



## Planning Commission Meeting Agenda

February 14, 2023  
5:30 PM – Regular Meeting  
Council Chambers  
400 N. Douty St.

Planning Commissioners will meet in-person in the Council Chambers. The meeting will also be live streamed on the City's website: <http://livestream.hanford.city/>

### CALL TO ORDER :

### ROLL CALL:

### INVOCATION:

### FLAG SALUTE:

### PUBLIC COMMENT:

*This is the time for citizens to comment on subject matters within the jurisdiction of the Hanford City Council. This is also the public's opportunity to request an item from the Consent Calendar be pulled for discussion purposes or to comment on any item on the agenda. State law does not allow the Council to discuss or take action on issues not on the agenda, except that members of the Council or staff may briefly respond to statements made or questions posed by persons exercising their public testimony rights (Gov. Code sec. 54954.2). A maximum of three minutes is allowed for each speaker. Please begin your comments by stating your name and providing your city of residence.*

### CONSENT CALENDAR:

*Consent Calendar items are considered routine and will be enacted in one motion. There will be no separate discussion of these matters unless a request is made and then the item will be removed from the Consent Calendar to be discussed and voted upon by a separate motion.*

- A. Community Development: **TE0001-23**, a request to extend the life of Vesting Tentative Tract 928 Unit Four for 12 months. The project is located at the southeast corner of Fargo Avenue and Centennial Drive (APN 009-030-158)
- B. Community Development: Approval of the Minutes of the January 24, 2023 Meeting

### GENERAL BUSINESS:

- A. Community Development: **Scoping Meeting or Vesting Tentative Tract 938**: A request by DR Horton to subdivide approximately 95 acres into 457 single-family residences, a drainage

retention basin, and a 5.82-acre park. The project is located east of 10 ½ Avenue between Hanford Armona Road and Houston Avenue (APN 011-440-015 and 011-440-014).

The City of Hanford will be the Lead Agency and will prepare a focused Environmental Impact Report (EIR) for the proposed Lunaria Residential Development Project (TTM 938; Project).

**DIRECTOR'S COMMENTS :**

**COMMISSIONERS' ITEMS OF INTEREST:**

**ADJOURNMENT:**

Materials related to an item on this Agenda submitted to the City Council after distribution of the agenda packet are available to public inspection in the City Clerk's Office located at 319 N. Douty Street, Hanford, California 93230, during normal business hours. Such agendas are also available at the city's website, [www.cityofhanfordca.com](http://www.cityofhanfordca.com) subject to staff's ability to post the agenda before the meeting.

If you need a disability-related modification or accommodation, including auxiliary aids or services, to participate in this meeting, please contact the City Clerk's office, 559-585-2515, 319 N. Douty Street, Hanford, California 93230, at least 2 days prior to the meeting {28 CFR 35.102.35.104 ADA Title II}



**CITY OF HANFORD PLANNING COMMISSION  
STAFF REPORT**

**MEETING DATE:** Tuesday, February 14, 2023

**PROJECT:** **TE0001-23**, a request to extend the life of Vesting Tentative Tract 928 Unit Four for 12 months.

**LOCATION:** The project is located at the southeast corner of Fargo Avenue and Centennial Drive (APN 009-030-158)

**PROJECT PLANNER:** Gabrielle Myers

**STAFF RECOMMENDATION**

Staff recommends that the Planning Commission:

1. Adopt Resolution No. 2023-05, approving Time Extension No. 0001-23.

**RECOMMENDED MOTION**

1. I move to adopt Resolution No. 2023-05, approving Time Extension No. 0001-23.

**PROJECT PROPOSAL**

Time Extension No. 0001-23 is a request by QK, on behalf of San Joaquin Valley Homes, to extend the life of Vesting Tentative Tract Map 928 Unit IV for 12 months, in order revise and record the Final Map for Unit IV of Vesting Tentative Tract 928.

Vesting Tentative Tract 928 is attached – **Attachment 1**.

Draft Final Map for Unit IV is attached – **Attachment 2**.

**BACKGROUND INFORMATION**

Vesting Tentative Tract 928 was a request, by Cal-Clark Farms, to subdivide 81.71 acres in 283 single-family residential lots, a 2.25-acre park, and a 4.94-acre storm drainage basin in the R- L- 5 Low-Density Residential zone district.

The project was heard by the Planning Commission on Tuesday, August 11, 2020. The Planning Commission ultimately did not take action, thus resulting in a denial of Vesting Tentative Tract 928 at the Planning Commission-level.

The original Planning Commission staff report is attached – **Attachment 3**.

The Planning Commission's decision to take no action was appealed to the City Council on September 1, 2020. The City Council voted 4,1 to adopt Resolution 20-23-R, approving Appeal No. 2020-01, overturning the Planning Commission's decision to take no action on Tentative Tract 928 and Mitigated Negative Declaration No. 2020-22.

The Appeal staff report is attached – **Attachment 4.**

Resolution 20-23-R is attached – **Attachment 5.**

Vesting Tentative Tract 928 was approved on September 1, 2020, for two years and set to expire on September 1, 2022.

Phase I, II, and III of Vesting Tentative Tract 928 have recorded and are under construction.

Prior to the map's expiration, Improvement Plans for Unit IV were submitted to Public Works on August 5, 2022. The Final Map for Unit IV was submitted on October 18, 2022. Since Improvement Plans were submitted prior to the expiration of the map and the map had previously been extended, it was determined that the map was eligible for extension.

Unit IV is the final phase of Vesting Tentative Tract 928.

The applicant seeks a 12-month extension of the original expiration date; thus extending the map from September 1, 2022 to September 1, 2023.

### **Project Location**

The project is located at the southeast corner of Centennial Drive and Fargo Avenue.

Figure 1 – Aerial

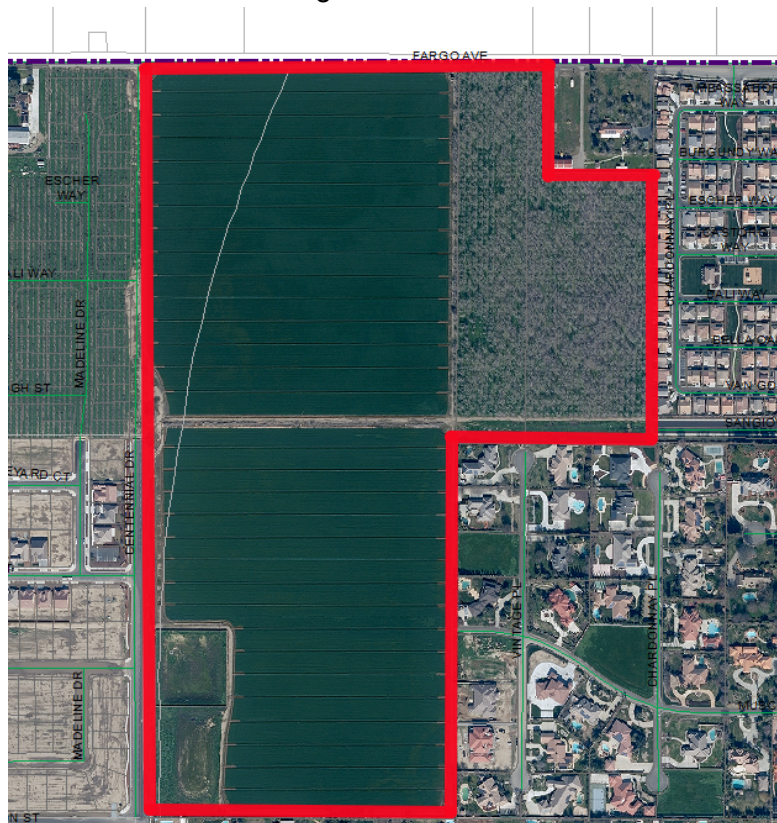


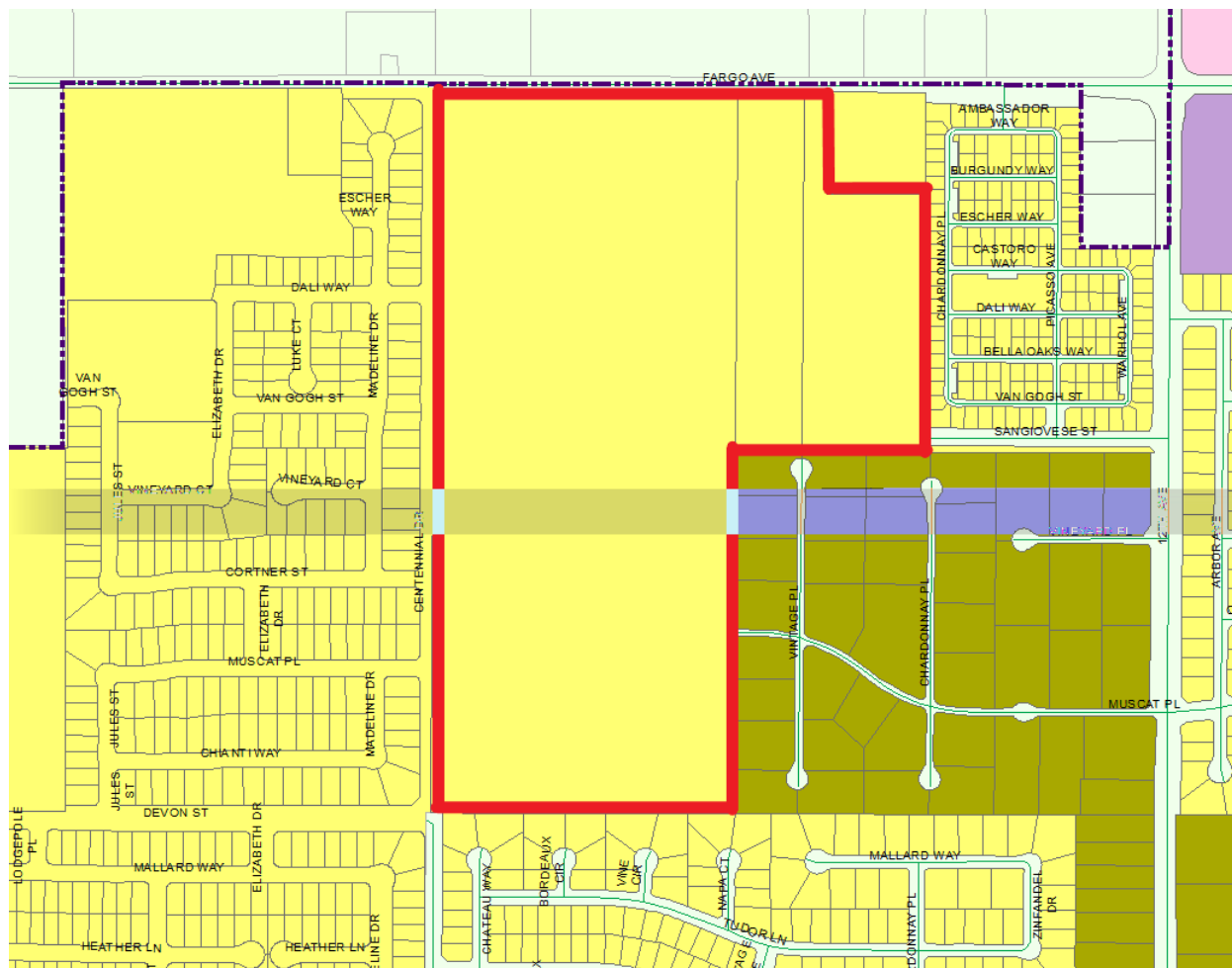
Figure 2: General Plan Designation  
Low-Density Residential



### R-L-5 Low-Density Residential

Page 5 of 602

Figure 3: Zoning Designation  
R-L-5 Low-Density Residential



## PROJECT EVALUATION

Due to the need to revise and record the Final Map for Unit IV of Vesting Tentative Tract 928, the applicant is requesting a 12-month time extension to the original map's expiration date. The map is still consistent with the current General Plan designation for the site, Low Density Residential, as well as the zoning designation, R-L-5 Low Density Residential.

In accordance with Section 16.32.090 Expiration and Time Extension of the Hanford Subdivision Ordinance:

"An approved or conditionally approved vesting tentative map shall expire at the end of the same time period, and shall be subject to the same extensions as established by the California Government Code (Section 66452.6) as amended for nonvesting tentative maps. The total of all time extensions for vesting tentative maps shall not exceed three years except when automatically extended as provided by California Government Code Section 66452.6 as amended. If a subdivider allows the Tentative Map approval time period to expire, the subdivider must reapply for a new vesting tentative map. If a vesting

map is recorded in phases, the first phase and all subsequent phases to be recorded must be recorded prior to the vesting tentative map expiring.

The rights conferred by a vesting tentative map shall expire if a final map is not recorded prior to the expiration of the vesting tentative map as provided in this section. If the final map is recorded, the rights conferred shall last for a period of one year from the date of the recording of the final map. Where one single vesting tentative map is submitted which covers several phases of a project, the rights conferred for each phase shall last for a period of one year from the date of recording of the final map for that phase.”

The Planning Commission may grant a total time extension of three years. The map has not previously been extended, and if sought, could be extended an additional two years.

No automatic State map extensions are applicable to this project.

#### **ENVIRONMENTAL ASSESSMENT**

Mitigated Negative Declaration No. 2020-22 was adopted for the project on September 1, 2020 certifying that the project would not have a significant adverse impact on the environment with the incorporation of mitigation measures.

#### **CONDITIONS OF APPROVAL**

That a 12-month time extension for Vesting Tentative Tract Map 928 be approved, in accordance with the existing conditions in Resolutions No. 20-23-R, adopted September 1, 2020, and with the addition of the following conditions:

1. That the new expiration date of Vesting Tentative Tract Map 928 be September 1, 2023.

**Applicant:**

Alex Dwiggins – QK  
609 W Irwin St.  
Hanford, CA 93230

**Owner:**

JJR Management – SJVH  
5607 Avenida de los Robles  
Visalia, CA 93291

**RESOLUTION NO. 2023-05**

**A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF HANFORD  
APPROVING TIME EXTENSION NO. 0001-23, A REQUEST TO EXTEND THE LIFE OF  
VESTING TENTATIVE TRACT 928 FOR 12-MONTHS. THE PROJECT PERTAINS TO  
PROPERTY LOCATED AT THE SOUTHEAST CORNER OF FARGO AVENUE AND  
CENTENNIAL DRIVE (APN 009-030-158)**

At a regular meeting of the Planning Commission of the City of Hanford duly called and held on February 14, 2023, by motion of Commissioner \_\_\_\_\_, seconded by Commissioner \_\_\_\_\_, and duly carried, the following resolution was adopted:

**WHEREAS**, Time Extension No. 0001-23, filed by QK on behalf of San Joaquin Valley Homes, proposing to extend the life of Vesting Tentative Tract 928, for 12 months, has been reviewed by the Planning Commission of the City of Hanford as an advisory agency, in accordance with Title 16 of the Hanford Municipal Code;

**WHEREAS**, the project pertains to property located at the southeast corner of Fargo Avenue and Centennial Drive; and

**WHEREAS**, a time extension was requested by the applicant pursuant to City Council Resolution No. 20-23-R and Section 66463.5(c) of the Subdivision Map Act; and

**WHEREAS**, in accordance with Section 16.32.090 of the Subdivision Ordinance, a vesting tentative map may be extended for a total time of three years, except when automatically extended, as provided by California Government Code Section 66452.6; and

**WHEREAS**, findings were made pursuant to Section 66474 of the Subdivision Map Act in City Council Resolution No. 20-23-R; and

**THEREFORE, BE IT RESOLVED**, that a 12-month time extension for Vesting Tentative Tract Map 928 be approved, in accordance with the existing conditions in Resolution No. 20-23-R, adopted September 1, 2020, and with the addition of the following conditions:

1. That the new expiration date of Vesting Tentative Tract 928 be September 1, 2023.

**PASSED AND ADOPTED** at a regular meeting of the Planning Commission of the City of Hanford on February 14, 2023 by the following vote:

|          |               |
|----------|---------------|
| AYES:    | Commissioners |
| NOES:    | Commissioners |
| ABSTAIN: | Commissioners |
| ABSENT:  | Commissioners |

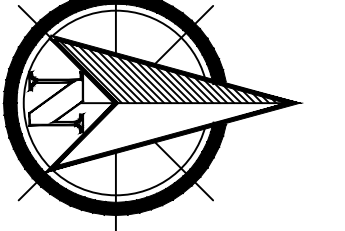
STATE OF CALIFORNIA)  
COUNTY OF KINGS     ) ss  
CITY OF HANFORD     )

I, **Jason Waters**, Secretary of the Planning Commission of the City of Hanford, do hereby certify the foregoing Resolution was duly passed and adopted by the Planning Commission of the City of Hanford at a regular meeting thereof held on the 14<sup>th</sup> day of February, 2023.

Jason Waters, Secretary



VESTING TENTATIVE  
SUBDIVISION MAP  
SILVER OAKS ADDITION  
COUNTY TRACT NO. 928



SCALE: 1"=100'

100 50 0 100 200

GENERAL INFORMATION

EXISTING ZONE R-L-5  
PROPOSED ZONE R-L-5  
EXISTING USE Walnuts & Row Crops  
PROPOSED USE Residential  
SEWER City of Hanford  
(see note, this sheet)  
WATER City of Hanford  
STORM DRAIN On-site Basin  
A.P.N. 009-030-158,005,115  
ELECTRIC SCE  
GAS Gas Company  
TELEPHONE SBC  
AREA (PHASE I) 27.223 Acres  
AREA (PHASE II) 12.417 Acres  
AREA (PHASE III) 22.550 Acres  
AREA (PHASE IV) 22.843 Acres

SANITARY SEWER NOTE

This tract proposes to utilize the existing sanitary sewer line in Sanguiovese Street as constructed with Copper Valley (Tract 835). If required due to pipe depth the existing sanitary sewer line in Centennial Dr. will be used for a portion of this tract.

LEGAL DESCRIPTION

The Westerly 16.73 chains of the Northeast Quarter of Section 22, T. 18 S., R. 21 E., M.D.B. & M., and the "Designated Remainder" as shown on a Parcel Map recorded in Book 17 of Parcel Maps at Page 5, Kings County Records.

TRACT NO. 928  
BOUNDARY ACREAGE

TOTAL WITH BASIN: 85.03 Acres  
TOTAL WITHOUT BASIN: 80.11 Acres

LOT COUNT

PHASE 1 = 56  
PHASE 2 = 43  
PHASE 3 = 88  
PHASE 4 = 93

APPLICANT

Cal-Clark Farms  
PO Box 221815  
Carmel, CA 93922

OWNER

Cal-Clark Farms  
PO Box 221815  
Carmel, CA 93922

LEGEND

- PHASE LINE
- TRANSFORMER POLE
- UTILITY POLE
- FIRE HYDRANT
- WATER SERVICE
- WATER VALVE
- EXISTING AC SURFACE

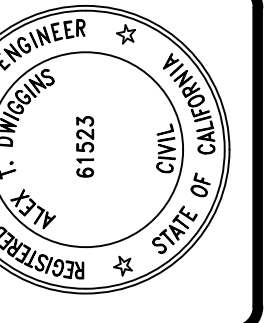
VICINITY MAP

NOT TO SCALE



| No. | Revisions                                    |
|-----|----------------------------------------------|
| 1   | Adjusted Dimensions and Layout               |
| 2   | Updated Section Lines & General Information  |
| 3   | Recorded Subdivision Layout                  |
| 4   | Recorded Subdivision Layout                  |
| 5   | Recorded Subdivision Layout                  |
| 6   | Recorded Subdivision Layout                  |
| 7   | Ex. Basin Dimensions/Updated Street Sections |
| 8   | Adjust Phase Lines, street bearings          |
| 9   | Adjust Phase Lines, street bearings          |
| 10  | Adjust Phase Lines, street bearings          |
| 11  | Phase III/IV - Swap Phases                   |

CAL CLARK FARMS, INC.  
PO Box 221815  
Carmel, CA 93922



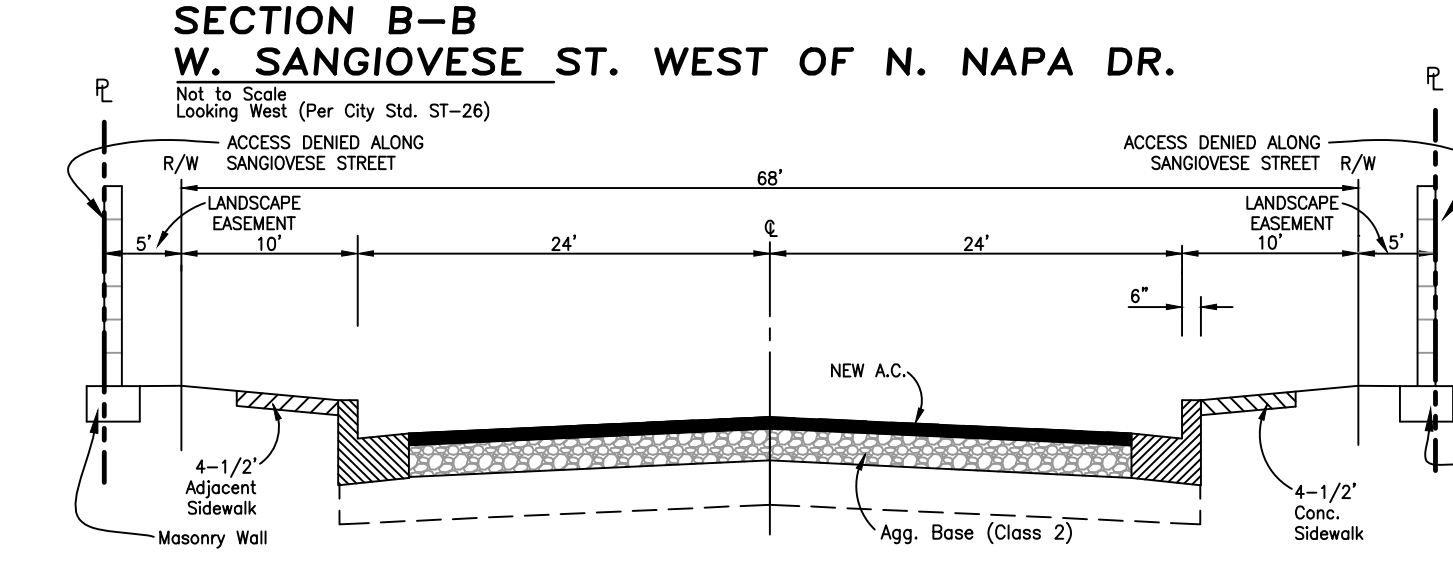
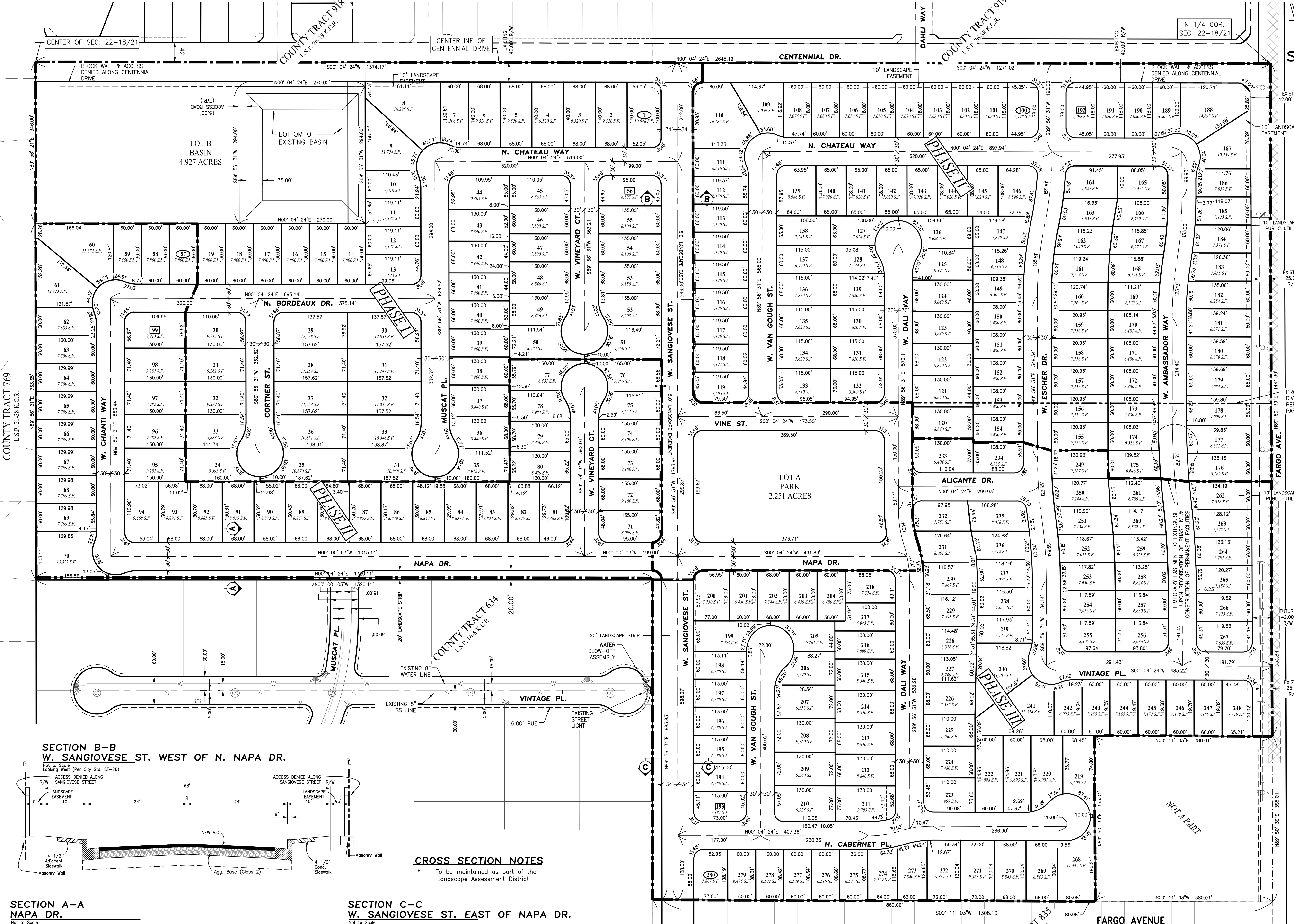
VESTING TENTATIVE SUBDIVISION MAP  
SILVER OAKS ADDITION  
COUNTY TRACT NO. 928  
FOR CAL CLARK FARMS, INC.

CIVIL ENGINEERS

ZUMWALT  
HANSEN &  
LAND SURVEYORS

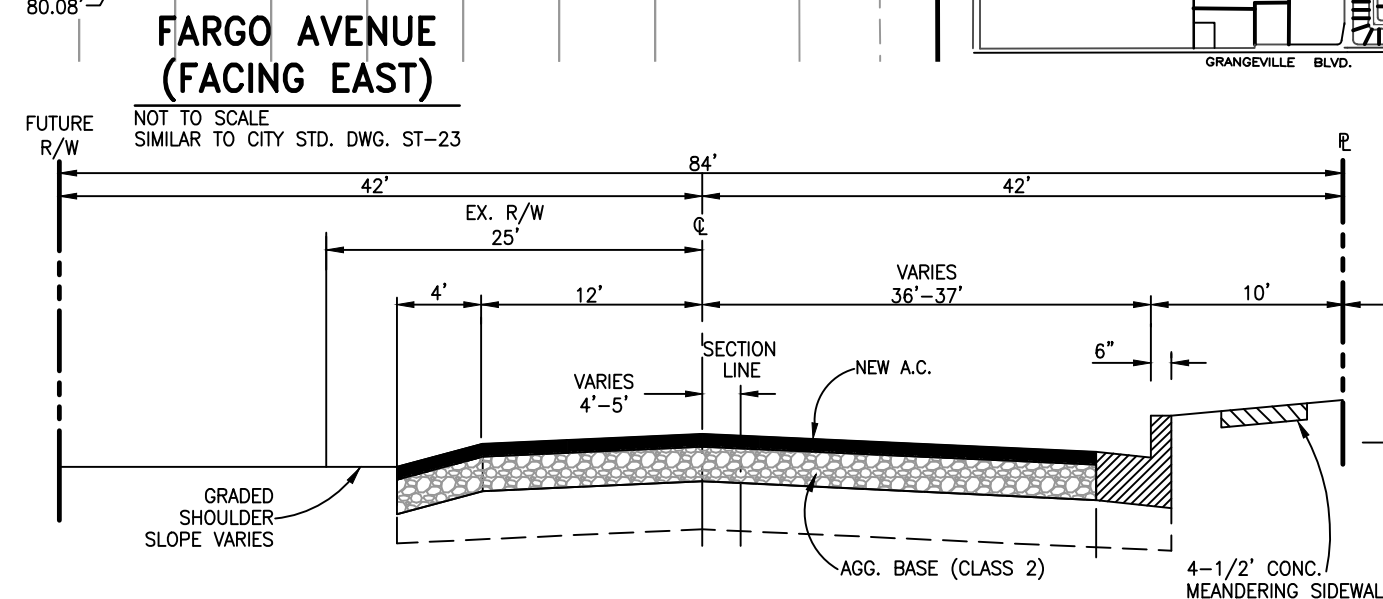
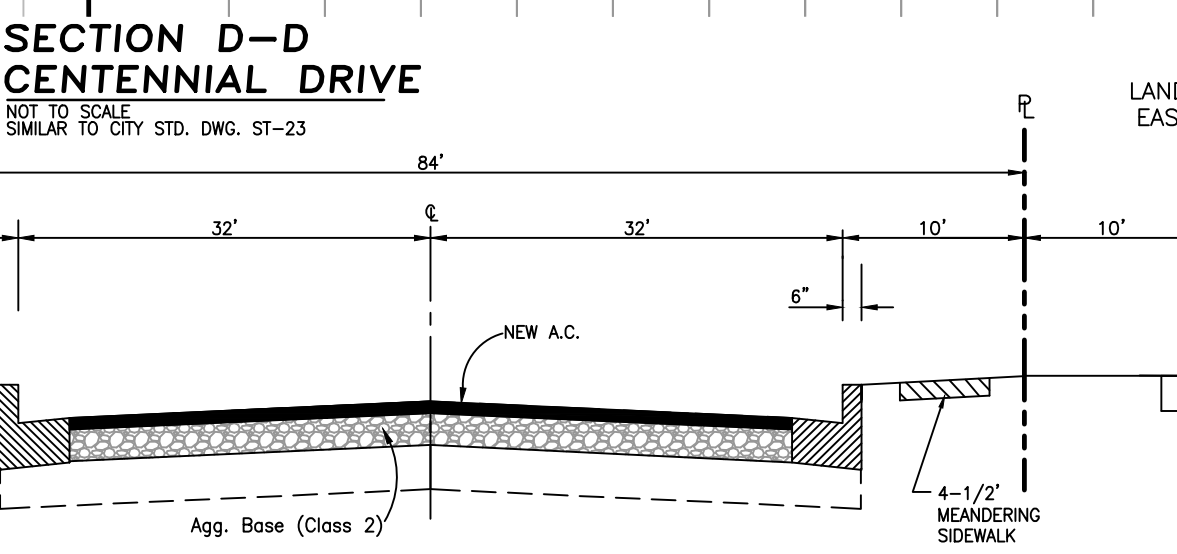
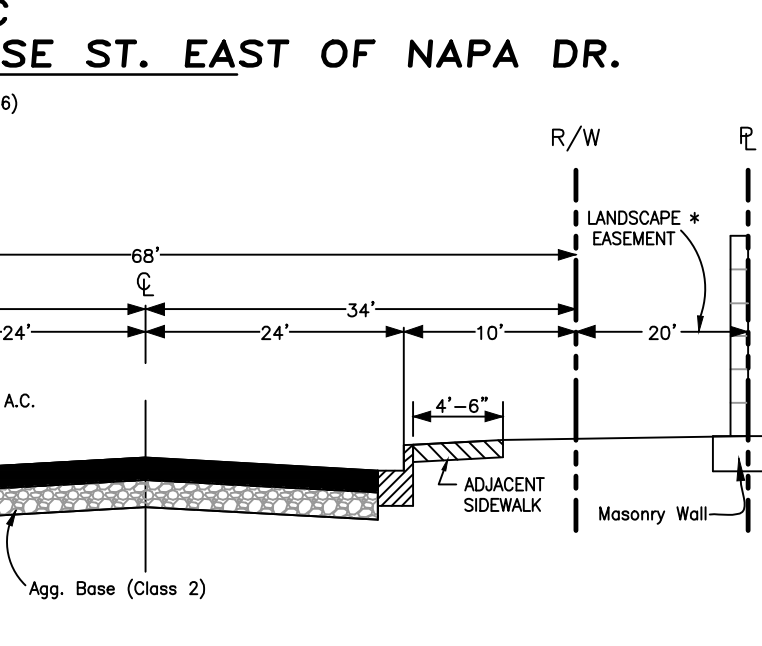
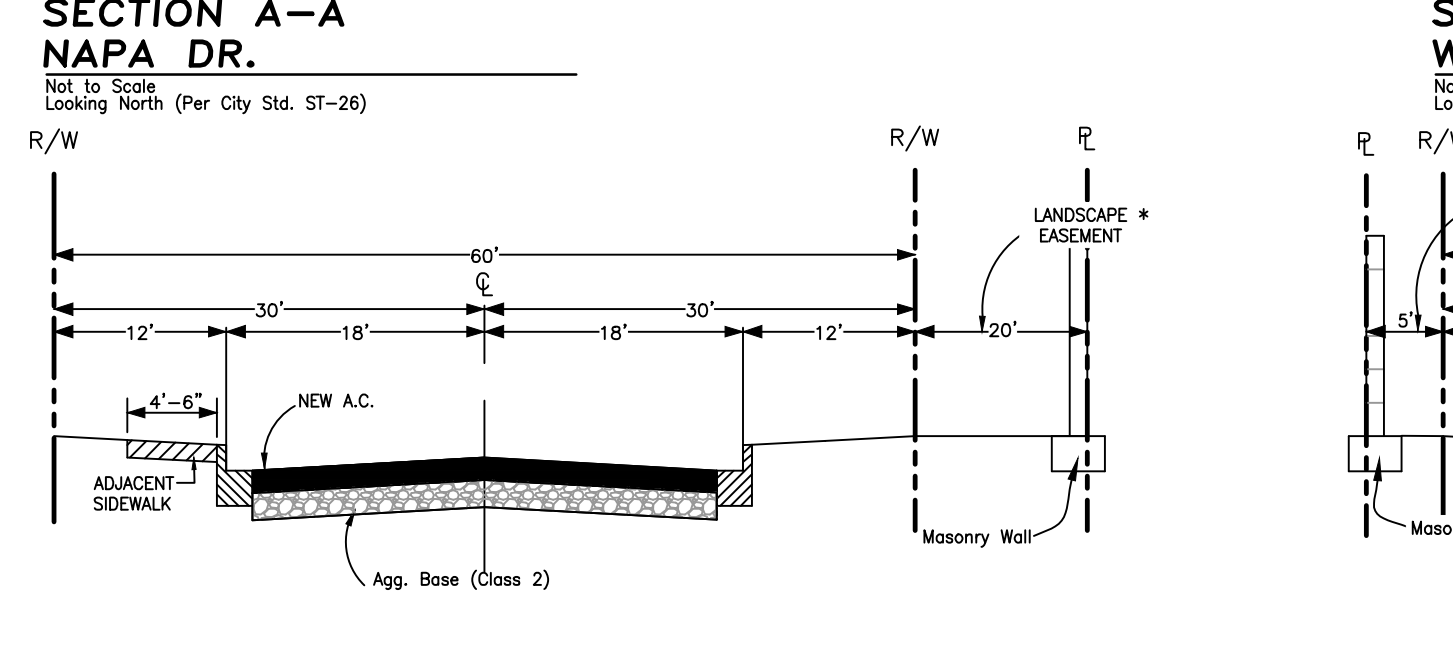
609 N. Irwin St.  
Hanford, CA 93230  
Office: (559) 582-1056  
Fax: (559) 584-4143

DRAWN BY: JB  
CHECKED BY: AD  
INDEXED BY:  
DATE: 07/02/2021  
JOB NO.: 0606354  
SHEET: 1 OF 1



CROSS SECTION NOTES

\* To be maintained as part of the Landscape Assessment District





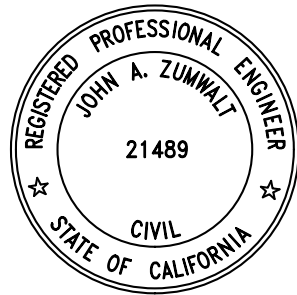
COUNTY TRACT No. 928  
UNIT IV  
CITY OF HANFORD, COUNTY OF KINGS  
STATE OF CALIFORNIA

ENGINEER'S STATEMENT

THIS MAP CONSISTING OF SIX SHEETS WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON A FIELD SURVEY IN CONFORMANCE WITH THE REQUIREMENTS OF THE SUBDIVISION MAP ACT AND LOCAL ORDINANCE AT THE REQUEST OF JIM ROBINSON OF SAN JOAQUIN VALLEY HOMES IN THE MONTHS OF MAY 2022 THROUGH OCTOBER 2022 . HEREBY STATE THAT THIS MAP SUBSTANTIALLY CONFORMS TO THE CONDITIONALLY APPROVED TENTATIVE MAP.

DATED THIS      DAY OF      , 20      .

JOHN A. ZUMWALT, R.C.E. 21489

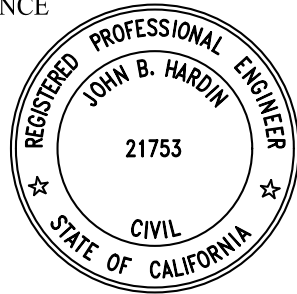


ACTING CITY SURVEYOR

I, JOHN B. HARDIN, HEREBY STATE THAT I HAVE CAREFULLY EXAMINED THE ANNEXED MAP, THAT I AM SATISFIED THAT SAID MAP IS TECHNICALLY CORRECT, AND IN ACCORDANCE WITH SECTIONS 66425 THROUGH 66450, INCLUSIVE, OF THE GOVERNMENT CODE.

DATED THIS      DAY OF      , 20      .

JOHN B. HARDIN, R.C.E. 21753  
ACTING FOR THE CITY OF HANFORD

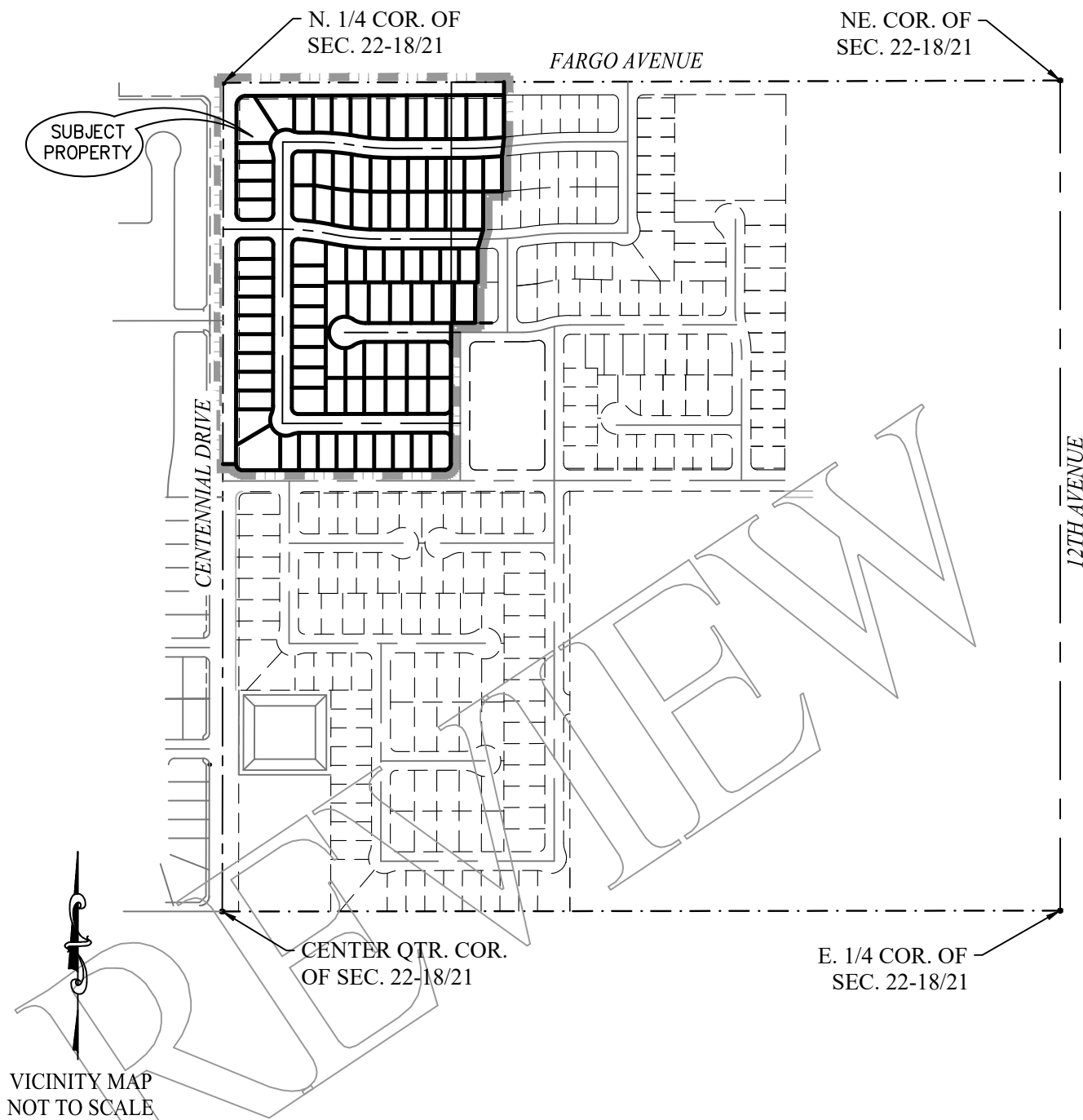
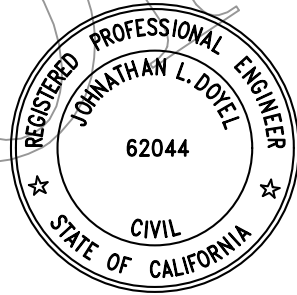


CITY ENGINEER'S STATEMENT

I, LISA DOCK, HEREBY STATE THAT I HAVE CAREFULLY EXAMINED THE ANNEXED MAP, THAT THE SUBDIVISION AS SHOWN IS SUBSTANTIALLY THE SAME AS IT APPEARED ON THE TENTATIVE MAP, AND ANY APPROVED ALTERATIONS THEREOF AND THAT ALL PROVISIONS OF ANY LOCAL ORDINANCES AND SECTIONS 66425 THROUGH 66450 OF THE GOVERNMENT CODE APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP HAVE BEEN COMPLIED WITH.

DATED THIS      DAY OF      , 20      .

LISA DOCK, ACTING CITY ENGINEER R.C.E. 62044



TAX COLLECTOR'S STATEMENT

THIS IS TO CERTIFY THAT THE PROVISIONS OF ARTICLE 8 OF CHAPTER 4 OF THE GOVERNMENT CODE HAVE BEEN COMPLIED WITH REGARDING DEPOSITS.

DATE:     

JAMES P. ERB, CPA; DIRECTOR OF FINANCE

BY:     

CITY CLERK'S CERTIFICATE

I HEREBY STATE THAT AT A REGULAR MEETING OF THE HANFORD CITY COUNCIL HELD ON THE      , DAY OF      , 20      , AN ORDER WAS DULY AND REGULARLY MADE AND ENTERED APPROVING THIS MAP AND SUBDIVISION AND ACCEPTING, SUBJECT TO IMPROVEMENT, ON BEHALF OF THE GENERAL PUBLIC, THE STREETS, EASEMENTS, AS INCLUDED WITHIN THE BOUNDARIES OF THE SUBDIVISION SHOWN UPON THIS MAP.

DATED THIS      DAY OF      , 20      .

NATALIE CORRAL, CITY CLERK

PLANNING COMMISSION CERTIFICATE

APPROVED BY THE HANFORD PLANNING COMMISSION IN ACCORDANCE WITH THE REQUIREMENTS OF LAW IN DULY AUTHORIZED MEETING HELD      , 20      .  
DATED THIS      DAY OF      , 20      .

JASON WATERS, COMMUNITY DEVELOPMENT DIRECTOR

RECORDER'S CERTIFICATE

FEE BOOK NO.      FEE PAID       
RECORDED AT THE REQUEST OF ZUMWALT-HANSEN & ASSOCIATES, INC. ON THIS      DAY OF      , 20      , AT      MINUTES PAST      O'CLOCK IN VOLUME      OF LICENSED SURVEYORS' PLATS, AT PAGE      , KINGS COUNTY RECORDS.

KRISTINE LEE, KINGS COUNTY RECORDER

BY:       
DEPUTY

OWNER'S STATEMENT

WE, THE UNDERSIGNED, DO HEREBY STATE THAT WE ARE THE OWNERS OF OR HAVE SOME RIGHT, TITLE, OR INTEREST IN AND TO THE REAL PROPERTY INCLUDED WITHIN THE SUBDIVISION SHOWN UPON THIS MAP AND THAT WE ARE THE ONLY PERSONS WHOSE CONSENT IS NECESSARY TO PASS A CLEAR TITLE TO SAID PROPERTY AND THAT WE CONSENT TO THE MAKING OF SAID MAP AND SUBDIVISION AS SHOWN ON THIS MAP AND DO HEREBY DEDICATE IN FEE TO PUBLIC USE ALL OF THE STREETS. WE ALSO DEDICATE THOSE EASEMENTS SHOWN HEREON FOR PUBLIC UTILITIES, LANDSCAPE AND SIDEWALKS.

PRESIDIO JJR BELLA VISTA II 150, LLC, A DELAWARE LIMITED LIABILITY COMPANY

BY: JJR MANAGEMENT SERVICES, INC. A CALIFORNIA CORPORATION, ITS OPERATING MANAGER  
JOSEPH A. LEAL, PRESIDENT

PRESIDIO JJR BONTERRA II 160, LLC, A DELAWARE LIMITED LIABILITY COMPANY, AS FEE TITLE OWNERS

BY: JJR MANAGEMENT SERVICES, INC. A CALIFORNIA CORPORATION, ITS OPERATING MANAGER  
JOSEPH A. LEAL, PRESIDENT

FARMERS AND MERCHANTS BANK OF LONG BEACH, A CALIFORNIA CORPORATION, AS BENEFICIARY  
UNDER DEED OF TRUST DATED JUNE 21, 2021 AND RECORDED JUNE 30, 2021 AS DOCUMENT NO. 2114772

BY:

NAME:

TITLE:

COUNTY TRACT No. 928  
UNIT IV  
CITY OF HANFORD, COUNTY OF KINGS  
STATE OF CALIFORNIA

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

STATE OF CALIFORNIA  
COUNTY OF

ON BEFORE ME,

NOTARY PUBLIC, PERSONALLY APPEARED

WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED THE INSTRUMENT. I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.  
WITNESS MY HAND AND OFFICIAL SEAL

SIGNATURE

(PRINT NAME)

MY COMMISSION NO. MY COMMISSION EXPIRES

PRINCIPAL OFFICE IN COUNTY OF

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

STATE OF CALIFORNIA  
COUNTY OF

ON BEFORE ME,

NOTARY PUBLIC, PERSONALLY APPEARED

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WITNESS MY HAND AND OFFICIAL SEAL

SIGNATURE

(PRINT NAME)

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PRINCIPAL OFFICE IN COUNTY OF

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STATE OF CALIFORNIA  
COUNTY OF

ON BEFORE ME,

NOTARY PUBLIC, PERSONALLY APPEARED

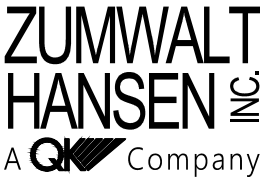
WHO PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED THE INSTRUMENT. I CERTIFY UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA THAT THE FOREGOING PARAGRAPH IS TRUE AND CORRECT.  
WITNESS MY HAND AND OFFICIAL SEAL

SIGNATURE

(PRINT NAME)

MY COMMISSION NO. MY COMMISSION EXPIRES

PRINCIPAL OFFICE IN COUNTY OF



609 N. IRWIN ST.

HANFORD, CA. 93230

PH. (559) 582-1056

FILE NO. 220196

SHEET TWO OF SIX SHEETS



N-1/4 COR. OF SEC. 22-18/21  
FD. 2-1/2" BRASS CAP, FLUSH  
IN CONCRETE, FLUSH IN PAVEMENT,  
STAMPED L.S. 4375, PER K.C.C.R. #1724

BASIS OF BEARINGS  
(N89° 50' 39"E 2671.87') [S89° 50' 51"W 2672.01']  
N89° 50' 39"E 2671.75'

NE COR. OF SEC. 22-18/21  
FD. 2" BRASS CAP IN CONCRETE,  
DOWN 1" STAMPED L.S. 4375,  
PER K.C.C.R. #3207

# COUNTY TRACT No. 928 UNIT IV

CITY OF HANFORD, COUNTY OF KINGS,  
STATE OF CALIFORNIA

## LEGAL DESCRIPTION

DESIGNATED REMAINDER PARCEL, IN THE CITY OF HANFORD, COUNTY OF KINGS, STATE OF CALIFORNIA,  
ACCORDING TO THE MAP RECORDED DECEMBER 9, 2021 IN BOOK 21, PAGE 35 OF PARCEL MAPS IN THE  
OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.  
DESIGNATED REMAINDER PARCEL, IN THE CITY OF HANFORD, COUNTY OF KINGS, STATE OF CALIFORNIA,  
ACCORDING TO THE MAP RECORDED DECEMBER 9, 2021 IN BOOK 21, PAGE 35 OF PARCEL MAPS IN THE  
OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

## BASIS OF BEARINGS

THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 22, T. 18 S., R. 21 E., M.D.B. & M.,  
BEARS S 89° 50' 39" W PER L.S.P. 21-53, K.C.R.

## SURVEYOR'S NOTE

ALL CURVES ARE TANGENT UNLESS OTHERWISE NOTED

## MONUMENT NOTE:

SIDE AND REAR LOT CORNERS OF LOTS 188-198 & LOTS 264-280 ADJACENT TO CENTENNIAL DRIVE  
AND FARGO AVENUE ARE MONUMENTED BY 1/2" REBAR, 30" LONG, WITH YELLOW PLASTIC TAG  
MARKED R.C.E. 21489, SET 6"± DEEP, ON THE LOT LINE A DISTANCE OF 14.00' (PERPENDICULAR)  
FROM THE SIDE OR REAR CORNER. THE REAR LOT CORNERS OF LOTS 198-207 ADJACENT TO  
SANGIOVESE ARE OF THE SAME CHARACTER BUT ONLY 9' (PERPENDICULAR) FROM THE REAR  
CORNER.

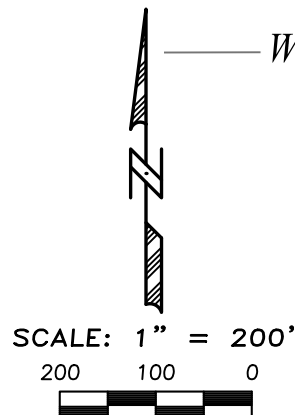
## SPECIAL MONUMENT NOTE:

ALL FRONT CORNERS ADJACENT TO STREETS ARE MONUMENTED AS WITNESS CORNERS, SET ON  
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"CONT. PT., R.C.E. 21489", AND SET 6"± DEEP, EXCEPT AS SHOWN OTHERWISE.

## LEGEND

- FOUND AND ACCEPTED MONUMENT AS NOTED
  - FD. 1/2" REBAR WITH PLASTIC TAG STAMPED R.C.E. 21489 DN 6"±
  - SET STEEL SPIKE WITH BRASS TAG, R.C.E. 21489, FLUSH IN PAVEMENT
  - △ SET 2"x24" GALV. I.P. WITH BRASS CAP STAMPED R.C.E. 21489 IN MONUMENT WELL, MONUMENT WELL SET FLUSH IN PAVEMENT
  - LOT CORNERS ARE MARKED WITH 1/2" REBAR, 30" LONG, TAGGED R.C.E. 21489, SET 6" DEEP, SEE SPECIAL MONUMENTATION NOTE
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  - △ NOW OFFERED FOR DEDICATION AS PUBLIC STREETS
  - ( ) RECORD DATA PER L.S.P. 21-53, K.C.R.
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  - (( )) RECORD DATA PER L.S.P. 26-19, K.C.R.
  - (1234) INDICATES STREET ADDRESSES
  - /// ACCESS DENIED TO CENTENNIAL DR., W. SANGIOVESE ST. AND FARGO AVE.
  - || ■ || ■ || DISTINCTIVE BORDER
  - [2'] 2' PEDESTRIAN ACCESS EASEMENT
- ALL DIMENSIONS ARE IN FEET AND DECIMALS THEREOF

| LINE TABLE |           |               | LINE TABLE |           |               |
|------------|-----------|---------------|------------|-----------|---------------|
| LINE #     | LENGTH    | DIRECTION     | LINE #     | LENGTH    | DIRECTION     |
| L1         | {176.19'} | N0° 04' 24"E  | L7         | {108.00'} | N0° 04' 24"E  |
| L2         | {61.05'}  | N5° 47' 48"E  | L8         | {8.00'}   | N89° 56' 31"E |
| L3         | {112.40'} | N0° 04' 24"E  | L9         | {130.00'} | N0° 04' 24"E  |
| L4         | {60.01'}  | N89° 10' 04"E | L10        | {77.00'}  | N89° 56' 31"E |
| L5         | {120.93'} | N0° 04' 24"E  |            |           |               |
| L6         | {62.40'}  | N15° 53' 04"E |            |           |               |



KEY  
NOT TO SCALE

ZUMWALT  
HANSEN INC.  
A Company

609 N. IRWIN ST. HANFORD, CA. 93230

PH. (559) 582-1056

FILE NO. 220196

SHEET THREE OF SIX SHEETS





COUNTY TRACT  
No. 928 UNIT IV  
CITY OF HANFORD, COUNTY OF KINGS,  
STATE OF CALIFORNIA

| Radial Line Table |               |        |               |
|-------------------|---------------|--------|---------------|
| Line #            | Bearing       | Line # | Bearing       |
| R24               | N03° 30' 24"E | R40    | N00° 40' 02"W |
| R25               | N09° 21' 41"E | R41    | S04° 21' 33"W |
| R26               | N04° 37' 30"W | R42    | N08° 48' 06"E |
| R27               | N05° 01' 32"W | R43    | N05° 28' 06"E |
| R31               | N02° 15' 54"E | R44    | N09° 21' 41"E |
| R32               | N07° 01' 00"E | R45    | N01° 26' 26"E |
| R33               | S11° 41' 23"W | R46    | N06° 14' 01"E |
| R34               | S07° 15' 19"W | R47    | S07° 54' 13"W |
| R35               | S11° 45' 03"W | R48    | S03° 47' 03"W |
| R36               | S00° 03' 29"E | R49    | N22° 44' 53"E |
| R37               | N00° 25' 39"W | R51    | N81° 12' 42"W |
| R38               | N02° 31' 28"W | R52    | S67° 16' 03"W |
| R39               | N02° 50' 39"W | R57    | N01° 02' 51"E |

BASIS OF BEARINGS

THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 22, T. 18 S., R. 21 E., M.D.B. & M., BEARS S 89° 50' 39" W PER L.S.P. 21-53, K.C.R.

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FOR CONTINUATION SEE SHEET 5

| Curve Table |         |         |             |         |        |          |            |         |        |         |             |         |         |          |              |
|-------------|---------|---------|-------------|---------|--------|----------|------------|---------|--------|---------|-------------|---------|---------|----------|--------------|
| Curve #     | Length  | Radius  | Delta       | Curve # | Length | Radius   | Delta      | Curve # | Length | Radius  | Delta       | Curve # | Length  | Radius   | Delta        |
| C32         | 29.44'  | 726.00' | 2° 19' 23"  | C46     | 7.61'  | 779.00'  | 0° 33' 34" | C57     | 60.15' | 719.00' | 4° 47' 35"  | C68     | 31.37'  | 20.00'   | 89° 52' 07"  |
| C33         | 60.21'  | 726.00' | 4° 45' 06"  | C47     | 52.93' | 779.00'  | 3° 53' 35" | C58     | 39.25' | 719.00' | 3° 07' 40"  | C69     | 31.46'  | 20.00'   | 90° 07' 53"  |
| C34         | 59.99'  | 726.00' | 4° 44' 03"  | C48     | 60.11' | 779.00'  | 4° 25' 15" | C59     | 21.35' | 839.00' | 1° 27' 28"  | C70     | 47.00'  | 30.00'   | 89° 46' 15"  |
| C36         | 60.83'  | 786.00' | 4° 26' 04"  | C49     | 15.03' | 779.00'  | 1° 06' 19" | C60     | 60.32' | 839.00' | 4° 07' 09"  | C71     | 128.07' | 779.00'  | 9° 25' 10"   |
| C37         | 51.43'  | 786.00' | 3° 44' 56"  | C50     | 10.57' | 1640.00' | 0° 22' 10" | C61     | 56.26' | 839.00' | 3° 50' 32"  | C72     | 128.07' | 779.00'  | 9° 25' 10"   |
| C38         | 30.22'  | 20.00'  | 86° 34' 01" | C51     | 60.03' | 1640.00' | 2° 05' 49" | C62     | 21.27' | 70.00'  | 17° 24' 34" | C73     | 130.72' | 1640.00' | 4° 34' 01"   |
| C41         | 149.63' | 726.00' | 11° 48' 32" | C52     | 60.13' | 1640.00' | 2° 06' 02" | C63     | 6.59'  | 70.00'  | 5° 23' 48"  | C74     | 136.98' | 1580.00' | 4° 58' 03"   |
| C42         | 113.10' | 786.00' | 8° 14' 39"  | C53     | 60.15' | 1580.00' | 2° 10' 53" | C64     | 48.64' | 50.00'  | 55° 43' 59" | C75     | 118.20' | 719.00'  | 9° 25' 10"   |
| C43         | 31.37'  | 20.00'  | 89° 52' 07" | C54     | 60.03' | 1580.00' | 2° 10' 37" | C65     | 42.09' | 50.00'  | 48° 13' 52" | C76     | 137.93' | 839.00'  | 9° 25' 10"   |
| C44         | 60.05'  | 779.00' | 4° 25' 01"  | C55     | 16.80' | 1580.00' | 0° 36' 33" | C66     | 27.50' | 50.00'  | 31° 30' 59" | C77     | 27.86'  | 70.00'   | 22° 48' 21"  |
| C45         | 60.40'  | 779.00' | 4° 26' 34"  | C56     | 18.80' | 719.00'  | 1° 29' 54" | C67     | 27.86' | 70.00'  | 22° 48' 21" | C78     | 118.23' | 50.00'   | 135° 28' 50" |

LEGEND

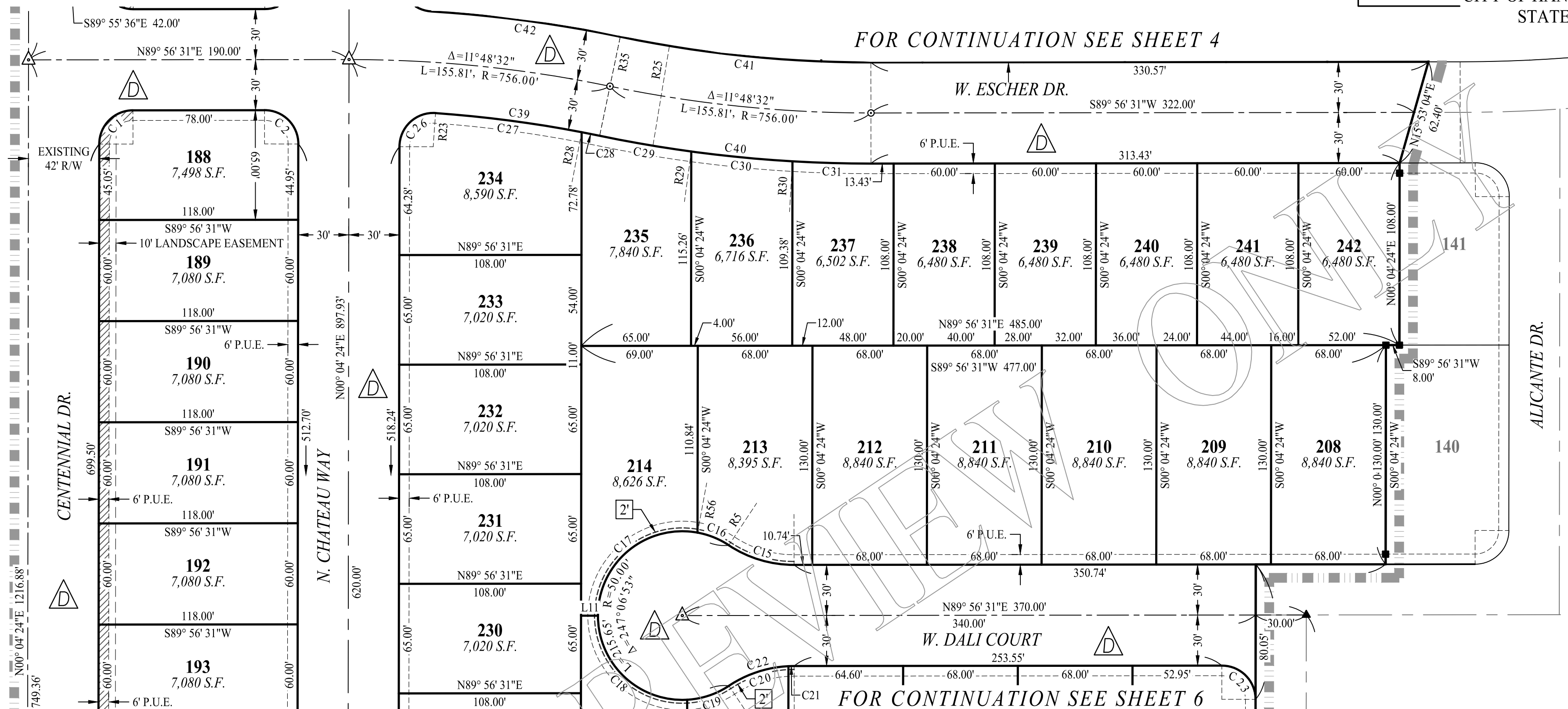
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COUNTY TRACT No. 928  
UNIT IV

CITY OF HANFORD, COUNTY OF KINGS,  
STATE OF CALIFORNIA



**BASIS OF BEARINGS**

THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 22, T. 18 S., R. 21 E., M.D.B. & M., BEARS S 89° 50' 39" W PER L.S.P. 21-53, K.C.R.

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| Curve Table |        |        |              | Radial Line Table |         |                |             |
|-------------|--------|--------|--------------|-------------------|---------|----------------|-------------|
| Curve #     | Length | Radius | Delta        | Curve #           | Length  | Radius         | Delta       |
| C1          | 31.37' | 20.00' | 89° 52' 07"  | C23               | 31.46'  | 20.00'         | 90° 07' 53" |
| C2          | 31.46' | 20.00' | 90° 07' 53"  | C26               | 32.78'  | 20.00'         | 93° 55' 12" |
| C15         | 41.00' | 70.00' | 33° 33' 26"  | C27               | 87.41'  | 726.00'        | 6° 53' 53"  |
| C16         | 20.12' | 50.00' | 23° 03' 28"  | C28               | 10.89'  | 726.00'        | 0° 51' 33"  |
| C17         | 87.70' | 50.00' | 100° 29' 58" | C29               | 55.12'  | 786.00'        | 4° 01' 04"  |
| C18         | 81.43' | 50.00' | 93° 18' 25"  | C30               | 60.29'  | 786.00'        | 4° 23' 41"  |
| C19         | 26.40' | 50.00' | 30° 15' 02"  | C31               | 46.59'  | 786.00'        | 3° 23' 47"  |
| C20         | 37.59' | 70.00' | 30° 46' 16"  | C39               | 98.29'  | 726.00'        | 7° 45' 26"  |
| C21         | 3.40'  | 70.00' | 2° 47' 11"   | C40               | 162.00' | 786.00'        | 11° 48' 32" |
| C22         | 41.00' | 70.00' | 33° 33' 26"  | LINE TABLE        |         |                |             |
|             |        |        |              | LINE #            | LENGTH  | DIRECTION      |             |
|             |        |        |              | L11               | 10.00'  | S89° 56' 31" W |             |

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A Q Company

609 N. IRWIN ST.

HANFORD, CA. 93230

PH. (559) 582-1056

FILE NO. 220196

SHEET FIVE OF SIX SHEETS



COUNTY TRACT No. 928  
UNIT IV  
CITY OF HANFORD, COUNTY OF KINGS,  
STATE OF CALIFORNIA

FOR CONTINUATION SEE SHEET 5

BASIS OF BEARINGS

(THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 22, T. 18 S., R. 21 E., M.D.B. & M., BEARS S 89° 50' 39" W PER L.S.P. 21-53, K.C.R.

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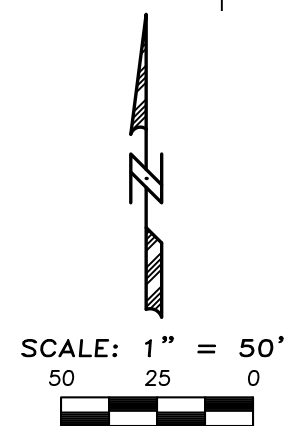
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| Curve Table |        |        |             | Curve # | Length | Radius | Delta       | Curve # | Length | Radius | Delta       | Curve #    | Length | Radius        | Delta       |
|-------------|--------|--------|-------------|---------|--------|--------|-------------|---------|--------|--------|-------------|------------|--------|---------------|-------------|
| Curve #     | Length | Radius | Delta       | C9      | 23.64' | 70.00' | 19° 20' 47" | C18     | 81.43' | 50.00' | 93° 18' 25" | C24        | 31.37' | 20.00'        | 89° 52' 07" |
| C3          | 31.46' | 20.00' | 90° 07' 53" | C10     | 4.26'  | 70.00' | 3° 29' 22"  | C19     | 26.40' | 50.00' | 30° 15' 02" | C25        | 31.46' | 20.00'        | 90° 07' 53" |
| C4          | 12.32' | 70.00' | 10° 05' 16" | C11     | 27.90' | 70.00' | 22° 50' 09" | C20     | 37.59' | 70.00' | 30° 46' 16" | LINE TABLE |        |               |             |
| C5          | 15.57' | 70.00' | 12° 44' 53" | C12     | 27.90' | 70.00' | 22° 50' 09" | C21     | 3.40'  | 70.00' | 2° 47' 11"  |            |        |               |             |
| C6          | 34.60' | 50.00' | 39° 39' 13" | C13     | 31.46' | 20.00' | 90° 07' 53" | C22     | 41.00' | 70.00' | 33° 33' 26" | LINE #     | LENGTH | DIRECTION     |             |
| C7          | 45.88' | 50.00' | 52° 34' 39" | C14     | 31.37' | 20.00' | 89° 52' 07" | C23     | 31.46' | 20.00' | 90° 07' 53" | L11        | 10.00' | S89° 56' 31"W |             |
| C8          | 38.02' | 50.00' | 43° 34' 19" |         |        |        |             |         |        |        |             |            |        |               |             |

| Radial Line Table |               | Line # | Bearing       |
|-------------------|---------------|--------|---------------|
| Line #            | Bearing       | R54    | S20° 40' 42"W |
| R1                | S67° 05' 26"E | R55    | S03° 21' 53"E |
| R2                | S22° 53' 38"E |        |               |
| R6                | S33° 36' 55"E |        |               |
| R53               | N73° 15' 21"E |        |               |

609 N. IRWIN ST.

HANFORD, CA. 93230

PH. (559) 582-1056

FILE NO. 220196

SHEET SIX OF SIX SHEETS



**CITY OF HANFORD PLANNING COMMISSION**  
**STAFF REPORT**  
**Tuesday, August 11, 2020**  
**Continued from July 14, 2020**

**PROJECT:**               **Vesting Tentative Tract 928:** A request by Cal-Clark Farms to subdivide 81.71 acres into 283 single-family residential lots, a 2.25-acre park, and a 4.94-acre basin in the R-L-5 Low-Density Residential zone district.

**Mitigated Negative Declaration No. 2020-22:** An initial study was prepared and it was determined that the project will not result in significant impacts to the environment with the incorporation of mitigation measures; therefore, Mitigated Negative Declaration 2020-22 has been prepared.

**LOCATION:**            The project is located at the southeast corner of Centennial Drive and Fargo Avenue (APN 009-030-158, -005, and -115).

**PLANNER:**            Gabrielle de Silva, Senior Planner

**STAFF RECOMMENDATION**

Staff recommends that the Planning Commission:

1. Certify Mitigated Negative Declaration No. 2020-22 for the project.
2. Adopt Resolution No. 2020-09, approving Vesting Tentative Tract 928.

**RECOMMENDED MOTION**

1. I move to certify Mitigated Negative Declaration No. 2020-22 for the project.
2. I move to adopt Resolution No. 2020-09, approving Vesting Tentative Tract 928.

**PROJECT DESCRIPTION**

**Vesting Tentative Tract 928**

The project is a request by Cal-Clark Farms to subdivide 81.71 acres into 283 single-family residential lots, a 2.25-acre park, and a 4.94-acre basin in the R-L-5 Low-Density Residential zone district.

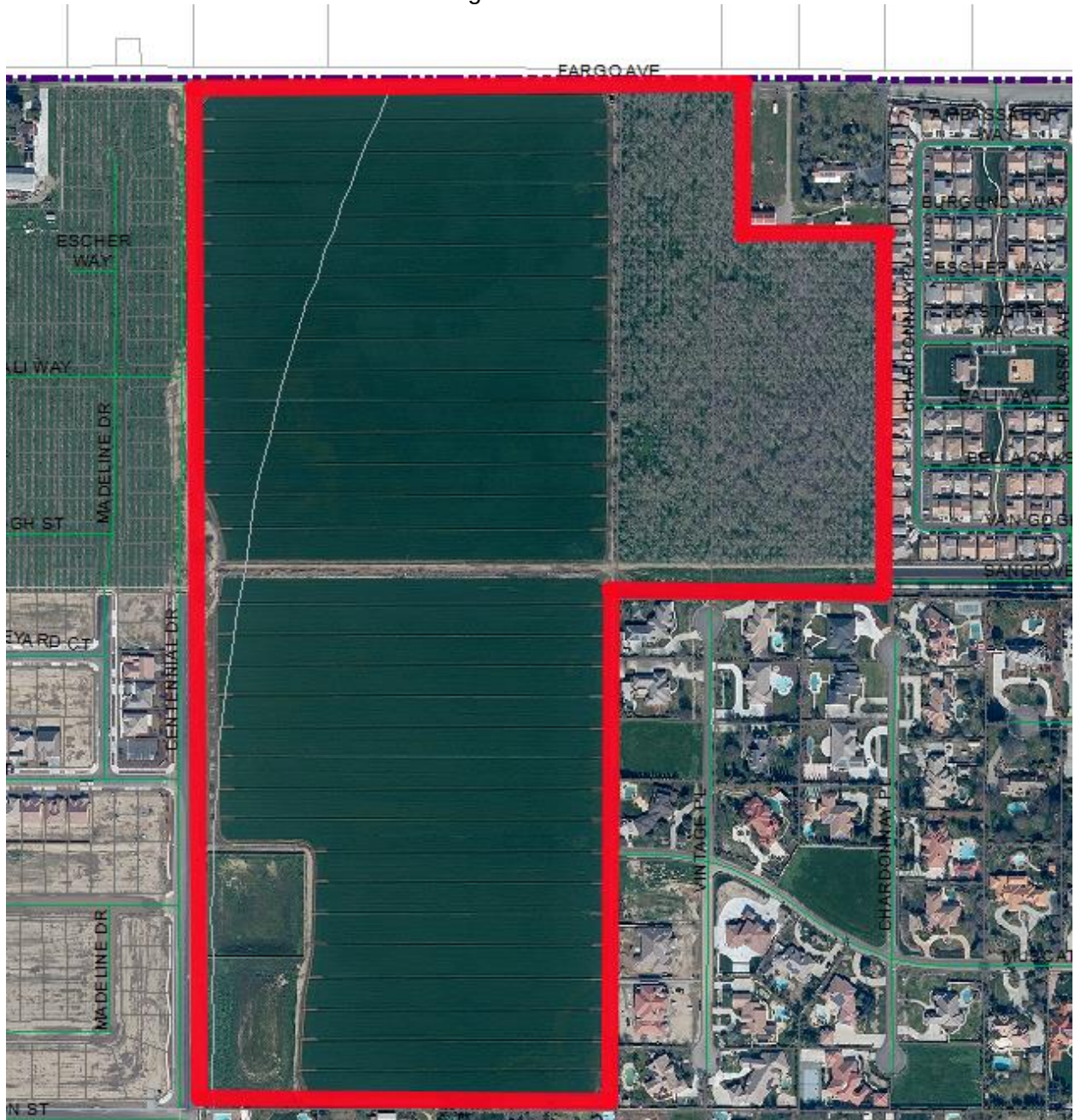
See proposed subdivision – **Attachment 1.**

**BACKGROUND INFORMATION**

**Project Location**

The project is located at the southeast corner of Centennial Drive and Fargo Avenue (APN 009-030-158, -005, and -115).

Figure 1 – Aerial



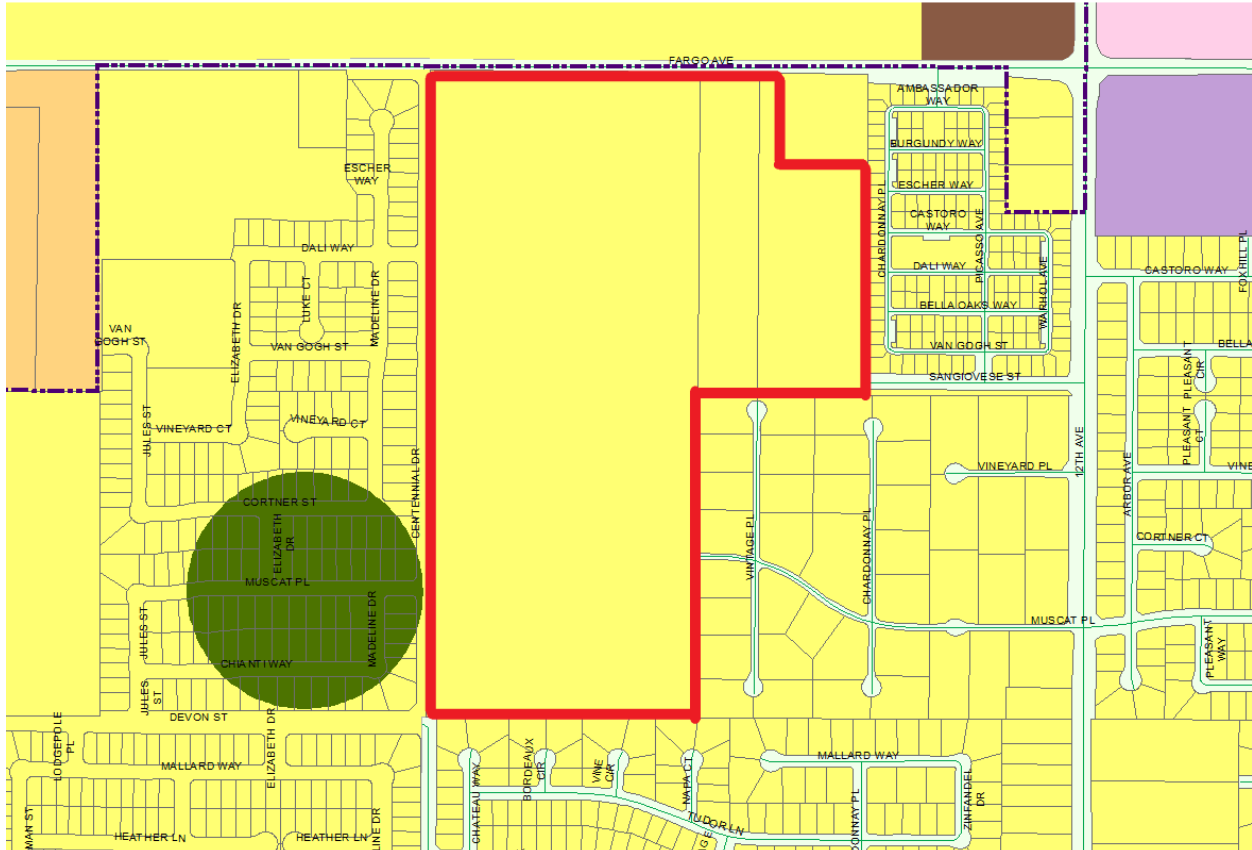
### **Existing Land Use**

The property is comprised of agricultural land (walnuts and row crops).

## **General Plan and Zoning Designation**

The site is designated by the General Plan as Low-Density Residential and is zoned R-L-5 Low-Density Residential, in accordance with the General Plan.

Figure 2: General Plan Designation  
Low-Density Residential



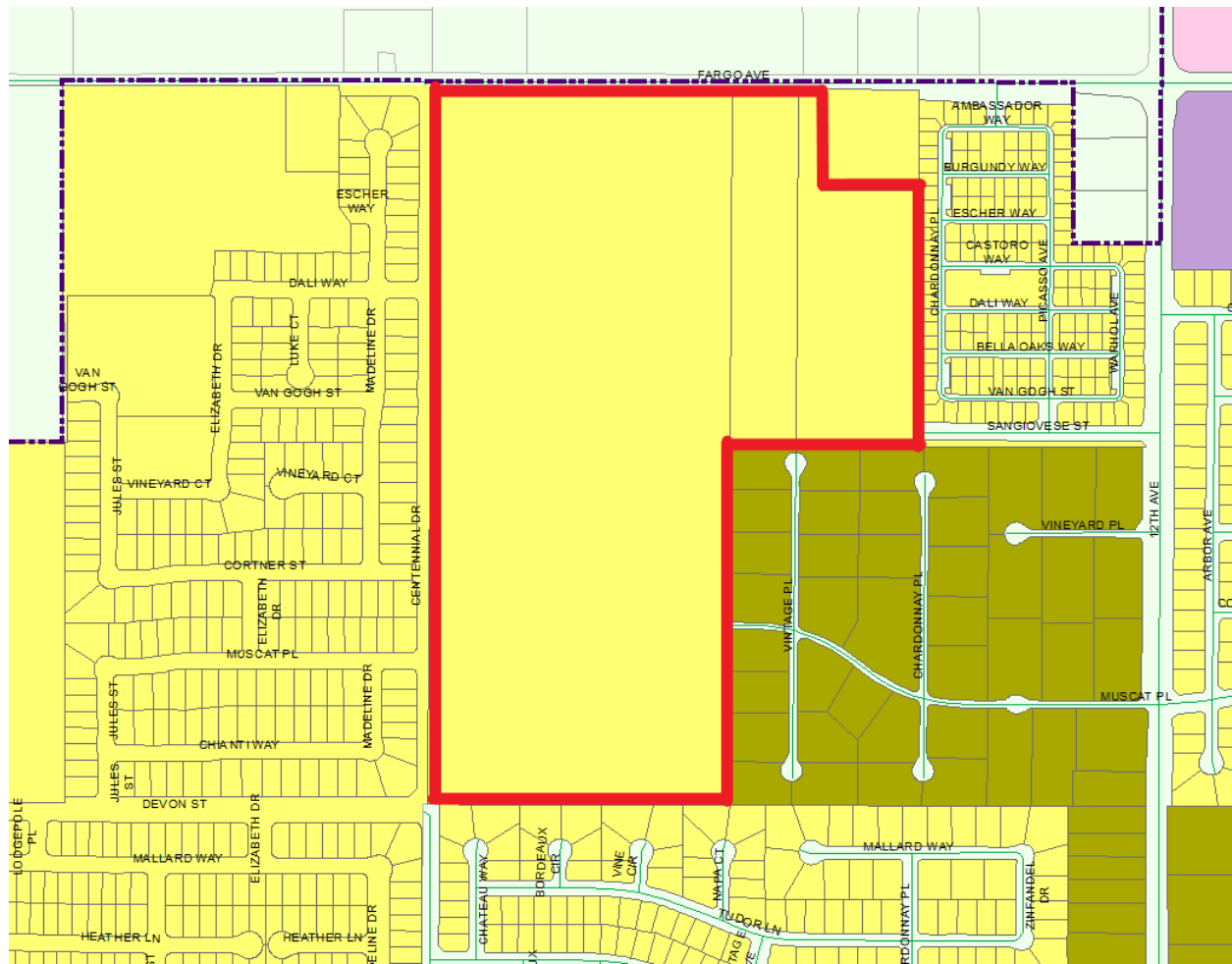
### **Low-Density Residential**

In accordance with the General Plan, the expected density range for Low-Density Residential is two to 10 units per gross acre, with an expected average of four units per gross acre. According to Land Use Policy L31, the purpose of the Low-Density Residential land use designation is to provide mainly single-family development on lot sizes typically found in urban settings. Typical uses in the Low-Density Residential land use designation include residential uses in a variety of single-family lot types. Duplexes, second dwelling units, and home occupations can also be allowed when made compatible with the residential nature of the neighborhood, according to Policy L32.

### **R-L-5 Low-Density Residential**

The property is zoned R-L-5 Low-Density Residential, 5,000 square-foot minimum lot size.

Figure 3: Zoning Designation  
R-L-5 Low-Density Residential



## PROJECT EVALUATION

### Vesting Tentative Tract 928

Vesting Tentative Tract 928 is a request to subdivide 81.71 acres into 283 single-family residential lots, a 2.25-acre park, and a 4.94-acre basin in the R-L-5 Low-Density Residential zone district.

See proposed subdivision, attached as **Exhibit A**.

APN(s): 009-030-005, 009-030-115, and 009-030-158

Total Area: 81.71 acres

Number of Lots: 283 residential lots; 4.94-acre on-site basin, and 2.25-acre park

Number of Dwelling Units: 283 single-family residential dwelling units



Units per acre: 3.46 units per gross acre

Potential population increase: 3.11 persons per household x 283 households = 880 persons

### **Conformance with the R-L Low-Density Residential Zoning**

#### Lot Area

| Smallest                | Largest                  | Average       | Required in R-L-5 and R-M |
|-------------------------|--------------------------|---------------|---------------------------|
| 6,257 sq. ft. (lot 141) | 16,578 sq. ft. (Lot 110) | 8,129 sq. ft. | 5,000 sq. ft.             |

In the R-L-5 Low-Density Residential zone district, the minimum lot size shall be 5,000 square feet, except as prescribed in Section 17.10.100, which allows lot area less than 5,000 square feet with the application of various standards.

Analysis: The minimum lot size provided in Vesting Tentative Tract 928 is 6,257 square feet, which meets and exceeds the minimum lot size requirement for the R-L-5 Low-Density Residential zone district.

#### Lot Dimensions

##### *Lot Frontage*

In the R-L-5 Low-Density Residential zone district, the minimum lot frontage shall be 40 feet.

Analysis: There is a minimum of 40 feet of lot frontage provided for all lots within the subdivision.

##### *Lot Width*

In the R-L-5 Low-Density Residential zone district, there shall be a minimum lot width of 50 feet for interior lots and 60 feet for corner lots.

Analysis: The majority of lots in Vesting Tentative Tract 928 are 60 feet wide for interior lots and upward of 65 feet for corner lots, which meets and exceeds the standard for lot width in the R-L-5 Low-Density Residential zone district.

##### *Lot Depth*

In the R-L-5 Low-Density Residential zone district, the lot depth shall be a minimum of 90 feet.

Analysis: the majority of the residential lots provided in Vesting Tentative Tract 928 are upward of 108 feet, which meets and exceeds the lot depth requirement for the R-L-5 Low-Density Residential zone district.

### Density

In accordance with the General Plan, the expected density range for Low-Density Residential is two to 10 units per gross acre, with an expected average of four units per gross acre.

Analysis: The density provided for Vesting Tentative Tract 928 is 3.46 units per gross acre, which is within the allowable density range for Low-Density Residential.

### Dwelling Units per Lot

In the R-L-5 Low-Density Residential zone district, not more than one dwelling unit shall be allowed on each lot, unless approved as an accessory dwelling unit in accordance with Section 17.60.030 (accessory dwelling unit standards).

Analysis: The lots are planned for single-family residential use. Accessory dwelling units would be permissible with an administrative approval, subject to the conditions set forth in 17.60.030 of the Hanford Municipal Code.

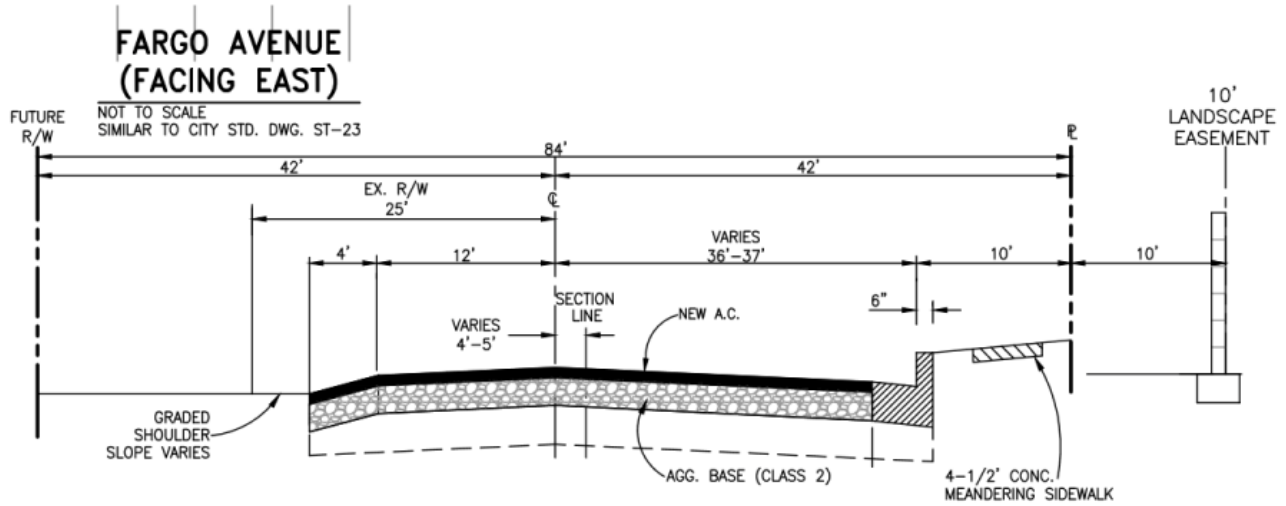
## **Subdivisions Improvements**

### Street Improvements

Street improvements will include the following:

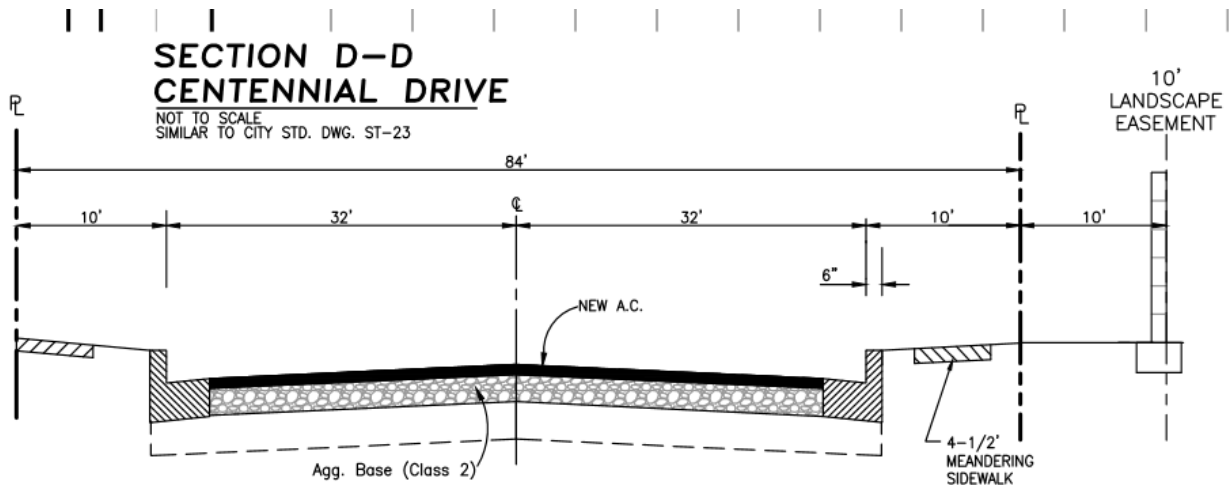
- Construction of residential streets within the subdivision to City Street Standard ST-32;
- Development of Fargo Avenue as a major collector, in conformance with City Standards ST-17 and ST-23
  - o Street improvements north of the Fargo Avenue centerline will include the construction of a minimum 12-foot travel lane, 4-foot paved shoulder, and 4-foot graded shoulder and all street signing, striping and transition paving.
  - o The developer will construct a left turn pocket at the intersection of Fargo Avenue and Centennial Drive for westbound traffic along Fargo Avenue to southbound Centennial Drive.
  - o A traffic signal is required at the intersection of Centennial Drive and Fargo Ave at the time of the construction of the development, unless a focused traffic study is conducted and the analysis determines that the traffic signal does not to meet the required warrants with the development of the subdivision.

Figure 4:  
Fargo Avenue Development along Development Frontage



- Development of Centennial Drive as a major collector, in conformance with City Standards ST-17 and ST-23
  - o The developer will construct a left-turn pocket at the intersection of Fargo Avenue and Centennial Drive for northbound traffic along Centennial Drive to westbound Fargo Avenue.

Figure 5:  
Centennial Drive Development along Development Frontage



- Development of W. Sangiovese Street as a minor collector street, in conformance with City Standards ST-17 and ST-26

## Backup Parkway Improvements

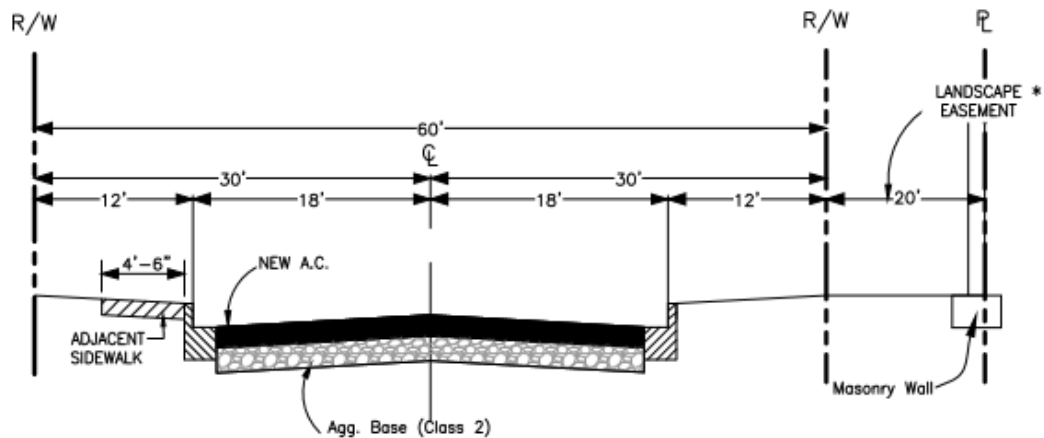
The developer will design and construct a minimum six-foot high decorative masonry block wall and landscaping/irrigation system improvements along the development frontages Centennial Drive, W. Sangiovese Street, and Fargo Avenue for lots backing onto said streets.

Figure 6:  
Napa Drive Development (south of Sangiovese Street)



## SECTION A-A NAPA DR.

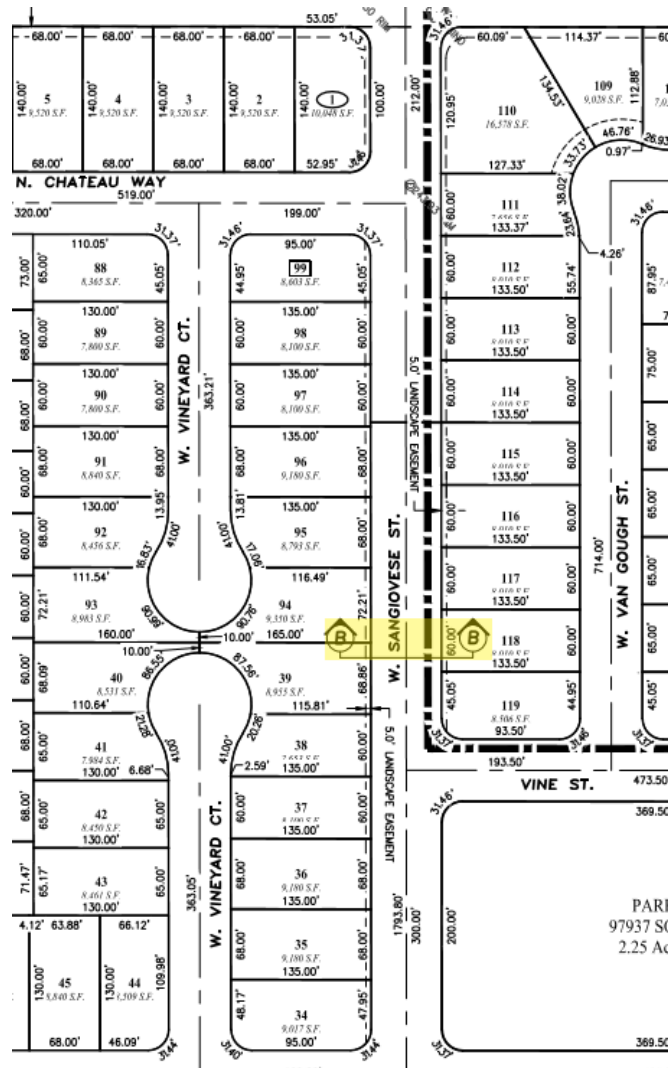
Not to Scale  
Looking North (Per City Std. ST-26)



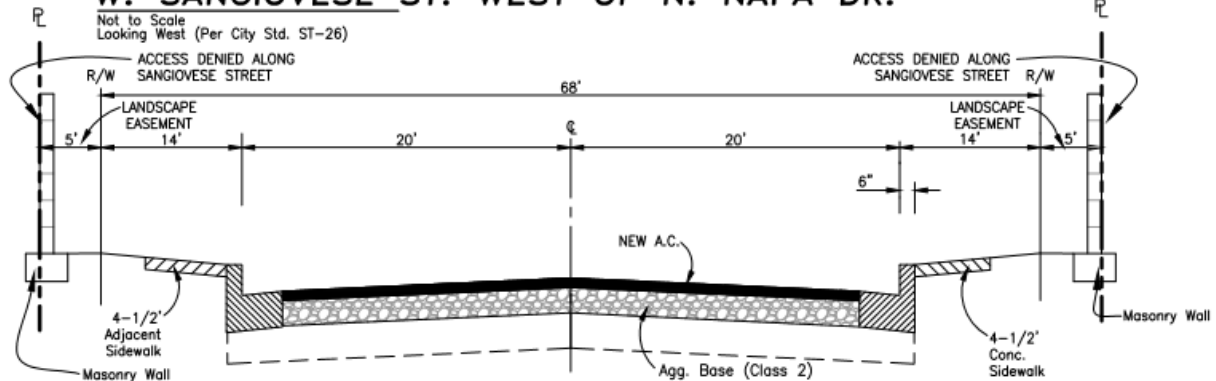
The applicant provides a masonry block wall and 20-foot landscape easement along the existing residences backing onto Napa Drive, which will be maintained by a landscape assessment district.



Figure 7:  
W. Sangiovese Street (west of N. Napa Drive)

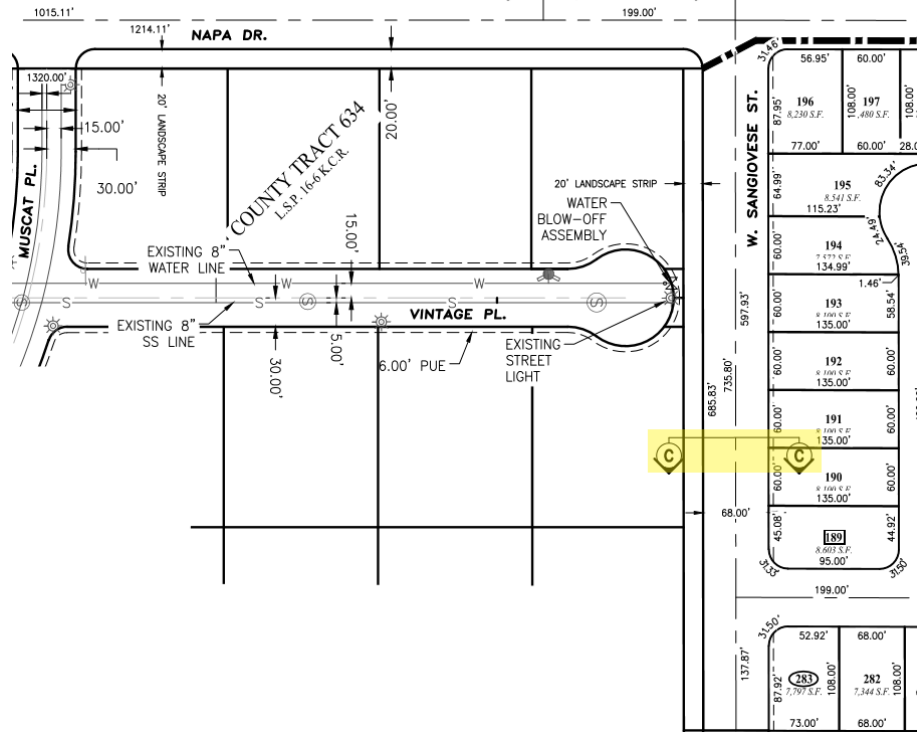


### SECTION B-B W. SANGIOVESE ST. WEST OF N. NAPA DR.



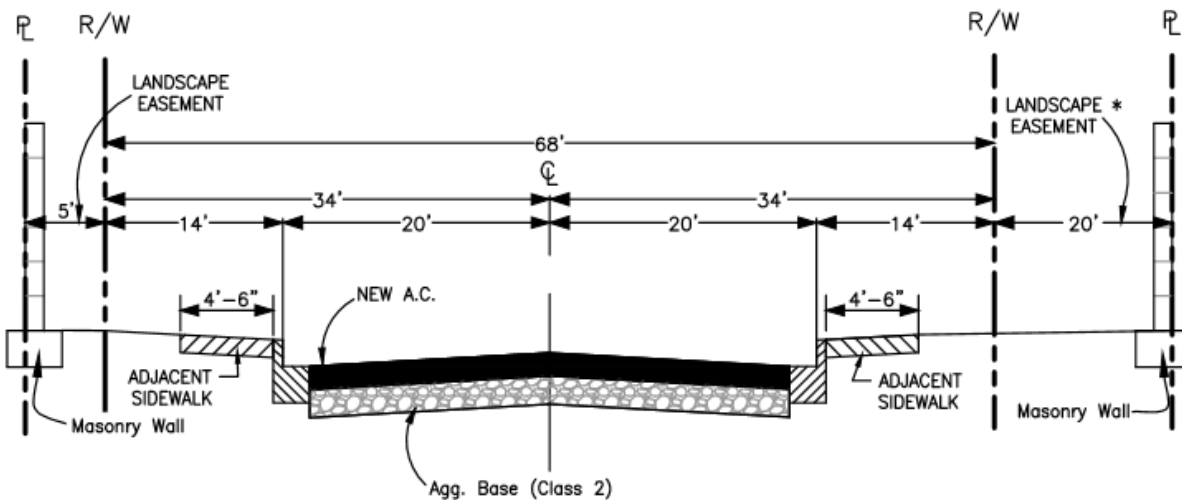
W. Sangiovese Street (west of Napa Drive) will be developed as a minor collector street with a masonry block wall on either side and a five-foot landscape easement along the rear of the properties backing onto the street.

Figure 8:  
Development of W. Sangiovese Street (east of Napa Drive)



## SECTION C-C W. SANGIOVESE ST. EAST OF NAPA DR.

Not to Scale  
Looking East (Per City Std. ST-26)



The applicant provides a masonry block wall and 20-foot landscape easement along the development frontage of the existing residences backing onto Napa Drive. A block wall and five-foot landscape easement is also provided on the northern side of W. Sangiovese Street, east of Napa Drive.

#### Sewer Improvements

The developer's engineer will provide a sanitary sewer master plan, complete with calculations for the entire subdivision prior to recording a subdivision final map for the development.

#### Storm Drainage Improvements

The developer's engineer will provide a storm drainage master plan, complete with calculations for the entire subdivision prior to recording a subdivision final map for the development. All drainage from the subdivision will be retained in the retention basin shown on the subdivision map.

#### Water System

The developer's engineer will provide a Water System Master Plan, complete with calculations for the entire subdivision, prior to recording a subdivision final map for the development.

#### Easements and Dedications

All easements will be designated on the final subdivision map, as required by the utility companies and where needed for providing service to street lights and landscape improvements as designated by the City Public Utilities and Engineering Division. A 10-foot utility and landscape easement will be provided along Fargo Avenue and Centennial Drive. A five-foot landscape and utility easement will be provided along W. Sangiovese Street. A six-foot public utility easement will be provided along all residential streets.

#### Assessment District

The developer will enter into an agreement with the City for the formation of a tax assessment district for the maintenance of interior subdivision street lighting, decorative block fencing, and landscaping located along the property frontages of Centennial Drive, W. Sangiovese Street, Napa Drive, and Fargo Avenue.

#### Neighborhood Park

The applicant has provided a 2.25-acre neighborhood park for the subdivision. The park is a neighborhood park and features eyes-on-park development, as houses face the park from three sides, which is consistent with General Plan Policy O64.

#### **Policy O64** Park Visibility:

Parks shall be designed to promote a safe and clean environment for recreation. New neighborhoods shall be designed so that common side and rear residential property lines with parks are minimized and visibility of parks from public streets is maximized.

Analysis: There are residential streets surrounding the park. Visibility is achieved from lots facing and siding onto the streets surrounding the park.

Figure 9:  
Park Visibility



Green = Lots facing the park  
Orange = Lots siding onto the park  
Red = Lots backing onto the park

As a condition of approval, the developer must consult with the City Parks and Recreation and Public Works staff prior to the design and construction of park facility improvements.

## FINDINGS FOR APPROVAL

### Tentative Tract Map 928:

Pursuant to Section 16.04.010 of the Hanford Subdivision Ordinance, Section 66474 of the Subdivision Map Act, and Hanford's Zoning Ordinance, the following findings can be made by the Planning Commission:

#### 1. Consistency Finding:

ANALYSIS: That a consistency finding can be made, because the proposed subdivision map is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth.



Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

2. Design Finding:

ANALYSIS: That the design and improvement of the subdivision is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

3. Type of Development Finding:

ANALYSIS: That the site is physically suitable for the single-family residential development proposed under Tentative Tract 928. The lots proposed meet the minimum lot size of the R-L-5 Low-Density Residential Zone District. All parcels have adequate street frontage on a public street and meet the minimum depth and width required for the district.

4. Density Finding:

ANALYSIS: That a density finding can be made, because the site is physically suitable for the proposed density of development. The General Plan prescribes a density range between two and 10 units per acre, with an expected average of four units per gross acre. The project has a density of 3.46 dwelling units per gross acre.

5. Environmental Finding:

ANALYSIS: That an initial study was conducted. On the basis of the initial study, the Community Development Department has determined that the project described above would not have significant adverse impacts on the environment, with the incorporation of mitigation measures. Mitigated Negative Declaration No. 2020-22 has been prepared for the project. The initial study, Mitigated Negative Declaration No. 2020-22, and mitigation measures required of development are attached (**Attachment 2**).

6. Public Health Finding:

ANALYSIS: That the design of the subdivision and type of improvements are not likely to cause serious health problems. The City of Hanford Building Division is responsible for ensuring that future construction of the site follows adopted building codes, thus reducing exposures to accidents to the general public. Consultation was sent for Tentative Tract 928 to interested agencies, including the County Health Department, Public Works Department, Fire Department, and Building Division. Any improvements or mitigations required for public health and safety were applied to the proposal and required in the conditions of approval.

7. Improvements and Access Findings:

ANALYSIS: That the design of the subdivision and type of improvements will not conflict with easements acquired by the public at large for access through or use of the property within the proposed subdivision.

**ENVIRONMENTAL ASSESSMENT**

That an initial study/environmental assessment was conducted; and, on the basis on the initial study, the Community Development Department has determined that the project described above would not have significant adverse impacts on the environment, with the incorporation of mitigation measures. Mitigated Negative Declaration No. 2020-22 has been prepared for the project. The initial study, Mitigated Negative Declaration No. 2020-22, and mitigation measures required of development are attached as **Attachment 2**.

**PRE-CONSULTATION**

In accordance with Section 15603(g) of the California Environmental Quality Act (CEQA) Guidelines, the project proposal was forwarded to the responsible and interested agencies for early consultation. Comments were received from the following agencies:

1. Consultation from Michael Wilson with AT&T (Received May 7, 2020).
2. Consultation from Amaud Marjollet, Director of Permit Services with the San Joaquin Valley Air Pollution Control District (Received May 28, 2020).
3. Consultation from Samantha McCarthy, Cultural Specialist II with the Santa Rosa Rancheria Tachi-Yokut Tribe (Received May 29, 2020).
4. Consultation from Lorena Mendibles with the Department of Transportation (Caltrans) (Received June 1, 2020).

Responses to comments are addressed within the initial study and are as follows:

**AT&T:**

Consultation was received from Michael Wilson with AT&T on July 22, 2019, stating, "ATT will serve residences with conduit fiber cables. Feed from east, on n/s Devon. 13<sup>th</sup> Avenue poles to remain, or will relocate with Edison as required by City mandate. Request relocate and not underground for 13<sup>th</sup> Avenue poles."

Analysis: The comment was forwarded to the Engineering Division.

**San Joaquin Valley Air Pollution Control District**

Pre-consultation was received from the San Joaquin Valley Air Pollution Control District on May 28, 2020. Comments were provided, as follows:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the project referenced above consisting of subdividing 81.71 acres into 340 residential lots, a park and a

basin (Project) located at the southeast corner of Centennial Drive and Fargo Avenue, in Hanford, CA. The District offers the following comments:

1. Significance Impact for Annual Criteria Pollutants Emissions – The Project specific annual emissions of criteria pollutants are not expected to exceed any of the following District significance thresholds: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5). Therefore, the District concludes that the Project would have a less than significant impact on air quality when compared to the above-listed annual criteria pollutant emissions significance thresholds.
2. District Rule 9510 (Indirect Source Review) - District Rule 9510 is intended to mitigate a project's impact on air quality through project design elements or by payment of applicable off-site fees. The Project may be subject to District Rule 9510 if it equals or exceeds 250 residential dwelling units and has or will receive a project level approval from a public agency. For assistance with determining if the Project is subject to Rule 9510, please call the District at (559) 230-6000 or email [ISR@valleyair.org](mailto:ISR@valleyair.org).

In the case the Project is subject to Rule 9510 an AIA application is required and the District recommends that demonstration of compliance with District Rule 9510, before issuance of the first building permit, be made a condition of Project approval. Information about how to comply with District Rule 9510 can be found online at: <http://www.valleyair.org/ISR/ISRHome.htm>. The AIA application form can be found online at: <http://www.valleyair.org/ISR/ISRFormsAndApplications.htm>.

3. District Rule 4002 (National Emissions Standards for Hazardous Air Pollutants) - In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002. This rule requires a thorough inspection for asbestos to be conducted before any regulated facility is demolished or renovated. Information on how to comply with District Rule 4002 can be found online at: <http://www.valleyair.org/busind/comply/asbestosbultn.htm>.
4. Regulation VIII (Fugitive PM10 Prohibitions) - The Project will be subject to Regulation VIII. The project proponent is required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in District Rule 8021 – Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities. Information on how to comply with Regulation VIII can be found online at: [http://www.valleyair.org/busind/comply/PM10/compliance\\_PM10.htm](http://www.valleyair.org/busind/comply/PM10/compliance_PM10.htm)
5. Other District Rules and Regulations – The above list of rules is neither exhaustive nor exclusive. For example, the Project may be subject to the following District rules, including: Rule 4102 (Nuisance), Rule 4601 (Architectural Coatings), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). To identify other District rules or regulations that apply to this Project or to obtain information on the District's permit requirements, such as an Authority to Construct (ATC), the Project proponent is strongly encouraged to contact the District's Small Business Assistance Office at (559) 230-5888 or e-mail [SBA@valleyair.org](mailto:SBA@valleyair.org). Current

District rules can be found online at the District's website at: [www.valleyair.org/rules/1ruleslist.htm](http://www.valleyair.org/rules/1ruleslist.htm).

6. Potential Air Quality Improvement Measures - The District encourages the following air quality improvement measures to further reduce Project related emissions from construction and operation. A complete list of potential air quality improvement measures can be found online at: <http://www.valleyair.org/ceqaconnected/aqimeasures.aspx>.
  - a. Cleaner Off-Road Construction Equipment – To reduce impacts from construction related exhaust emissions, the District recommends the cleanest reasonably available off-road construction fleets, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations.
  - b. Improve Walkability Design – This measure is to improve design elements to enhance walkability and connectivity. Improved street network characteristics within a neighborhood include street accessibility, usually measured in terms of average block size, proportion of four-way intersections, or number of intersections per square mile. Design is also measured in terms of sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments.
  - c. Improve Destination Accessibility – This measure is to locate the project in an area with high accessibility to destinations. Destination accessibility is measured in terms of the number of jobs or other attractions reachable within a given travel time, which tends to be highest at central locations and lowest at peripheral ones. The location of the project also increases the potential for pedestrians to walk and bike to these destinations and therefore reduces the (vehicle miles traveled) VMT.
  - d. Increase Transit Accessibility – This measure is to locate the project with high density near transit which will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features:
    - A transit station/stop with high-quality, high-frequency bus service located within a 5-10-minute walk (or roughly  $\frac{1}{4}$  mile from stop to edge of development), and/or
    - A rail station located within a 20-minute walk (or roughly  $\frac{1}{2}$  mile from station to edge of development)
    - Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations
    - Neighborhood designed for walking and cycling
  - e. Voluntary Emission Reduction Agreement - Design elements, mitigation measures, and compliance with District rules and regulations may not be sufficient to reduce project-related impacts on air quality to a less than significant level. In

such situation, project proponents may enter into a Voluntary Emission Reduction Agreement (VERA) with the District to reduce the project related impact on air quality to a less than significant level. A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increases through a process that funds and implements emission reduction projects, which are administered through the District's emission reduction incentive grant programs. A VERA can be implemented to address impacts from both construction and operational phases of a project.

The District recommends that a copy of the District's comment letter be provided to the Project proponent. District staff is available to meet with you and/or the applicant to further discuss the regulatory requirements that are associated with this Project. If you have any questions or require further information, please contact Carol Flores by e-mail at [carol.flores@valleyair.org](mailto:carol.flores@valleyair.org) or by phone at (559) 230-5935. When calling or emailing the District, please reference District CEQA number 20200402.

Staff Analysis: The project will be subject to District Rule 9510, which is intended to mitigate the project's impact on air quality through design elements or payment of applicable off-site mitigation fees. An Air Impact Assessment application is required to be submitted to the SJVAPCD prior to issuance of a building permit.

The project does not propose renovation or demolition of any buildings on site, therefore, the project is not subject to District Rule 4002.

The project is required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to any earthmoving activities.

A copy of the District's comments has been provided to the Project proponent. The Project proponent has been encouraged to contact the Air District's small Business Assistance Office to identify other rules and regulations the project may be subject to.

#### **Mitigation Measures:**

**MM Air Quality 1:** That the applicant complies with the SJVAPCDC Air Quality Plan and obtains any necessary permits through the SJVAPCD.

**MM Air Quality 2:** That effective dust control must be maintained on the job site at all times in order to reduce the risk of valley fever to workers and nearby residents. More information regarding the prevention of work related valley fever is available at [www.cdph.ca.gov/programs/hesis/Documents/CocciFact.pdf](http://www.cdph.ca.gov/programs/hesis/Documents/CocciFact.pdf) and <http://www.cdph.ca.gov/programs/ohb/Documents/OccCocci.pdf>. Contact the San Joaquin Valley Air Pollution Control District for more information on dust control techniques.

**MM Air Quality 3:** The project is subject to District Rule 9510, which is intended to mitigate a project's impact on air quality through project design elements or by payment of applicable off-site mitigation fees. The applicant is required to submit an Air Impact Assessment (AIA) application to the District prior to issuance of a building permit.



### **Santa Rosa Rancheria Tachi-Yokut Tribe**

Consultation was received from Samantha McCarty with the Santa Rosa Rancheria Tachi-Yokut Tribe on May 29, 2020 providing the following, "Thank you for contacting the Santa Rosa Rancheria Tachi-Yokut Tribe regarding: Vesting Tentative Tract 928 APN: 009-030-158, -005, -115. Due to the location and tribal history, the Tribe is requesting to have tribal monitors out on during all ground disturbance related to the site including but not limited to: water ponds, grading, excavation, trenching, and utilities. If you have any questions or comments, please contact me directly or the Santa Rosa Rancheria Cultural Department. Thank you."

Analysis: The project will incorporate this request as a mitigation measure.

MM Cultural Resources: That tribal monitors are required during all ground disturbance activities, including but not limited to: water ponds, grading, excavation, trenching, and utilities.

### **Caltrans**

Consultation was received from Lorena Mendibles with Caltrans on June 1, 2020:

Thank you for the opportunity to review the Tentative Tract Map #928. The application includes a request to subdivide 81.71 acres into 340 residential lots, a park, and a basin. The project is located at the southeast corner of Centennial Drive and Fargo Avenue in the City of Hanford in Kings County.

Caltrans provides the *following comments* consistent with the State's smart mobility goals that support a vibrant economy and sustainable communities:

1. According to the ITE Trip Generation 9th Ed. (Land Use 210), the project is estimated to generate approximately 340 trips during the afternoon peak-hour period and would have an impact to the surrounding area. State Route (SR) 198 at 12th Avenue interchange has been recently reconstructed for capacity improvement. The project was funded by the Regional Improvement Program and is currently in the Closeout phase.
2. It is expected that a portion of the trips generated by this development would utilize the SR 43 intersection at Fargo Avenue. This is a skewed two-way stop control intersection, in which Caltrans has identified a need to construct left turn channelization on SR 43, and previous traffic studies have identified a need to signalize the intersection. Signalization would require realignment of Fargo Avenue to modify the skew angle. The developer to contribute its fair share to fund the future infrastructure in this area due to the continuous development within the vicinity.
3. Given the previously mentioned information regarding the intersections of SR 198/12th Avenue and SR 43/Fargo Avenue, the applicant should provide a trip distribution/trace of the projects' projected peak hour traffic trips to determine the extent of the projects' impact on State facilities. The trip distribution/trace should be completed and submitted to this office prior to any analysis for a traffic impact study to determine if further analysis will be needed on State facilities.
4. Alternative transportation policies should be applied to the development. An assessment of multi-modal facilities should be conducted to develop an integrated multi-modal transportation

system to serve and help alleviate traffic congestion caused by the project and related development in this area of the City. The assessment should include the following:

- a. Pedestrian walkways should link this proposal to an internal project area walkway, transit facilities, as well as other walkways in the surrounding area.
- b. The project should consider bicycles as an alternative mode of transportation and offer internal amenities to encourage bicycle use which should include parking, security, lockers and showers. However, internal bicycle paths should be coordinated with local and regional pathways to further encourage the use of bicycles for commuter and recreational purposes.
- c. If transit is not available within ¼-mile of the site, transit should be extended to provide services to what will be a high activity center.

**Staff Analysis:** The intersection of State Route 43 and Fargo Avenue is in the City's impact fee program (partial). Payment of circulation impact fees for this project will share their pro-rata share of the impact to the intersection.

The project will be developed consistent with the Pedestrian and Bicycle Master Plan, which incorporates pedestrian and bicycle facilities.

The City of Hanford has consulted with Kings Area Rural Transit (KART) but not received a response regarding a transit stop for this project.

## **CONSULTATION**

On June 29, 2020, staff forwarded a consultation notice to the interested agencies, in accordance with Public Resources Code Section 21081.6. One response was received from the following:

1. Consultation from Renee Creech with the Hanford Joint Union High School District (Received July 1, 2020).
2. Consultation from Victor Hernandez with Kings County Community Development Agency (Received July 6, 2020) – **Attachment 3**

### **Hanford Joint Union High School District**

On July 6, 2020, Renee Creech provided the following comment in response to consultation for the project, "This project is another housing development in our school boundary that is already impacted. This causes issues for traffic, transportation, and classroom housing of students and faculty.

**Staff Analysis:** The City's role in development and managing school sites and programs is limited. The various school districts truly govern where a new school site would be located and when it would be necessary to construct or expand facilities, in order to adequately accommodate population growth. Elected governing school boards are responsible for budgeting and decision-making and the State Department of Education establishes school site and construction standards. The General Plan provides policy which focuses on collaboration with school districts

in determining new school locations and utilizing school facilities for general public needs. School districts would be able to utilize the General Plan, along with other plans, standards, and codes, to establish new school sites and to make decisions on school amenities and cohesiveness with the surrounding area. The development will be subject to School Impact fees, in order to mitigate the effect of the project on schools.

Impacts to traffic and transportation are addressed through street development and design and through the payment of traffic impact fees.

### **Kings County, Community Development Agency**

Consultation was received from Victor Hernandez with Kings County Community Development Agency on July 6, 2020, providing the following:

Thank you for the opportunity to comment and review Tentative Tract Map No. 928 with the City of Hanford.

The property involved in the project is within the City of Hanford and is near the unincorporated area of Kings County, to the north of the subject property, the zoning is Limited Agricultural (AL-10).

The Kings County Board of Supervisors has adopted a “*Right to Farm*” Ordinance which among other things declares that normal and usual farming operations and activities are not a nuisance. The ordinance requires that in unincorporated areas activities such as rezoning, land divisions, zoning permits, building permits (for new residences), and transfers of property must be accompanied by recording of a notice and disclosure statement. A copy of the County’s “*Right to Farm*” Ordinance, which applies to the unincorporated area of the County, is provided for your information.

Neighboring residents should be prepared to inherent and potential inconveniences and discomforts often associated with normal and usual agriculture activities and operations. They should also be aware that the County will not take any nuisance abatement actions against any normal and usual farming operations.

Staff Analysis: Impacts to agricultural resources were addressed in the initial study. As a mitigation measure and condition of approval for the project, a right-to farm provision shall be recorded with the recording of the final subdivision map to insure that future residents of the homes in the project area are aware of the adjacent agricultural uses and their right to continue to operate.

### **PUBLIC COMMENTS**

Noticing of the project was published in the newspaper on June 19, 2020 and mailed to property owners within 300 feet of the project site on June 18, 2020. The initial study and notice of intent to adopt a mitigated negative declaration was made available to the public for a 20-day comment period, from June 19 to July 9, 2020.

Two public comments have been received:

- Christine Shepard on July 6, 2020 – **Attachment 4**

- John Zumwalt on August 6, 2020 – **Attachment 5**

Christine Shepard:

In the letter, Ms. Shepard requests the park provided in the subdivision be developed as a dog park. Staff alerted Ms. Shepard that during the Tentative Tract entitlement phase only the size and location of the park would be addressed and the design/amenities of the park would be addressed by the Parks and Community Services and Public Works Department at a later date. Staff has forwarded the comments to the Parks and Community Services Director, Bradly Albert.

John Zumwalt:

The applicant's engineer, Mr. Zumwalt, discusses the subdivision's connection to Muscat Place, as shown on the subdivision map, and the way the subdivision was designed to reduce impact to the existing Vintage Estate development.

|                       |
|-----------------------|
| <b>RECOMMENDATION</b> |
|-----------------------|

Staff recommends that the Planning Commission:

1. Certify Mitigated Negative Declaration No. 2020-22 for the project.
2. Adopt Resolution No. 2020-09, approving Vesting Tentative Tract 928.

**Applicant/Owner:**

Cal-Clark Farms  
P.O. Box 22185  
Carmel, CA 93922

**CITY OF HANFORD CITY COUNCIL  
STAFF REPORT**

**MEETING DATE:** Tuesday, September 1, 2020

**PROJECT:** **APPEAL NO. 2020-01**, filed by Cal-Clark Farms, appealing the decision of the Planning Commission on August 11, 2020 to take no action on Mitigated Negative Declaration No. 2020-22 and Vesting Tentative Tract 928.

**Vesting Tentative Tract 928:** A request by Cal-Clark Farms to subdivide 81.71 acres into 283 residential lots, a 2.25-acre park, and a 4.94-acre basin.

**LOCATION:** The project is located at the southeast corner of Centennial Drive and Fargo Avenue (APN 009-030-158, -005, and -115).

**STAFF RECOMMENDATION**

Staff recommends that the City Council:

1. Adopt Resolution 20-23-R, approving Appeal No. 2020-01, overturning the Planning Commission's decision to take no action on Tentative Tract 928 and Mitigated Negative Declaration No. 2020-22.

Or

2. Approve Tentative Tract 928 Option 2 and direct staff to bring back a resolution at the next available City Council meeting.

Or

3. Approve Tentative Tract 928 Option 3 and direct staff to bring back a resolution at the next available City Council meeting.

Should the Council vote to approve Option 2 and 3, staff recommends the Council initiate abandonment of Muscat Place, west of Vintage Place.

**RECOMMENDED MOTION**

1. I move to adopt Resolution 20-23-R, approving Appeal No. 2020-01, overturning the Planning Commission's decision to take no action on Tentative Tract 928 and Mitigated Negative Declaration No. 2020-22.

Or

2. I move to approve Tentative Tract 928 Option 2 and direct staff to bring back a resolution at the next available City Council meeting.

Or



3. I move to approve Tentative Tract 928 Option 3 and direct staff to bring back a resolution at the next available City Council meeting.
4. I move to initiate abandonment of Muscat Place, west of Vintage Place.

## PROJECT PROPOSAL

Appeal No. 2020-01 is an appeal of the Planning Commission's denial, by taking no action, on Vesting Tentative Tract 928 and Mitigated Negative Declaration No. 2020-22. The appeal application, made by John Zumwalt as the authorized agent of Cal-Clark Farms on August 14, 2020, is attached as **Attachment 1**.

Vesting Tentative Tract 928 is a request by Cal-Clark Farms to subdivide 81.71 acres into 283 residential lots, a 2.25-acre park, and a 4.94-acre basin.

See Tentative Tract Map 928, attached as **Attachment 2**.

In the appeal, Mr. Zumwalt provides a synopsis of the Planning Commission hearing,

On August 11, 2020 the Planning Commission considered Tract 928. The commission made several attempts to make a decision, all of which either failed with a 3 to 3 vote or died for a lack of a second. Their failure was in spite of the fact that the property is currently in the city limits and the proposal is completely consistent with existing zoning and the General Plan in every respect. Since not making a decision is equivalent to a no vote, we are appealing to the council for resolution.

The primary competing issues at the Planning Commission meeting were the staff's desire to connect Tract 928 to Vintage Estates at Muscat Place vs. the residents of Vintage estates desire that there be no connection. The applicant sided with the City staff but added that whatever the Commission decided to do regarding Muscat, to please approve the Tract either with or without the connection. Unfortunately the Commission did neither.

Staff concurs with the synopsis provided.

Mr. Zumwalt goes on to state,

As we see it, the Council has 3 primary options described as follows:

- Option 1 – if the Council agrees with the city staff and not the residents, approve connecting to Muscat.
- Option 2 – If the Council agrees with the arguments of the Vintage Estate residents, approve the Map without the Muscat connection. **If the Council selects this option, we have provided an alternate map to accomplish this.** Please consider and approve the alternate map. [**Attachment 3**].
- Option 3 – if the Council agrees with the Vintage Estates residents but is concerned about leaving Vintage Estates with only 1 exit, consider approving Choice 2 but adding a provision which enables a 2<sup>nd</sup> exit from Vintage Place onto Sangiovese. There already exists an easement from the end of the Vintage Place cul-de-sac to the property line. If this option is selected, the applicant agrees to construct whatever connection the city may

require between Sangiovese and the Vintage Estates property line. It would be the responsibility of others to construct the remaining connection within Vintage Estates. This access could be a regular street or an emergency access with a “crash” gate or anything in between. The applicant defers to the council as to what kind of connection is in order. It is important to note that the applicant is willing to construct this whether or not others follow through with their part, but development of the subdivision cannot be tied to the performance or non-performance of others.

## **BACKGROUND INFORMATION**

### Tentative Tract 861

The project area was formerly proposed to be subdivided under Tentative Tract 861, which proposed 237 single-family units and a 1.49-acre drainage basin. The subdivision was approved on July 11, 2006 and due to automatic state extensions, did not expire until 2019. The subdivision was approved with a connection to Muscat Place through Vintage Estates.

### Planning Commission

Vesting Tentative Tract 928 was heard by the Planning Commission as a public hearing item on Tuesday, August 11, 2020. The Planning Commission staff report and exhibits are attached as **Attachment 4**.

During public comment one person spoke in favor of the project and 17 persons spoke in opposition. A copy of the minutes of the August 11, 2020 Planning Commission meeting are attached as **Attachment 5**.

The majority of the opposition came from neighbors of the project site opposing the development of Muscat Place into the future subdivision. Many cited a decrease in property value, an adverse effect on traffic, and the degradation of the neighborhood’s safety and walkability, as the result of Muscat opening.

Fire Chief Steve Pendergrass explained that the California Fire Code requires two means of egress. The second access point into Vintage Estates is planned through Muscat Place.

Public Works Director John Doyel explained that it would be necessary to open Muscat Place, a public street, for traffic circulation, public safety, and to comply with the City’s Circulation Element of the General Plan. He stated that it had been planned as a connector street since the area was annexed into the City.

There were several inquiries regarding the formation of a home-owners association (HOA) to close off Muscat Place with a crash-gate, allowing for Fire access, in case of an emergency for the Vintage Estates development.

Director Doyel confirmed that residents of Vintage Estates did meet with City staff several times to find an alternative and stated, in order not to open Muscat Place, Vintage Estates would need to be formed as a private subdivision, with 100% vote by the residents to abandon the right-of-way back to the HOA for maintenance.

Staff addressed the residents and Planning Commission, informing all, the request to gate and privatize Vintage Estates was a separate project and should not preclude Vesting Tentative Tract 928 from proceeding.

## **EVALUATION**

### **Muscat Place Development**

Within the Vintage Estates subdivision, Muscat Place has a stub-out to the west, as part of its original design. Residential subdivisions are designed with a requirement to have two points of access. Staff coordinated with the subdivider to develop a project which minimized impacts to the existing subdivision.

### *Public Works Comments*

The property was formerly proposed to be subdivided under Tentative Tract 861, which expired in July 2019. The previous subdivision 861 included a connection to Muscat Place.

A connection to Muscat is important, because from Grangeville Boulevard to Fargo Avenue, there is only one street, Sangiovese, which connects to Centennial Drive. Sangiovese is a collector street, however there is no guarantee that left turn access onto 12<sup>th</sup> Avenue will be available in the future and as such, vehicles will not be able to make left hand turns onto 12<sup>th</sup> Avenue. There is not a traffic signal there.

According to the General Plan Circulation Element, there should be a connection every quarter mile. Muscat Place is the half-mile distance between Fargo Avenue and Grangeville Boulevard.

Muscat Place has been planned to connect since the property was annexed into the City.

Since the previous subdivision, Tentative Tract 861, proposed a connection through Muscat Place, residents of Vintage Estates met with the City to discuss elimination of the connection to Muscat. Staff informed the residents that in order to do so, Vintage Estates would need to be developed as a private subdivision with private roads to be maintained through an HOA. This would require 100% consent of the residents to dedicate their easement to the HOA for the creation of a private road. Without 100% consent to abandon the easement to the HOA, there would be situations of land-locking those on either side of those not agreeing to abandon the road. If some residents did not give up their easement, there would not be a legal right to cross the property.

Staff alerted the residents of Vintage Estates to consult an attorney on the regulations for creating a private subdivision from a previously existing tract, as staff has not had experience in converting an existing development into an HOA.

### *Fire Department Comments*

Fire has to plan for two points of egress into and out of a residential area, in accordance with the California Fire Code. The Fire Department must plan for emergencies. The Fire Chief can allow deviations from the Fire Code; however the Chief is opposed to allowing such a deviation, due to safety concerns – Chief Pendergrass stated, in cases of emergencies, two points of access are necessary because, while residents are trying to get out, the Fire Department is trying to get in

and that cannot happen if the same access point is being utilized. Chief Pendergrass is not opposed to gates, so long as two points of access are available.

As a public street, Muscat Drive is required to connect from a traffic circulation point of view and safety point of view.

### Option Evaluation

As discussed above, the applicant sites three options for Council:

- Option 1 – if the Council agrees with the city staff and not the residents, approve connecting to Muscat.

Staff Analysis: Staff is favorable of this option. Muscat Place is necessary to satisfy the General Plan Circulation Element and safety requirements for two points of access. The project is consistent with the General Plan Designation for the property, Low-Density Residential and complies with all requirements of the R-L-5 Low-Density Residential zone district. The necessary findings, pursuant to Section 16.04.010 of the Hanford Subdivision Ordinance, Section 66474 of the Subdivision Map Act, and Hanford's Zoning Ordinance, to support this option have been made in the original Planning Commission staff report.

- Option 2 – If the Council agrees with the arguments of the Vintage Estate residents, approve the Map without the Muscat connection. **If the Council selects this option, we have provided an alternate map to accomplish this.** Please consider and approve the alternate map. [Attachment 3].

Staff Analysis: Staff is not supportive of this option. The proposal conflicts with the General Plan Circulation Element, by eliminating a necessary connection between 12<sup>th</sup> Avenue and Centennial Drive. A second access into Vintage Estates is required by the Fire Department. The necessary findings cannot be made by staff for this option, specifically the design finding and public health finding.

Design Finding: **Unable to satisfy finding.** The design and improvement of the subdivision conflicts with the General Plan Circulation Element and California Fire Code by capping off the access to Muscat Place west of Vintage Estates.

Public Health Finding: **Unable to satisfy finding.** The design of the subdivision, as proposed in this option, will effect emergency access into Vintage Estates. The Fire Department is not supportive of this design.

- Option 3 – If the Council agrees with the Vintage Estates residents but is concerned about leaving Vintage Estates with only 1 exit, consider approving Choice 2 but adding a provision which enables a 2<sup>nd</sup> exit from Vintage Place onto Sangiovese. There already exists an easement from the end of the Vintage Place cul-de-sac to the property line. If this option is selected, the applicant agrees to construct whatever connection the city may require between Sangiovese and the Vintage Estates property line. It would be the responsibility of others to construct the remaining connection within Vintage Estates. This access could be a regular street or an emergency access with a “crash” gate or anything in between. The applicant defers to the council as to what kind of connection is in order. It is important to note that the applicant is willing to construct this whether or not others follow

through with their part, but development of the subdivision cannot be tied to the performance or non-performance of others.

Staff Analysis: This option provides challenges. First of all, the project still conflicts with the General Plan Circulation Element, by eliminating a necessary connection between 12<sup>th</sup> Avenue and Centennial Drive.

Developing an access from Vintage Place onto Sangiovese is inconsistent with the Circulation Element's requirement to provide connection to arterials and collectors at ¼ mile intervals.

Developing an access from Vintage Place onto Sangiovese would require the City to relocate the existing street light and fire hydrant currently in place and pave a connection to the property line (estimated cost \$40,000). Additionally, there may be a potential grade variation between Vintage Place and Sangiovese Street, which could require regrading of the cul-de-sac.

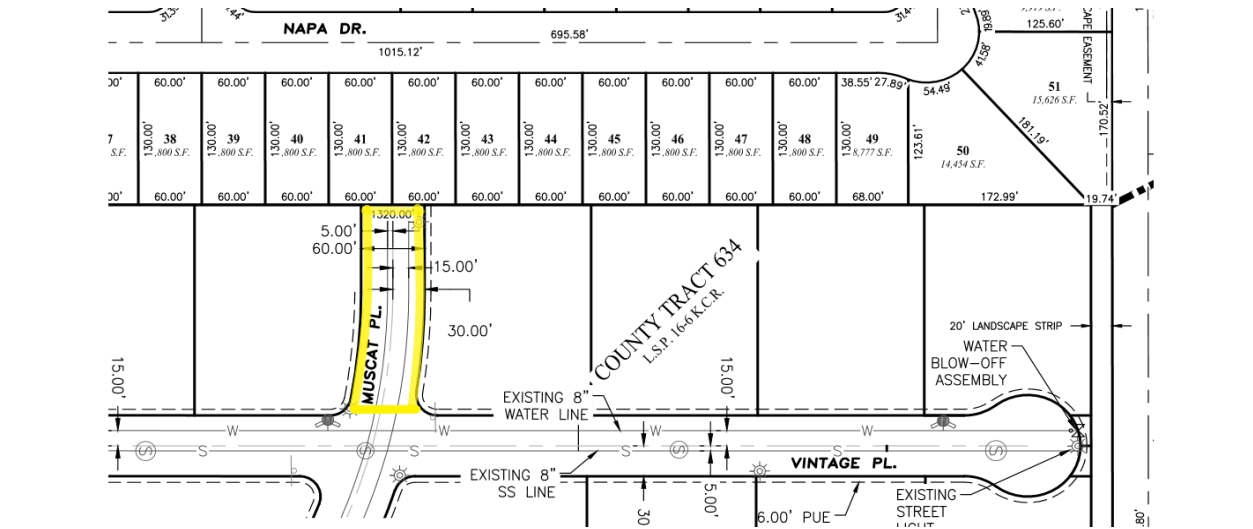
Developing the connection between Vintage Place and Sangiovese with an emergency-only crash gate is not permitted for a public street. The necessary findings cannot be made by staff for this option, specifically the design finding.

Design Finding: **Unable to satisfy finding.** The design and improvement of the subdivision conflicts with the General Plan Circulation Element by eliminating a necessary connection between 12<sup>th</sup> Avenue and Centennial Drive.

Sangiovese was never intended to remain as an open intersection. As traffic volumes increase on 12<sup>th</sup> Avenue, at some point in the future (potentially 10 years), the City would require that the intersection be limited to right in, right out movements, then the circulation in that area will be dramatically affected. Projects and future streets shall be designed to minimize conflict points as arterial streets become more impacted.

### **Street Abandonment**

Should the City Council choose Option 2 or 3, staff recommends the Council initiate the abandonment for Muscat Place, west of Vintage Place. If Muscat Place is not a through road, the road will not be utilized. Maintenance of the road is the responsibility of the City. Abandoning the road and dedicating it back to the owners on Vintage Place on either side of Muscat Place will alleviate the City's responsibility to maintain that portion of the road.



## PUBLIC COMMENTS

In accordance with Section 17.70.200 B, appeals to the City Council shall be conducted as a public hearing in accordance with the public hearing noticing and hearing procedures in Section 17.70. Therefore, the appeal and public hearing notice were published in the newspaper on August 21, 2020 and mailed to property owners within 300 feet on August 20, 2020. No comments have been received as of the date of preparation of this report.

## RECOMMENDATION

In accordance with Section 17.70.200 C., a decision on an application that has been appealed may be upheld, overturned, or modified. The appeal decision shall be adopted by resolution or other applicable document.

Staff recommends the City Council adopt Resolution 20-23-R, overturning the decision of the Planning Commission to deny, by taking no action, Vesting Tentative Tract 928 and Mitigated Negative Declaration No. 2020-22.

Should the City Council wish to proceed with Option 2 or 3, the council would need provide justification findings to support overriding the requirements of General Plan Circulation Element and direct staff to bring back a resolution with conditions of approval.

Should the Council vote to approve Option 2 and 3, staff recommends the Council initiate abandonment of Muscat Place, west of Vintage Place.



**RESOLUTION 20-23-R**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HANFORD, APPROVING APPEAL NO. 2020-01, THUS OVERTURNING THE PLANNING COMMISSION'S DECISION TO TAKE NO ACTION AND APPROVING VESTING TENTATIVE TRACT 928, A REQUEST BY CAL-CLARK FARMS TO SUBDIVIDE 81.71 ACRES INTO 283 SINGLE-FAMILY RESIDENTIAL LOTS, A 2.25-ACRE PARK, AND A 4.94-ACRE BASIN IN THE R-L-5 LOW-DENSITY RESIDENTIAL ZONE DISTRICT. THE PROJECT IS LOCATED AT THE SOUTHEAST CORNER OF CENTENNIAL DRIVE AND FARGO AVENUE (APN 009-030-158, -005, AND 115).**

At a regular meeting of the City of Hanford City Council, duly called and held on September 1, 2020, on motion of Councilmember \_\_\_\_\_, seconded by Councilmember \_\_\_\_\_, and duly carried, the following resolution was adopted:

**WHEREAS**, the City of Hanford City Council held a public hearing and received testimony and evidence for and against Appeal No. 2020-01, an appeal of the Planning Commission's decision to take no action, thus denying, Vesting Tentative Tract 928, filed by Cal-Clark Farms, in accordance with Section 17.70.200 of the Hanford Municipal Code; and

**WHEREAS**, the project is located at the southeast corner of Centennial Drive and Fargo Avenue (APN 009-030-158); and

**WHEREAS**, Vesting Tentative Tract 928, attached as Exhibit A, was presented to the Planning Commission as a public hearing item on August 11, 2020, in accordance with Section 16.40.040 and Section 66474 of the Subdivision Map Act; and

**WHEREAS**, the Planning Commission voted 3-3 to approve Resolution No. 2020-09 and Mitigated Negative Declaration No. 2020-22, thus resulting in no action taken; and

**WHEREAS**, the Initial Study, Mitigated Negative Declaration No. 2020-22, and all notices related thereto were prepared in compliance with the California Environmental Quality Act (CEQA) and the City of Hanford Municipal Code and Policies; and

**NOW, THEREFORE, BE IT RESOLVED**, that the City Council hereby finds that no significant environmental impacts would result from the proposed project with the incorporation of mitigation measures, adopt a Mitigation Monitoring and Reporting Program, attached as Exhibit B, and certify that Mitigated Negative Declaration No. 2020-22 was prepared consistent with CEQA and City of Hanford Environmental Guidelines.

**BE IT FURTHER RESOLVED** that the City Council of the City of Hanford, has made the following findings pursuant to Section 16.04.010 of the Hanford Subdivision Ordinance, Section 66474 of the Subdivision Map Act and Hanford's Zoning Ordinance:

**1. Consistency Finding:**



**ANALYSIS:** That a consistency finding can be made, because the proposed subdivision map is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

2. Design Finding:

**ANALYSIS:** That the design and improvement of the subdivision is consistent with the State Subdivision Map Act, General Plan, Zoning Ordinance, and Subdivision Ordinance. The subdivision is consistent with the General Plan Designation for the property, Low-Density Residential. All requirements of the R-L-5 Low-Density Residential zone district are met for lot size, frontage, width, and depth. Compliance with the regulations set forth in the Hanford Municipal Code for the R-L-5 Low-Density Residential zone district will be a condition of approval for the subdivision.

3. Type of Development Finding:

**ANALYSIS:** That the site is physically suitable for the single-family residential development proposed under Tentative Tract 928. The lots proposed meet the minimum lot size of the R-L-5 Low-Density Residential Zone District. All parcels have adequate street frontage on a public street and meet the minimum depth and width required for the district.

4. Density Finding:

**ANALYSIS:** That a density finding can be made, because the site is physically suitable for the proposed density of development. The General Plan prescribes a density range between two and 10 units per acre, with an expected average of four units per gross acre. The project has a density of 3.46 dwelling units per gross acre.

5. Environmental Finding:

**ANALYSIS:** That an initial study was conducted. On the basis of the initial study, the Community Development Department has determined that the project described above would not have significant adverse impacts on the environment, with the incorporation of mitigation measures. Mitigated Negative Declaration No. 2020-22 has been prepared for the project.

6. Public Health Finding:

**ANALYSIS:** That the design of the subdivision and type of improvements are not likely to cause serious health problems. The City of Hanford Building Division is responsible for ensuring that future construction of the site follows adopted building codes, thus reducing

exposures to accidents to the general public. Consultation was sent for Tentative Tract 928 to interested agencies, including the County Health Department, Public Works Department, Fire Department, and Building Division. Any improvements or mitigations required for public health and safety were applied to the proposal and required in the conditions of approval.

7. Improvements and Access Findings:

ANALYSIS: That the design of the subdivision and type of improvements will not conflict with easements acquired by the public at large for access through or use of the property within the proposed subdivision.

**THEREFORE, BE IT RESOLVED** that the City Council of the City of Hanford hereby approves Appeal No. 2020-01, thus approving Vesting Tentative Tract 928, subject to the conditions of approval, attached as Exhibit C, and the following:

1. That this tentative subdivision map becomes null and void after 24 months has elapsed from the date of approval, if the above conditions have not been satisfied or bonded for, and a final map recorded. A time extension may be granted by the Commission upon written request by the applicant. The time extension, if approved, will be subject to the improvement standards and fees in effect at the time the extension for the tentative subdivision map is granted.

Passed and adopted at a regular meeting of the City Council of the City of Hanford duly called and held on September 1, 2020, by the following roll call vote:

AYES:

Draxler, Sorenson, Devine, Ramirez

NOES:

Brieno

ABSTAIN:

ABSENT:

APPROVED

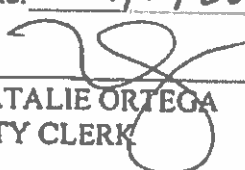
John Draxler  
John Draxler  
MAYOR of the City of Hanford

ATTEST:

Natalie Ortega  
NATALIE ORTEGA  
CITY CLERK

STATE OF CALIFORNIA )  
COUNTY OF KINGS ) ss  
CITY OF HANFORD )

I, NATALIE ORTEGA, City Clerk of the City of Hanford, do hereby certify the foregoing Resolution was duly passed and adopted at a regular meeting of the City Council of the City of Hanford held on the 1 day of September, 2020.

Date: 9/1/2020  
  
\_\_\_\_\_  
NATALIE ORTEGA  
CITY CLERK

**Exhibit A:  
Tentative Tract Map 928**





**Exhibit B:**  
**Mitigation Monitoring and Reporting Program**

Tentative Tract 928  
Mitigation Measures  
Mitigated Negative Declaration 2020-22

| Mitigation Number                 | Potential Impact                                                                                                                                                                                                                                             | Mitigation Measure                                                                                                                                                                                                                            | Responsible Party |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>AESTHETICS</b>                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                               |                   |
| <b>MM Aesthetics 1</b>            | The project could substantially degrade the existing visual character or quality of the site and its surroundings?                                                                                                                                           | That the applicant develop the project consistent with the General Plan, Hanford Municipal Code, and Tree Ordinance.                                                                                                                          | Developer         |
| <b>MM Aesthetics 2</b>            | The project may create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?                                                                                                                           | That the development comply with the Hanford Municipal Code Section 17.50.140 Outdoor Lighting Standards and the California Building Code for outdoor lighting standards.                                                                     | Developer         |
| <b>AGRICULTURE RESOURCES</b>      |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                               |                   |
| <b>MM Agriculture Resources 1</b> | The project will convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | That a right-to-farm provision be recorded with the recording of the final subdivision map(s) to insure that future residents of the homes in the project are aware of the adjacent agricultural uses and their right to continue to operate. | City to require   |

| AIR QUALITY             |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                      |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| MM Air Quality 1        | The project may conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                                                                                                                           | That the applicant complies with the SJVAPCDC Air Quality Plan and obtains any necessary permits through the SJVAPCD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Developer to file application with San Joaquin Valley Air Pollution Control District |
| MM Air Quality 2        | The project could potentially violate any air quality standard or contribute substantially to an existing or projected air quality violation?                                                                                                                                                                          | That effective dust control must be maintained on the job site at all times in order to reduce the risk of valley fever to workers and nearby residents. More information regarding the prevention of work related valley fever is available at <a href="http://www.cdph.ca.gov/programs/hesid/Documents/CocciFact.pdf">www.cdph.ca.gov/programs/hesid/Documents/CocciFact.pdf</a> and <a href="http://www.cdph.ca.gov/programs/hesid/Documents/OccCocci.pdf">http://www.cdph.ca.gov/programs/hesid/Documents/OccCocci.pdf</a> . Contact the San Joaquin Valley Air Pollution Control District for more information on dust control techniques. | Developer                                                                            |
| MM Air Quality 3        | The project could potentially result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | The project is subject to District Rule 9510, which is intended to mitigate a project's impact on air quality through project design elements or by payment of applicable off-site mitigation fees. The applicant is required to submit an Air Impact Assessment (AIA) application to the District prior to issuance of a building permit.                                                                                                                                                                                                                                                                                                      | Developer                                                                            |
| CULTURAL RESOURCES      |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                      |
| MM Cultural Resources 1 | The project could potentially cause a substantial adverse change in the                                                                                                                                                                                                                                                | That tribal monitors are required during all ground disturbance activities, including but not limited to: water ponds, grading, excavation, trenching, and utilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Developer to coordinate with the Tachi Yokut Tribe;                                  |

|                                |                                                                                                                                                                                                                                                                                                  |                                                                                                                                  |                                                                                                                                                             |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | <p>significance of an archeological resource pursuant to Public Resources Code 15064.5?</p> <p>The project could potentially disturb human remains, including those interred outside of formal cemeteries?</p>                                                                                   |                                                                                                                                  | Developer or representative to notify archeologist or coroner of discovery (if uncovered)                                                                   |
| <b>MM Cultural Resources 2</b> | <p>The project could potentially cause a substantial adverse change in the significance of an archeological resource pursuant to Public Resources Code 15064.5?</p> <p>The project could potentially disturb human remains, including those interred outside of formal cemeteries?</p>           | That a Burial Treatment Plan be entered to by the applicant/property owner prior to any earth disturbing activities.             | <p>Developer to coordinate with the Tachi Yokut Tribe;</p> <p>Developer or representative to notify archeologist or coroner of discovery (if uncovered)</p> |
| <b>GEOLOGY AND SOILS</b>       |                                                                                                                                                                                                                                                                                                  |                                                                                                                                  |                                                                                                                                                             |
| <b>MM Geology 1</b>            | <p>That the project may expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving:</p> <ul style="list-style-type: none"> <li>- strong seismic ground shaking;</li> <li>- seismic-related ground failure, including</li> </ul> | That the development of the project complies with the applicable General Plan policies, as well as the California Building Code. | <p>City of Hanford must ensure conditions are set forth to mitigate impacts;</p> <p>Developer to comply with standards</p>                                  |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                  |                                                          |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
|                      | liquefaction, - landslides.<br>The project may be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site landslide, lateral spreading, subsidence, liquefaction or collapse?                                                                                                                                                                                                                                |                                                                                                                                                                                                                  |                                                          |
| <b>MM Geology 2</b>  | That the project may expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving: - strong seismic ground shaking; - seismic-related ground failure, including liquefaction, - landslides.<br>The project may be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-site landslide, lateral spreading, subsidence, liquefaction or collapse? | That a geotechnical and soil studies be prepared as a required by the Building Official (if applicable).                                                                                                         | Building Official to require; developer to conduct study |
| <b>MM Geology 3:</b> | That the project could result in substantial soil erosion or the loss of                                                                                                                                                                                                                                                                                                                                                                                                                              | That the physical development of the project comply with the Hanford Municipal Code Section 15.52 Flood Damage Prevention Regulation and the California Building Code, along with the plan check and development | City to require; developer to comply                     |

|                                        | topsoil?                                                                                                                                                                                                                                                                                                                                                                                      | review process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
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| <b>HAZARDS AND HAZARDOUS MATERIALS</b> |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>MM Hazards 1</b>                    | That the project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                                                                                                                                                                                                   | <p>If hazardous materials at or above threshold reporting quantities (55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a gas) will be kept on site during the construction phase, a Hazardous Materials Business Plan must be filed online at <a href="http://cers.calepa.ca.gov">http://cers.calepa.ca.gov</a> within 30 days of beginning operations. Hazardous materials are broadly defined, and include fuel, lubricants, antifreeze, motor vehicle batteries, welding gases, paints, solvents, glues, agricultural chemicals, etc. Please contact our office if you require assistance with the online registration process. Any quantities of hazardous wastes generated by the construction operation must be managed in accordance with Federal, State, and local laws and regulations. Hazardous wastes cannot be disposed of into the municipal waste stream or onsite sewage disposal system. The owner/operator must contact the Kings County Environmental Health Department at with any questions regarding proper management and reporting of hazardous wastes, such as waste oil/filters, associated with this operation.</p> | Developer |
| <b>MM Hazards 2</b>                    | <p>That the project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</p> <p>That the project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</p> | <p>Any quantities of hazardous wastes generated by the construction operation must be managed in accordance with Federal, State, and local laws and regulations. Hazardous wastes cannot be disposed of into the municipal waste stream or onsite sewage disposal system. The owner/operator must contact our office at with any questions regarding proper management and reporting of hazardous wastes, such as waste oil/filters, associated with this operation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Developer |
| <b>HYDROLOGY AND WATER QUALITY</b>     |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |

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| <p><b>MM Hydrology 1 &amp; 2</b></p> | <p>The project could potentially violate water quality standards or waste discharge requirements.</p> <p>That the project could potentially substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</p>                                                                                                 | <p>1) All new development that disturbs more than one acre is required to comply with the General Permit Order No. 2012-006-DWQ during construction. Proponents of new development would have to develop and implement a stormwater pollution prevention plan (SWPPP) that specifies best management practices (BMPs) to prevent construction pollutants from contacting stormwater, with the intent of keeping all products of erosion from moving off-site and into receiving waters; eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the United States; and inspect all BMPs;</p> <p>2) New development would be required to implement appropriate minimum control measures (MCMs) and design standards in compliance with Phase II General Permit, as outlined in the Stormwater Management Plan, as well as the City's grading plan and site development requirements.</p> | <p>City to require; Developer to provide</p> |
| <p><b>MM Hydrology 3</b></p>         | <p>The project could potentially substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?</p> <p>Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted</p> | <p>New development must submit grading plans. Site development must comply with the requirements of the City Building Division and incorporate best management practices/design standards.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>City to require; Developer to provide</p> |



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|                            | runoff?                                                                                                                                                                                                                                |                                                                                                                                                                                               |                                            |  |
| <b>MM Hydrology 4</b>      | Otherwise substantially degrade water quality?                                                                                                                                                                                         | New development would have to incorporate best management practices and adhere to design standards to maximize the reduction of pollutant loadings in runoff to the maximum extent practical. | City to require; Developer to provide      |  |
| <b>NOISE</b>               |                                                                                                                                                                                                                                        |                                                                                                                                                                                               |                                            |  |
| <b>MM Noise 1:</b>         | Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?                                                       | Comply with applicable regulations and policies of the General Plan to ensure that construction-related impacts would be attenuated to the greatest extent feasible.                          | Residents and developer; Police to enforce |  |
| <b>MM Noise 2 &amp; 3:</b> | Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?<br><br>The project could cause a substantial temporary or periodic increase in ambient noise levels existing without the project? | Construction is limited to the hours of 7 a.m. to 10 p.m.                                                                                                                                     | Developer; Police to enforce               |  |

| <b>PUBLIC SERVICES</b>      |                                                                                                                                                                                                                          |                                                                                                      |                  |
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| <b>MM Public Services 1</b> | The project may result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities. (Fire)    | That the development of the project will be subject to Fire Impact Fees.                             | Developer to pay |
| <b>MM Public Services 2</b> | The project may result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities. (Police)  | That the development of the project will be subject to Police Impact Fees.                           | Developer to pay |
| <b>MM Public Services 3</b> | The project may result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities. (Schools) | That the development of the project will be subject to School Impact Fees.                           | Developer to pay |
| <b>MM Public Services 4</b> | The project may result in substantial adverse                                                                                                                                                                            | That the development of the project will be subject to Park Impact Fees, or provision of park space. | Developer to pay |

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|                        | physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities. (Parks)                                                                                                                                                                                                                                    |                                                                                                                                                                                                                           |                                      |
| <b>RECREATION</b>      |                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                           |                                      |
| <b>MM Recreation 1</b> | <p>The project would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</p> <p>The project includes recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?</p> | <p>1. That the development of the project will be subject to Park impact fees, or provision of park space.</p> <p>2. That the park be developed according to the conditions set forth by the Public Works Department.</p> | Developer to pay;<br>City to require |
| <b>MM Recreation 2</b> | The project would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be                                                                                                                                                                                                              | <p>1. That the development of the project will be subject to Park impact fees, or provision of park space.</p> <p>2. That the park be developed according to the conditions set forth by the Public Works Department.</p> | Developer to pay;<br>City to require |

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|                                                        | accelerated?<br>The project includes recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>TRANSPORTATION/TRAFFIC</b>                          |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MM</b><br><b>Transportation/Traffic</b><br><b>1</b> | The project may conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | <p>City to require; developer to provide</p> <p>1. That the development is subject to traffic impact fees.</p> <p>2. Conditions of the development include:<br/>Street Improvements:</p> <ol style="list-style-type: none"> <li>1. That all improvements consisting of sanitary sewers, storm sewers, water mains, concrete curbs, gutters, sidewalks, street lights, landscaping, street sub-grading, surfacing and striping and all other improvements shall be installed in accordance with Chapter 16.24, "Improvements", of the Hanford Municipal Code and this resolution pertaining to subdivision improvements in effect at the time of filing the tentative subdivision map.</li> <li>2. That all streets within the subdivision shall be developed to residential street standard ST-32, except the following: <ol style="list-style-type: none"> <li>(a) Fargo Avenue shall be developed as a major collector street along the entire development frontage. All improvements shall be constructed in conformance with City Standards ST17 and ST-23 and as follows: <ol style="list-style-type: none"> <li>(1) Traffic index used for the design of street structural section shall be a minimum of 10.0.</li> <li>(2) A geotechnical report shall be submitted to the City Engineer identifying the existing structural section thickness of Fargo Avenue, along the entire development</li> </ol> </li> </ol> </li> </ol> |

frontage, concurrent with the submittal of development improvement plans. Reconstruction of Fargo Avenue, along the entire development frontage will be required if the existing street structural section does not conform to City Standards and Specifications.

(3) Street improvements south of the Fargo Avenue centerline shall include, but not be limited to, the installation of concrete curb and gutter, sidewalk, landscaping, decorative masonry block wall, street lights, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required. The installation of raised concrete median in Fargo Ave is not required.

(4) Street improvements north of the Fargo Avenue centerline shall include, but not be limited to, the construction of a minimum 12-foot travel lane, 4-foot paved shoulder, and 4-foot graded shoulder, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required. The installation of raised concrete median in Fargo Ave is not required.

(5) Developer shall attempt to acquire additional street right-of-way along the "Not a Part" frontage of Fargo Ave in accordance with Section 66462.5 of the Subdivision Map Act. The additional street right-of-way is necessary to facilitate street widening improvements along the entire development frontage of Fargo Ave. If Developer is unsuccessful, City will attempt to acquire the right-of-way.

b) Centennial Drive shall be developed as a major collector street, along the development frontage of the subdivision. All improvements shall be constructed in conformance with City Standards ST-17 and ST-23, and as follows:

- 1) Traffic index used for the design of street structural section shall be a minimum of 7.0.

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|  |  | <p>2) Street improvements shall include, but not be limited to, the installation of concrete curb and gutter, sidewalk, landscaping, decorative masonry block wall, street lights, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required. (Raised median island not required).</p> <p>3) Developer shall construct a left turn pocket at the intersection of Fargo Ave and Centennial Drive for westbound traffic along Fargo Ave.</p> <p>c) W. Sangiovese Street shall be developed as a minor collector street, along the development frontage of the subdivision. All improvements shall be constructed in conformance with City Standards ST-17 and ST-26, and as follows:</p> <ol style="list-style-type: none"> <li>1) Traffic index used for the design of street structural section shall be a minimum of 6.0.</li> <li>2) Street improvements shall include, but not be limited to, the installation of concrete curb and gutter, sidewalk, landscaping, decorative masonry block wall, street lights, street paving, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required.</li> </ol> <p>3. That street lights shall be installed throughout the subdivision in conformance with City Standard GE-56 and Southern California Edison requirements. Street lights shall be located as designated by City Engineer.</p> <p>4. That a traffic signal be installed at the intersection of Centennial Drive and Fargo Ave at the time of the construction of the development unless a focused traffic study is conducted and the analysis determines that the traffic signal does not to meet the required warrants with the development of the subdivision.</p> <p>5. That the developer shall attempt to acquire additional street right-of-way along the "Not a Part" frontage and make street</p> |
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|                                   |                                                                                                                                                                                                                                    | <p>improvements. City to reimburse for offsite right-of-way and improvement cost.</p> <p>6. That development is subject to a transportation mitigation impact fee as required by City Municipal Code section 15.48 and any revisions thereof. Developer shall be entitled to a credit towards their development impact fee for permanent street improvements constructed by developer within Fargo Ave, consisting of curb &amp; gutter, street striping, signing and street paving from gutter lip to edge of the existing Fargo Ave street sections. If applicable, developer may also be entitled to credit towards impact fees for supplemental transportation capacity improvements to the existing Fargo Ave street section. Transitional paving improvements beyond the development limits, that are not considered to be a permanent improvement and the reconstruction of the existing Fargo Ave street section, if required, will not be subject to a credit. Developer shall submit competitive bid proposals to substantiate the cost of reimbursable items for City Public Works Department review and approval prior to beginning construction. All documentation materials submitted for reimbursement consideration shall be well organized and tabulated for convenient reference by Public Works' staff. Improvement quantities and costs proposed for reimbursement must be clearly identified in the documentation provided, and not combined or aggregated with non-reimbursable subdivision improvement costs. Appropriate graphic exhibits referenced to the subdivision improvement plans shall also be provided as needed to facilitate the reimbursement review process.</p> |  | City to require; developer to provide |
| MM<br>Transportation/Traffic<br>2 | The project may conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management | That the development is subject to traffic impact fees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                       |



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|                                      | agency for designated roads of highways?                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 |
| MM<br>Transportation/Traffic<br>3    | The project may conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?                                                                | That the development is subject to traffic impact fees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | City to require; developer to provide                                           |
| <b>UTILITIES AND SERVICE SYSTEMS</b> |                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 |
| MM Utilities 1                       | Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <p>Conditions of approval for storm drainage is as follows:</p> <ol style="list-style-type: none"> <li>1. That the developer's engineer shall provide a storm drainage master plan complete with calculations for the entire subdivision for City Public Utilities and Engineering Department review and approval prior to recording a subdivision final map for the development. Provisions shall be made to provide service for future areas of development located adjacent to the subdivision.</li> <li>2. That all drainage from proposed development shall be retained in retention drainage basin located as shown on the tentative subdivision map. The basin expansion shall be constructed in conformance with City Standards and the entrance to the basin shall be relocated to N. Mustang Drive.</li> <li>3. That developer shall be required to comply with State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.</li> </ol> | City to require and ensure compliance; developer to provide                     |
| MM Utilities 2                       | Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?                                        | That the future development would be required to implement water conservation measures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | City to require and ensure compliance; developer and future occupants to adhere |

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| MM Utilities 3 | Would the project comply with federal, state, and local statutes related to solid waste? | That the future project be required to comply with all statutes and regulations related to solid waste. | City to require; developer to provide |
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Exhibit C:  
Conditions of Approval

**PLANNING DIVISION**  
**SITE PLAN REVIEW COMMENTS**

**TENTATIVE TRACT NO. 928**

**CONTACT:** Gabrielle Myers, Senior Planner: (559) 585-2578

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**General Plan Designation:** Low-Density Residential

**Zoning:** R-L-5 Low-Density Residential

**Other Special Districts:** N/A

**Planning Division Recommendation** ☒ Revise and Proceed ☐ Resubmit

**General Requirements:**

- ☒ That the applicant hereby agrees to hold the City of Hanford and all of its departments, officers, agents, and employees free and harmless of and from all claims of any kind or nature arising out of or by reason of the approval of this project.
- ☒ That approval of this project does not exempt compliance with all applicable sections of the Uniform Fire and Building Codes, Zoning Ordinance, Public Works Improvement Standards, and other City Ordinances.
- ☒ That the final map be submitted to the City Engineer and Community Development Department for compliance with the Tentative Subdivision Map approval prior to recording the final map.
- ☒ That all conditions of approval listed in this resolution by the City of Hanford be contained in the line drawing submitted for building permits.
- ☒ That in accordance with Title 16 of the Hanford Municipal Code, all conditions of this subdivision listed herein, and contained in subsequent improvement agreements, excluding the landscape district, must be completed and accepted for maintenance by the City Council prior to the final building inspection and occupancy permits being issued for the first house in the subdivision.
- ☒ That Vesting Tentative Tract 928 be developed consistent with the approved tentative tract map, attached as **Exhibit A**.
- ☒ That the tentative tract is subject to the mitigations cited in the Mitigation Monitoring and Reporting Program, attached as **Exhibit B (to be developed as part of the environmental review of the project)**.

**Right-to-Farm:**

- ☒ Notwithstanding any other provision in this Chapter, agricultural operations are the principal and favored use of land in the areas of Kings County designated "Agricultural" in the Kings County General Plan and included in the agricultural zone districts of the Kings County zoning

ordinance. In order to implement Policy LU 8.2 and Program LU 8.2-A of the city of Hanford General Plan, there is hereby adopted in the city of Hanford a policy to (1) protect agricultural land, operations, and facilities from conflicting use due to the encroachment of incompatible, non-agricultural uses of the land in agricultural areas of the county, and (2) to advise developers, owners, and subsequent purchasers of property in the city of Hanford within one (1) mile of the city's urban limit line of the inherent potential inconveniences and discomforts often associated with agricultural activities and operations, including, but not limited to, equipment and animal noise; farming activities conducted on a 24-hour a day, 7-days a week basis; odors from manure, fertilizers, pesticides, chemicals, or other sources; the aerial and ground application of chemicals and seeds; dust; flies and other insects; and smoke from agriculture operations.

- ☒ That no lawfully established and otherwise lawful agricultural activity, operation, or facility, or appurtenances thereto, conducted or maintained for commercial agricultural purposes in a manner consistent with proper and accepted customs and standards as established and followed by similar agricultural operations in the same locality, shall be or become a nuisance, private or public, due to any changed condition in or about the locality, including, but not limited to, the encroachment of non-agricultural uses such as residences.
- ☒ In order to carry out the goals and policies of the city of Hanford General Plan, and the provisions of this chapter, the following notices and disclosures shall be required:
- ☒ All approvals for improvement or development of property including without limitation application for rezonings, land divisions, zoning permits, and residential building permits, on property in the city of Hanford within one (1) mile of the city's urban limit line, shall include a condition that notice and disclosure of this agricultural land use policy be given by the applicant, or the owner if different from the applicant. The applicant, or owner if different from the applicant, shall also acknowledge the contents of the notice and disclosure, which includes a description of the property the notice and disclosure pertains to, in the Official Records of the Kings County Recorder, and recorded at the applicant's own expense.

**Zoning:**

- ☒ That all requirements of the R-L-5 Low-Density Residential district shall apply.

**Dwelling Units per Lot** (Section 17.10.050)

- ☒ That not more than one dwelling unit shall be allowed on each lot, unless approved as an accessory use to an allowed or approved conditional use, or approved as an accessory dwelling unit, in accordance with Section 17.60.030 of the Hanford Municipal Code.

**Coverage** (Section 17.10.060)

- ☒ That the maximum overage shall be determined by the combined building setback requirements, accessory structure limitations, and off-street parking requirements.

**Building Setback Area** (Section 17.10.070)

- ☒ That no structure shall be placed within a building setback area.
- ☒ The front building setback area shall be 15 feet from the front lot line for livable space and 20 feet for garages, carports, and other non-livable building space.
- ☒ That the rear building setback shall be 15 feet from the rear lot line, except where there is a landscape easement with a wall or fence on the rear of the lot, then the rear building setback shall be 20 feet.
- ☒ The rear building setback area shall be increased by 10 feet for buildings over one-story high.
- ☒ That where there is a landscape easement with a wall or fence on the street side of the lot the side yard setback area shall be measured from the easement area instead of the side lot line.

**Distance between Structures** (Section 17.10.080)

- ☒ The minimum distance between structures shall be 10 feet, except as provided by the building code.

**Height of Structures** (Section 17.10.090)

- ☒ The maximum structure height shall be 35 feet.

**Driveways** (Section 17.10.110)

- ☒ That the width of a driveway and any paved area shall not cumulatively exceed 40% of the width of the lot's street frontage on which the driveway and any paved area faces. In the case of "L" or "U" shaped driveways or other configurations besides perpendicular driveways, the paved area of these driveways shall not exceed 50% of the front building setback area.
- ☒ That on corner lots, the driveway shall be located on the side of the lot adjacent to the interior lot line.
- ☒ That on key lots, the driveway shall be located on the side of the lot, which is not adjacent to the rear lot line of the adjacent reverse corner lot.

**Usable Open Space** (Section 17.10.150)

- ☒ That each lot shall provide for a usable open space area of a minimum 400 feet that is a minimum 15 feet wide.

**Landscaping** (Section 17.10.160)

- ☒ That landscaping be provided in accordance with Section 17.52 Landscape Standards of the Hanford Municipal Code.
- ☒ That except for driveways and approved parking areas all yard areas and setback areas visible from the street shall be landscaped with live plant materials and ornamentation

common to the Hanford area or up to 100% of the yard and setback area may be landscaped with artificial turf and other permeable surfaces.

- ☒ That two street trees, a minimum 15 gallon size, shall be planted on all lots 6,000 square feet or greater. One of the two shall be planted 12 feet (no greater or no less) from the face of the front lot line street curb.
- ☒ That one street tree, a minimum 15 gallon size, shall be planted on all lots less than 6,000 square feet. The tree shall be planted in the parkway. If there is no parkway, the tree shall be planted four feet behind the sidewalk.
- ☒ That there shall be two additional street trees, a minimum 15 gallon size, planted on all corner lots in the parkway adjacent to the street side lot line.
- ☒ That all species of trees shall be selected from a list approved by the City Parks and Recreation Commission.
- ☒ That each lot owner within Tentative Tract 929 shall care for and maintain the trees and lawn area located in the parkway in front of their lot(s). For corner lots, the lot owner shall also care for and maintain the parkway trees and land area along the street-side of their lot. The parkway is defined as that land area located between the street curb and the public sidewalk.

**Environmental Requirements:**

- ☒ That if fireplaces are proposed in the residential units, natural gas fireplaces or EPA-certified wood-burning fireplaces/stoves are to be installed in every unit that has a fireplace. Conventional open-hearth fireplaces are not allowed.
- ☒ That natural gas lines and electrical outlets be installed in backyards or patios to encourage use of gas and/or electric barbecues.
- ☒ That electrical outlets be installed around the exterior of the residential units to encourage use of electric lawn mowers, edgers, etc.

**Noise:**

- ☒ That construction equipment is muffled and construction activities be limited to the hours between 7:00 a.m. to 10:00 p.m., Monday through Friday, unless the construction is within the enclosed structure or approved by the Community Development Department.
- ☒ That noise from fixed mechanical equipment, when measured at the property line, meets the standard of the Hanford Noise Element.

**Rooftop Equipment** HMC Section 17.50.100

- ☒ That all elevator housing and mechanical equipment located on the roof of any building shall be screened from adjacent views and contained within a completely enclosed penthouse or

portion of the same building having walls and roofs with construction and appearance similar to the building.

**Outdoor Lighting Standards** HMC Section 17.50.140

- ☒ That all lights and light fixtures, except public street lights, shall be located, aimed or shielded so as to minimize light trespassing across property boundaries or skyward.
- ☒ That no lights or light fixtures shall flash, revolve, blink or otherwise resemble a traffic control signal or operate in such a fashion to create a hazard for passing traffic.
- ☒ That building mounted lighting fixtures shall be attached only to the walls of the building. The top of a light fixture attached to a building wall shall not be higher than the top of the building parapet or the top of the roof eave, whichever is lower.
- ☒ That canopy ceiling light fixtures shall be recessed or the sides of the lens area shall be shielded in order to eliminate emission of horizontal light.
- ☒ That mercury vapor lamps shall be a fully shielded fixture with all light directed on-site.
- ☒ That freestanding light fixtures shall not exceed eighteen (18) feet in height measured from the top of a light fixture to the adjacent grade at the base of the support for that light fixture.

**Tents, Tarps, and Other Coverings** (Section 17.50.130)

- ☒ That no front or side building setback area shall be covered by tents, tarps, cloth, fabric, or a wood or metal covering or structure except for the following:
  - ☒ Standard window and door awnings
  - ☒ Ornamental covers, such as a sidewalk or entry awning trellis, or other similar improvement intended as an improved passageway or for aesthetic purposes providing architectural integrity with the building to which it is attached. Supports shall be ninety (90) percent open and shall not be enclosed.

**Dust Control:**

- ☒ That the appropriate dust-control practices of the San Joaquin Valley Air Pollution Control District shall be implemented.
- ☒ That the any necessary permits be obtained through the San Joaquin Valley Air Pollution Control District.



## **BUILDING DIVISION**

**TT 928 (504-0534)**

Contact Building Official: Tom Webb (559) 585-2584

Concerning questions that you may have on the conditions listed below:

### **Soils:**

1. That a preliminary soils report, prepared by a qualified soil's engineer, be provided to the Engineering and Building Departments prior to approval of Subdivision Improvement Plans.
2. That a final soils report, prepared by a qualified soils engineer, be provided to the Engineering Department and Building Division prior to acceptance of the subdivision improvements by the City or issuance of building permits or whichever comes first.
3. That the developer retains the design engineer to inspect and verify that grading within the subdivision was constructed as per the approved design, and a copy of the report be provided to the Building Division prior to building permit issuance.

### **Street Names and Addresses:**

1. That street addresses for each lot, as provided by the Building Division, be included on the subdivision final map.
2. That street names, as shown on the tentative subdivision map, be included on the subdivision final maps.
3. That all single family dwellings within the subdivision have illuminated address numbers 2-¼ inches high or be within an illuminated area with 3-½ inch high address numbers installed on the front most part of the building leading to the entrance. In either case the address numbers shall be of contrasting colors with the background.
4. That all landscaping requires permits and must meet requirements at time of installation.
5. That a map must be provided to show existing streets names of surrounding subdivisions that have City maintained streets.

**FIRE DEPARTMENT**  
**SITE PLAN REVIEW COMMENTS**

**TENTATIVE TRACT NO. 928**

**CONTACT:** Larry Garcia, Fire Inspector: (559) 585-2594

1. Provide fire flow and hydrant information per California Fire Code and City of Hanford Public Works Standards.
2. Approved access roadway and the fire protection system (hydrants) shall be in place prior to construction.
3. All residential structures shall be provided with an NFPA 13 fire sprinkler system. Plans shall be submitted prior to construction.
4. Provide minimum thirty (30) feet clear width for fire apparatus access.
5. A approved turnaround shall be provided for all dead end roads in excess of 150 feet. Approved turnaround shall meet City of Hanford Road Standards.



# City of Hanford

## Department of Public Works

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**PROJECT: Tract 928 Cal Clark Farms Silver Oaks Addition**

### **Maps and Plans:**

1. That the developer shall submit to the City Engineer a set of construction plans on 24" x 36" sheets for all required improvements. Plans shall be prepared by a registered civil engineer and shall include a drainage and utility plan identifying sizes and location of sanitary sewer, storm drainage and water mains, curbs, gutters, sidewalks, masonry walls, street lights, street improvements, culverts and landscape improvements and all other infrastructure required to complete development. All plans shall be approved by the City Engineer and all other involved agencies before the release of the building permits.
2. That prior to beginning any construction or within ten (10) calendar days after the approved plans are released by the City, the developer shall submit to the City of Hanford Engineering Division one (1) reproducible and four (4) blue line copies of the approved set of construction plans and four (4) bound sets of the approved construction specifications, if any.
3. That within twenty (20) calendar days after all improvements have been constructed and accepted by the City, the developer shall submit to the City of Hanford Engineering Division one (1) reproducible and one (1) blue line copy of the approved set of construction plans revised to reflect all field revisions and marked "RECORD DRAWING."

### **Easements:**

1. That all easements shall be designated on the subdivision final map as required by the utility companies and where needed for providing service to street lights and landscape improvements as designated by the City Public Works Department.
2. That all easements for irrigation ditches and / or irrigation pipelines shall be legally abandoned or relocated to the satisfaction of the City Engineer prior to the recording of a subdivision final map.
3. That all proposed landscape/public utility easements, located as shown on the tentative subdivision map, shall be dedicated to the City and be delineated on the final subdivision map. Landscape/public utility easement shall meet or exceed the following minimum widths:
  - a.) Fargo Avenue – Ten feet (Landscape/Public Utility)
  - b.) Centennial Drive – Ten feet (Landscape/Public Utility)
  - c.) W. Sangiovese Street – Five feet (Landscape/Public Utility)
  - d.) All residential streets – Six feet (Public Utility)

### **Dedications:**

1. That all proposed streets and street extensions, located as shown on the tentative subdivision map, shall be dedicated to the City as public right-of-way, and any alteration of existing utilities shall be the responsibility of the developer.

Luis Verdugo  
ASSISTANT ENGINEER (559) 585-2556

08/06/2020  
DATE



# City of Hanford

## Department of Public Works

900 South 10th Ave. • Hanford, CA 93230-5234 • (559) 585-2550

2. That all proposed landscape public utility easements, located as shown on the tentative subdivision map shall be dedicated to the City for landscape and public utility purposes concurrent with the recording of a subdivision final map, unless modified herein.

### **Restricted Access:**

1. That a one-foot reservation strip shall be established at the end or sides of all streets abutting undeveloped property and be indicated on the subdivision final map.
2. That all access shall be restricted from lots at the property lines backing onto Centennial Drive, W. Sangiovese Street, and Fargo Avenue shall be indicated on the subdivision final map.

### **Street Improvements:**

1. That all improvements consisting of sanitary sewers, storm sewers, water mains, concrete curbs, gutters, sidewalks, street lights, landscaping, street grading, surfacing and striping and all other improvements shall be installed in accordance with Chapter 16.24, "Improvements", of the Hanford Municipal Code and this resolution pertaining to subdivision improvements in effect at the time of filing the tentative subdivision map.
2. That all streets within the subdivision shall be developed to residential street standard ST-32, except the following:
  - a. Fargo Avenue shall be developed as a major collector street along the entire development frontage. All improvements shall be constructed in conformance with City Standards ST-17 and ST-23 and as follows:
    1. Traffic index used for the design of street structural section shall be a minimum of 10.0.
    2. A geotechnical report shall be submitted to the City Engineer identifying the existing structural section thickness of Fargo Avenue, along the entire development frontage, and the "not a part", concurrent with the submittal of development improvement plans. Reconstruction of Fargo Avenue, along the entire development frontage and the "not a part" will be required if the existing street structural section does not conform to City Standards and Specifications.
    3. Street improvements south of the Fargo Avenue centerline shall include, but not be limited to, the installation of concrete curb and gutter, sidewalk, landscaping, decorative masonry block wall, street lights, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required. The installation of raised concrete median in Fargo Ave is not required.
    4. Street improvements north of the Fargo Avenue centerline shall include, but not be limited to, the construction of a minimum 12-foot travel lane, 4-foot paved shoulder, and 4-foot graded shoulder, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required.

Luis Verdugo  
ASSISTANT ENGINEER (559) 585-2556

08/06/2020  
DATE



# City of Hanford

## Department of Public Works

900 South 10th Ave. • Hanford, CA 93230-5234 • (559) 585-2550

5. Developer shall attempt to acquire additional street right-of-way along the "Not a Part" frontage of Fargo Ave in accordance with Section 66462.5 of the Subdivision Map Act. The additional street right-of-way is necessary to facilitate street widening improvements along the entire development frontage of Fargo Ave. If Developer is unsuccessful, City will attempt to acquire the right-of-way.
6. Developer shall construct a left turn pocket at the intersection of Fargo Ave and Centennial Drive for westbound traffic along Fargo Ave to southbound Centennial Drive.
- b. Centennial Drive shall be developed as a major collector street, along the development frontage of the subdivision. All improvements shall be constructed in conformance with City Standards ST-17 and ST-23, and as follows:
  1. Traffic index used for the design of street structural section shall be a minimum of 7.0.
  2. Street improvements shall include, but not be limited to, the installation of concrete curb and gutter, sidewalk, landscaping, decorative masonry block wall, street lights, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required. (Raised median island not required).
  3. Developer shall construct a left turn pocket at the intersection of Fargo Ave and Centennial Drive for northbound traffic along Centennial Drive to westbound Fargo Ave.
- c. W. Sangiovese Street shall be developed as a minor collector street. All improvements shall be constructed in conformance with City Standards ST-17 and ST-26, and as follows:
  1. Traffic index used for the design of street structural section shall be a minimum of 6.0.
  2. Dedicate right-of-way as shown on tentative map.
  3. Street improvements shall include, but not be limited to, the installation of concrete curb and gutter, sidewalk, landscaping, decorative masonry block wall, street lights, street paving, including pavement reconstruction of existing roadway if applicable, and all street signing, striping and transition paving as required.
3. That street lights shall be installed throughout the subdivision in conformance with City Standard GE-56 and Southern California Edison requirements. Street lights shall be located as designated by City Engineer.
4. That a traffic signal be installed at the intersection of Centennial Drive and Fargo Ave at the time of the construction of the development unless a focused traffic study is conducted and the analysis determines that the traffic signal does not to meet the required warrants with the development of the subdivision.

Luis Verdugo

ASSISTANT ENGINEER (559) 585-2556

08/06/2020

DATE



# City of Hanford

## Department of Public Works

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5. That the developer shall attempt to acquire additional street right-of-way along the "Not a Part" frontage and make street improvements. City to reimburse for offsite right-of-way and improvement cost.
6. That development is subject to a transportation mitigation impact fee as required by City Municipal Code section 15.48 and any revisions thereof. Developer shall be entitled to a credit towards their development impact fee for permanent street improvements constructed by developer within Fargo Ave, consisting of street paving, median curbs, and median concrete as identified in the City's Impact Fee Program. Transitional paving improvements beyond the development limits, that are not considered to be a permanent improvement and the reconstruction of the existing Fargo Ave street section, if required, will not be subject to a credit. Developer shall agree that all reimbursements will be made pursuant to the City's Impact Fee Program reimbursement schedule.

### **Backup Parkway Improvements:**

1. That the developer shall design and construct the following improvements along the development frontages of Centennial Drive, W. Sangiovese Street and Fargo Avenue for lots backing onto said streets:
  - a. A minimum six-foot-high decorative masonry block wall with continuous reinforced concrete footings. Masonry walls shall be treated with anti-graffiti repellent. The minimum height of the wall shall be measured from the highest elevation grade of the property located adjacent to either side of the wall. Wall heights shall be maintained at a uniform grade / slope whenever possible. If elevation changes are required, steps shall be introduced at pilaster locations and / or changes in wall direction. Wall improvement plans shall be designed to incorporate architectural, civil and structural components into one set of drawings. Wall plans shall be reviewed and approved by both the City Public Works and Community Development Departments.
  - b. A 4 1/2-foot-wide meandering detached sidewalk along the development frontages of Centennial Drive, W. Sangiovese Street, and Fargo Ave.
  - c. Landscaping and irrigation system improvements along the development frontages of Centennial Drive, W. Sangiovese Street and Fargo Ave. Landscape plans shall be prepared by a licensed landscape architect. Plans shall be reviewed and approved by the City Public Works, Parks & Recreation, and Community Development Departments.
2. That all species of trees and plants shall be selected from a list approved by the City's Parks and Recreation Commission.
3. That all new and existing electrical boxes, control boxes and other equipment boxes (excluding traffic control) cabinets along the street frontage shall be painted hunter green or be of a color compatible with the landscaping. Prior to painting, all metal surfaces shall be treated with an etching primer (zinc chromate) or equivalent. All new irrigation electrical and control cabinets shall be mounted into the masonry wall per City Standards.

Luis Verdugo

ASSISTANT ENGINEER (559) 585-2556

08/06/2020

DATE



# City of Hanford

## Department of Public Works

900 South 10th Ave. • Hanford, CA 93230-5234 • (559) 585-2550

4. That a covenant including each residential lot within the subdivision and requiring care and maintenance of local street park strip landscape improvements along the individual lot frontage(s) by the homeowners thereof shall be recorded concurrent with the final map.

### **Neighborhood Park Improvements:**

1. That the developer shall consult with City Parks & Recreation and Public Works staff prior to the design and construction of park facility improvements. The design and construction of park facility improvements shall be concurrent with the first phase of development. Park improvements shall include, but may not be limited to: Recreational areas, decorative landscaping and irrigation system improvements, drinking fountains, park benches, decorative security lights and trash receptacles. The developer shall retain the services of a licensed landscape architect to design all park facility improvements.
2. That the development is subject to a park development mitigation impact fee as required by City Municipal Code Section 15.44 and any revisions thereof. Developer shall be entitled to a credit towards the subdivision park impact fee obligation for all park improvements constructed by the developer in accordance with the Municipal Code. The developer shall agree that all reimbursements will be made pursuant to the City's Impact Fee Program reimbursement schedule.

### **Sewer Improvements:**

1. That the developer's engineer shall provide a sanitary sewer master plan complete with calculations for the entire subdivision for City Public Works Department review and approval prior to recording a subdivision final map for the development. Provisions shall be made to provide service for future areas of development located adjacent to the subdivision.
2. A 15-inch diameter sanitary sewer main shall be installed within Fargo Avenue in accordance with the Sewer System Master Plan.
3. That the developer may be entitled to a refund for sewer main over-sizing in accordance with City Municipal Code Section 13.08. Developer's engineer shall be required to submit calculations to substantiate request for an over-sizing refund to the City Public Works Department for review and approval. The developer shall agree that all reimbursements will be made pursuant to the City's Impact Fee Program reimbursement schedule.
4. That the developer may be entitled to enter into a reimbursement agreement in accordance with City Municipal Code section 13.08 for sewer system improvements which also provide a benefit to others. Developer shall submit competitive bid proposals to substantiate costs for said sewer system improvements for Public Works Department review and approval prior to beginning construction.

### **Storm Drainage Improvements:**

Luis Verdugo  
ASSISTANT ENGINEER (559) 585-2556

08/06/2020  
DATE



# City of Hanford

## Department of Public Works

900 South 10th Ave. • Hanford, CA 93230-5234 • (559) 585-2550

1. That the developer's engineer shall provide a storm drainage master plan complete with calculations for the entire subdivision for City Public Utilities and Engineering Department review and approval prior to recording a subdivision final map for the development. Provisions shall be made to provide service for future areas of development located adjacent to the subdivision.
2. That all drainage from proposed development shall be retained in retention drainage basin located as shown on the tentative subdivision map. The basin expansion shall be constructed in conformance with City Standards and the entrance to the basin shall be located on Centennial Drive. Entrance shall have a 20-foot setback to allow city vehicles off-street access.
3. That developer shall be required to comply with State of California Water Resources Control Board requirements specifically related to the National Pollution Elimination System Permit process.

### **Water System:**

1. That the developer's engineer shall provide a Water System Master Plan complete with calculations for the entire subdivision for City review and approval prior to recording a subdivision final map for the development. Provisions shall be made to provide service for future areas of development located adjacent to the subdivision.
2. A 12-inch water main shall be installed within Fargo Avenue & Centennial Drive in accordance with the Water System Master Plan.
3. That the developer may be entitled to a refund for water main over-sizing in accordance with City Municipal Code Section 13.04. Developer's engineer shall be required to submit calculations to substantiate request for an over-sizing refund to the City Public Works Department for review and approval. The developer shall agree that all reimbursements will be made pursuant to the City's Impact Fee Program reimbursement schedule.
4. That the developer may be entitled to enter into a reimbursement agreement in accordance with City Municipal Code section 13.04 for water system improvements which also provide a benefit to others. Developer shall submit competitive bid proposals to substantiate costs for said water system improvements for Public Works Department review and approval prior to beginning construction.
5. That all existing water wells located within the proposed development shall be abandoned in conformance with State of California Department of Health Standards.

### **Assessment District:**

1. That the developer shall enter into an agreement with the City for the formation of a tax assessment district for the maintenance of interior subdivision street lighting, decorative block fencing, and landscaping located along the property frontages of Centennial Drive, W. Sangiovese Street, Napa Drive, and Fargo Avenue located as shown on the tentative subdivision map.

Luis Verdugo  
ASSISTANT ENGINEER (559) 585-2556

08/06/2020  
DATE





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## Department of Public Works

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2. That prior to funds from the tax assessment district being obtained, the developer shall be responsible for the maintenance of all landscaping, subdivision interior street lighting and decorative fencing.

### **City Development Impact Fees:**

1. That development is subject to a Police Development Impact Fee as required by City Ordinance No. 19-41-R, and any revisions thereof. Fee payable with each building permit.
2. That development is subject to a Fire Development Impact Fee as required by City Ordinance No. 19-41-R, and any revisions thereof. Fee payable with each building permit.
3. That development is subject to a Park Development Impact Fee as required by City Ordinance No. 19-41-R and any revisions thereof. Fee payable with each building permit.
4. That development is subject to a Transportation mitigation impact fee as required by City Ordinance No. 19-41-R and any revisions thereof. Fee payable with each building permit.
5. That the development is subject to a Wastewater System Development Impact fee as required by City Ordinance No. 19-41-R, and any revisions thereof. Fee payable with each building permit.
6. That development is subject to a Water System Development Impact Fee as required by City Ordinance No. 19-41-R or any revisions thereof. Fee payable with each building permit.
7. That development is subject to a Refuse and Recycling Development Impact Fee as required by City Ordinance No. 19-41-R or any revisions thereof. Fee payable with each building permit.
8. That development is subject to a Storm Drainage Development Impact Fee as required by City Ordinance No. 19-41-R, and any revisions thereof. Fee payable prior to recording of subdivision final map.
9. That development is subject to a 12<sup>th</sup> Avenue Sanitary Sewer area of benefit district assessment fee as required by City Ordinance No. 92-03 or any revisions thereof, if applicable. Fee shall be payable prior to recording to recording of final subdivision map.

Luis Verdugo

ASSISTANT ENGINEER (559) 585-2556

08/06/2020

DATE



## AGENDA STAFF REPORT

|                                |                                         |
|--------------------------------|-----------------------------------------|
| <b>MEETING DATE:</b> 2/14/2023 | <b>AGENDA SECTION:</b> CONSENT CALENDAR |
|--------------------------------|-----------------------------------------|

**SUBJECT:**

Approval of the Minutes of the January 24, 2023 Meeting

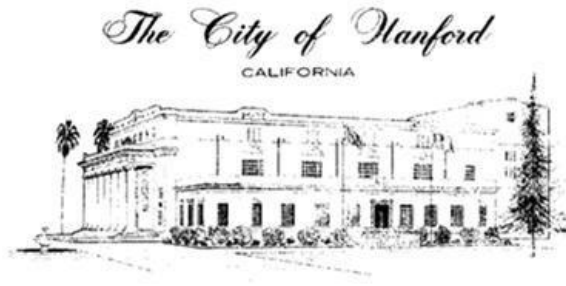
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**RECOMMENDATION:**

Recommendation: Approve the minutes of the January 24, 2023 meeting.

**ATTACHMENTS:**

1. 01-24-23 Minutes



**MINUTES**  
**PLANNING COMMISSION**  
**of the**  
**CITY OF HANFORD**

**COUNCIL CHAMBERS**  
**400 N. Douty St.**  
**5:30 PM, Tuesday, January 24, 2023**

Commissioners will meet in person in the Council Chambers. The meeting will also be livestreamed on the City's website: <http://livestream.hanford.city/>

**CALL TO ORDER**

Chair SANCHEZ was absent. Commissioner DOUGLAS called the meeting to order at 5:30 p.m.

**ROLL CALL**

| Attendee Name   | Title | Status  | Arrived |
|-----------------|-------|---------|---------|
| Dennis Ham      |       | Present | 4:45 PM |
| Richard Douglas |       | Present | 4:47 PM |
| Martin Devine   |       | Present | 4:46 PM |
| Jacob Sanchez   |       | Absent  |         |
| Gunther Norris  |       | Present | 4:44 PM |

**INVOCATION**

None.

**FLAG SALUTE**

Commissioner DEVINE led the flag salute.

**PUBLIC COMMENT**

*This is the time for citizens to comment on subject matters not on the agenda and that are within the jurisdiction of the Commission. This is also the public's opportunity to request an item from the Consent Calendar be pulled for discussion purposes or to comment on any item on the agenda. Comments related to Public Hearing items will be heard at the time the item is discussed. A maximum of **three minutes** is allowed*

*for each speaker. Please begin your comments by stating your name and providing your city of residence.*

None.

## **CONSENT CALENDAR**

*Consent Calendar items are considered routine and will be enacted in one motion. There will be no separate discussion of these matters unless a request is made and then the item will be removed from the Consent Calendar to be discussed and voted upon by a separate motion.*

- 1. Approval of the Minutes of the January 10, 2023 Meeting**
- 2. Time Extension 2023-01, a request to extend the life of Conditional Use Permit No. 2019-06 and Site Plan Review No. 2019-32 for one year. The project is located north of Glendale Avenue, west of Aquifer Drive (APN 011-010-044).**

Motion to approve the Consent Calendar.

|                  |                              |
|------------------|------------------------------|
| <b>RESULT:</b>   | <b>APPROVED [UNANIMOUS]</b>  |
| <b>MOVER:</b>    | Dennis Ham                   |
| <b>SECONDER:</b> | Martin Devine                |
| <b>AYES:</b>     | Ham, Douglas, Devine, Norris |
| <b>ABSENT:</b>   | Sanchez                      |

## **PUBLIC HEARING**

- 3. CONTINUED FROM JANUARY 10, 2023 Vesting Tentative Tract 937: A request by DR Horton to subdivide 21.12 acres into a 95-lot subdivision, including a 1.6-acre stormwater retention basin in R-L-5 Low-Density Residential zone district. Mitigated Negative Declaration No. 2022-101: An initial study was prepared and it was determined that the project will not result in significant impacts to the environment with the incorporation of mitigation measures; therefore, Mitigated Negative Declaration 2021-100 has been prepared. The Project is adjacent to and fronts the south side of Hanford Armona Road and lies between 12th Avenue and 13th Avenue. APN: 011-040-007**

Commissioner DOUGLAS opened the public hearing and called for the staff report.

Senior Planner Myers presented the staff report, recommended approval, and invited questions of staff.

Commissioner HAM noted that there are streets with names similar to others nearby (Spring Crest Street and Spring Crest Drive; Elaine Drive and Elaine Lane). He was concerned that this might cause some confusion. Ms. Myers replied that the street names are not final. The building official assigns addresses within the City, and he is aware of the similar street names. Any address issues can be addressed and will be official with the final map. He had additional questions regarding road widths, which were addressed by Director Waters and the applicant..

He was also concerned that there was only one entrance/exit to Hanford-Armona Road, for 95 homes.

Director Waters clarified that the Resolution references Storm Drain Impact Fees; and typically, when a developer provides a storm drain basin, those impact fees are waived, as there is no impact to the City's storm drain system. Staff does references those fees and how they are calculated; however, they will likely be waived.

Commissioner DOUGLAS opened Public Comment:

**FAVOR**

Alex Dwiggins, with QK (formerly Zumwalt-Hansen) introduced Melody Haigh and stated that they were both available to answer questions from the Commissioners. He thanked staff for their presentation and for working with them. Mr. Dwiggins provided the following information, in response to Commissioner HAM's questions:

- He noted referencing Public Works' comment regarding street improvements, states that Hanford-Armona Road has a curb-to-curb of 64 feet, with a 14-foot median painted in the middle.
- The plan for access on Aquifer is to have a dedicated left-hand turn lane westbound on Hanford-Armona Road, as ingress to the subdivision. On Aquifer northbound, a left or right turn will be available.
- The traffic study listed no specific mitigation measures needed for the intersections, including Aquifer. Northbound lane on Aquifer would be the eastbound lane on Spring Crest. The travel lanes consist of 12 feet of pavement and a 4-foot paved shoulder.

Melody Haigh, representing D R Horton, thanked staff for their presentation. She noted that they are looking forward to breaking ground soon on a new subdivision in Hanford. She encouraged acceptance of the proposal and invited questions.

**OPPOSED**

None.

Motion to certify Mitigated Negative Declaration No. 2022-101 for the project.

|                  |                              |
|------------------|------------------------------|
| <b>RESULT:</b>   | <b>APPROVED [UNANIMOUS]</b>  |
| <b>MOVER:</b>    | Dennis Ham                   |
| <b>SECONDER:</b> | Martin Devine                |
| <b>AYES:</b>     | Ham, Douglas, Devine, Norris |
| <b>ABSENT:</b>   | Sanchez                      |

Motion to adopt Resolution No. 2023-03, approving Vesting Tentative Tract 937.

|                  |                              |
|------------------|------------------------------|
| <b>RESULT:</b>   | <b>APPROVED [UNANIMOUS]</b>  |
| <b>MOVER:</b>    | Gunther Norris               |
| <b>SECONDER:</b> | Martin Devine                |
| <b>AYES:</b>     | Ham, Douglas, Devine, Norris |
| <b>ABSENT:</b>   | Sanchez                      |

**DIRECTOR'S COMMENTS**

Director Waters notified the Commission that staff will be taking a request to City Council, at the February 7, 2023 meeting, for authorization to apply for grant funds for corridor planning for east Lacey and around the High Speed Rail Station.

**COMMISSIONERS' ITEMS OF INTEREST**

*At this time, any Commissioner may ask a question for clarification of matters within the Planning Commission's jurisdiction, make an announcement, or report briefly on activities in their role as a Planning Commissioner. In addition, subject to the Planning Commissioner's Handbook, Commissioners may request staff to report back to the Planning Commission at a subsequent meeting concerning any matter within Commissioner's jurisdiction (GC 54954.2).*

None.

**ADJOURNMENT**

Commissioner DOUGLAS adjourned the meeting at 5:52 p.m.

Respectfully submitted,

Diana Black  
Recording Secretary



## AGENDA STAFF REPORT

|                                |                                         |
|--------------------------------|-----------------------------------------|
| <b>MEETING DATE:</b> 2/14/2023 | <b>AGENDA SECTION:</b> GENERAL BUSINESS |
|--------------------------------|-----------------------------------------|

### **SUBJECT:**

**Scoping Meeting or Vesting Tentative Tract 938:** A request by DR Horton to subdivide approximately 95 acres into 457 single-family residences, a drainage retention basin, and a 5.82-acre park. The project is located east of 10 ½ Avenue between Hanford Armona Road and Houston Avenue (APN 011-440-015 and 011-440-014).

The City of Hanford will be the Lead Agency and will prepare a focused Environmental Impact Report (EIR) for the proposed Lunaria Residential Development Project (TTM 938; Project).

### **RECOMMENDATION:**

Recommendation:

Recommended Motion:

### **BACKGROUND:**

### **FISCAL IMPACT:**

### **ATTACHMENTS:**

1. Attachment 1 - Initial Study

**CITY OF HANFORD PLANNING COMMISSION  
STAFF REPORT  
Tuesday, February 14, 2022**

**PROJECT:**                **Scoping Meeting or Vesting Tentative Tract 938:** A request by DR Horton to subdivide approximately 95 acres into 457 single-family residences, a drainage retention basin, and a 5.82-acre park.

**LOCATION:**            The project is located east of 10 ½ Avenue between Hanford Armona Road and Houston Avenue (APN 011-440-015 and 011-440-014).

**PLANNER:**            Gabrielle de Silva, Senior Planner

**STAFF RECOMMENDATION**

Staff recommends that the Planning Commission:

1. Open the scoping meeting, request a report from staff, and invite comments from the public.

**Scoping Meeting Background**

The purpose of a public scoping meeting is to inform the public that the lead agency, the City of Hanford (City) is evaluating a project under the California Environmental Quality Act (CEQA) and to solicit public comment regarding the type and extent of environmental analyses to be undertaken. At the scoping stage, the project design is not completed, and general information is available to provide to the public. The City describes the preliminary concept of the project, and asks for feedback.

The public scoping meetings will consist of an informal open house where attendees can talk with staff about the overview of the CEQA process and of the proposed project. Attendees will have an opportunity to provide oral comment recorded by the clerk.

The public has the option of submitting scoping comments orally and in writing at the Public Scoping Meeting or submitting written comments to the contact person by the date indicated via e-mail, fax, or mail. All comments received from the public, agencies, and organizations must be considered by the City. Comments must be received by the last day of the posted public comment period (March 4, 2023).

Upon completion of the scoping process, all public comments will be organized and will be considered in the preparation of the DEIR. The DEIR will evaluate potential environmental impacts associated with the proposed project.



The below Notice of Preparation (NOP) was published in the Hanford Sentinel, published on the City's website, and posted to OPR's CEQAnet site, as required by CEQA.

### **Notice of Preparation/Initial Study for a Focused Environmental Impact Report**

City of Hanford

To: Agencies and Interested Parties

Date: February 2, 2023

Subject: Notice of Preparation of a Focused Environmental Impact Report for Vesting Tentative Tract 938.

Notice is hereby given that the City of Hanford will be the Lead Agency and will prepare a focused Environmental Impact Report (EIR) for the proposed Lunaria Residential Development Project (TTM 938; Project). An Initial Study has been prepared along with this Notice of Preparation (NOP), which scopes out environmental topics for further review. The focused EIR will address the potential physical environmental effects of the proposed projects that have not been scoped out, as outlined in the California Environmental Quality Act (CEQA). The City is requesting comments on the scope and content of this focused EIR.

A scoping session will be held on February 14, 2023 at 5:30 p.m. in the Council Chambers of the Civic Auditorium, 400 N. Douty Street, Hanford, CA 93230.

The scoping session, which is part of the focused EIR process, is the time when the City solicits input from the public and agencies on specific topics they believe should be addressed in the environmental analysis. The scoping process is designed to enable the City to determine the scope and content of the focused EIR, identify the range of actions, and identify potentially significant environmental effects, alternatives, and mitigation measures to be analyzed in the focused EIR.

#### ***Project Location***

The Project site is adjacent to 10 ½ Avenue to the west and between Hanford Armona Road and Houston Avenue in the City of Hanford, Kings County, CA. The Project is on Assessor Parcel Numbers (APN) 011-440-015 and 011-440-014, within Section 1, Township 19S, Range 21E, Mount Diablo Base and Meridian (MDB&M).

#### ***Project Description***

The Applicant proposes the construction of 457 single-family residences, internal roads, a drainage retention basin, and a 5.82-acre park on an approximately 95-acre site (Project). Access to the proposed subdivision will be from 10 1/2 Avenue. The development will build 10 ½ Avenue with a minimum 34-foot road right of way (ROW).

In order for the Project to be constructed, approval of the following actions is required:  
Tentative Tract Map 938 – Planning Commission Approval

Construction will take approximately 24 months, with a total buildout of the homes by Q4 2025. There will be six phases, with the following lots constructed per phase:  
Phase 1 – 106 lots

Phase 2 – 65 lots  
Phase 3 – 78 lots  
Phase 4 – 67 lots  
Phase 5 – 67 lots  
Phase 6 – 69 lots

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document is 30 days (CEQA Section 15073[b]). The public review period begins on February 2 and ends on March 4, 2023. For further information, please contact Gabrielle de Silva Myers, 317 N. Douty Street, Hanford, CA 93230. (559) 585-2500

The initial study for the proposed project is attached as **Attachment 1**.

**DRAFT NOTICE OF PREPARATION/INITIAL STUDY FOR  
A FOCUSED ENVIRONMENTAL IMPACT REPORT**

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**CITY OF HANFORD  
TENTATIVE TRACT MAP 938**



**OCTOBER 2022**

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# DRAFT NOTICE OF PREPARATION/INITIAL STUDY FOR A FOCUSED ENVIRONMENTAL IMPACT REPORT

## TENTATIVE TRACT MAP 938

**Prepared for:**



City of Hanford - Community Development Department  
317 N. Douty Street  
Hanford, CA 93230  
Contact Person: Gabrielle de Silva Myers  
Phone: (559) 585-2500

**Consultant:**



5080 California Avenue, Suite 220  
Bakersfield, CA 93309  
Contact: Jaymie L. Brauer  
Phone: (661) 616-2600

October 2022

## Table of Contents

|                                                        |            |
|--------------------------------------------------------|------------|
| <b>SECTION 1 - Introduction .....</b>                  | <b>1-1</b> |
| 1.1 - Overview .....                                   | 1-1        |
| 1.2 - California Environmental Quality Act .....       | 1-1        |
| 1.3 - Impact Terminology.....                          | 1-2        |
| 1.4 - Document Organization and Contents .....         | 1-2        |
| 1.5 - Incorporated by Reference .....                  | 1-3        |
| <b>SECTION 2 - Project Description.....</b>            | <b>2-1</b> |
| 2.1 - Introduction.....                                | 2-1        |
| 2.2 - Project Location .....                           | 2-1        |
| 2.3 - Surrounding Land Uses .....                      | 2-1        |
| 2.4 - Proposed Project .....                           | 2-1        |
| 2.4.1 - Project Description.....                       | 2-1        |
| <b>SECTION 3 - Initial Study.....</b>                  | <b>3-1</b> |
| 3.1 - Environmental Checklist.....                     | 3-1        |
| 3.2 - Environmental Factors Potentially Affected ..... | 3-7        |
| 3.3 - Determination.....                               | 3-8        |
| 3.4 - Evaluation of Environmental Impacts.....         | 3-9        |
| 3.4.1 - Aesthetics .....                               | 3-11       |
| 3.4.2 - Agriculture and Forestry Resources.....        | 3-14       |
| 3.4.3 - Air Quality .....                              | 3-17       |
| 3.4.4 - Biological Resources.....                      | 3-24       |
| 3.4.5 - Cultural Resources .....                       | 3-29       |
| 3.4.6 - Energy .....                                   | 3-32       |
| 3.4.7 - Geology and Soils .....                        | 3-35       |
| 3.4.8 - Greenhouse Gas Emissions.....                  | 3-41       |
| 3.4.9 - Hazards and Hazardous Materials.....           | 3-45       |
| 3.4.10 - Hydrology and Water Quality .....             | 3-51       |
| 3.4.11 - Land Use and Planning.....                    | 3-57       |
| 3.4.12 - Mineral Resources .....                       | 3-59       |
| 3.4.13 - Noise .....                                   | 3-61       |
| 3.4.14 - Population and Housing.....                   | 3-65       |
| 3.4.15 - Public Services.....                          | 3-67       |
| 3.4.16 - Recreation .....                              | 3-71       |
| 3.4.17 - Transportation and Traffic.....               | 3-73       |
| 3.4.18 - Tribal Cultural Resources.....                | 3-75       |

|                                                   |            |
|---------------------------------------------------|------------|
| 3.4.19 - Utilities and Service Systems .....      | 3-78       |
| 3.4.20 - Wildfire .....                           | 3-83       |
| 3.4.21 - Mandatory Findings of Significance ..... | 3-85       |
| <b>SECTION 4 - List of Preparers.....</b>         | <b>4-1</b> |
| 4.1 - Lead Agency .....                           | 4-1        |
| 4.2 - QK.....                                     | 4-1        |
| <b>SECTION 5 - Bibliography.....</b>              | <b>5-1</b> |

## Appendices

Appendix A – Air Quality and Greenhouse Gas Study  
Appendix B – Biological Resources Evaluation  
Appendix C – Cultural Technical Memo  
Appendix D – Traffic Impact Analysis

## List of Figures

|                                    |     |
|------------------------------------|-----|
| Figure 3-1 Regional Map .....      | 3-4 |
| Figure 3-2 Project Site Area ..... | 3-5 |
| Figure 3-3 Tract Map .....         | 3-6 |

## List of Tables

|                                                                           |      |
|---------------------------------------------------------------------------|------|
| Table 3.4.3-1 SJVAPCD Pollutant Thresholds of Significance.....           | 3-19 |
| Table 3.4.3-2 Project Construction Emissions.....                         | 3-20 |
| Table 3.4.3-3 Project Operational Emissions (tons/year) .....             | 3-20 |
| Table 3.4.3-5 Screening Levels for Potential Odor Sources .....           | 3-23 |
| Table 3.4.6-1 Project Operational Natural Gas and Electricity Usage ..... | 3-33 |
| Table 3.4.8-1 Project Operational Greenhouse Gas Emissions.....           | 3-42 |
| Table 3.4.13-1 Different Levels of Groundborne Vibration .....            | 3-63 |
| Table 3.4.13-2 Typical Vibration Levels for Construction Equipment.....   | 3-63 |
| Table 3.4.14-1 Regional Housing Needs 2014-2024 (Hanford) .....           | 3-65 |

## **NOTICE OF PREPARATION/INITIAL STUDY FOR A FOCUSED ENVIRONMENTAL IMPACT REPORT**

Notice is hereby given that the City of Hanford will be the Lead Agency and will prepare a focused Environmental Impact Report (EIR) for the proposed Lunaria Residential Development Project (TTM 938; Project). An Initial Study has been prepared along with this Notice of Preparation (NOP), which scopes out environmental topics for further review. The focused EIR will address the potential physical environmental effects of the proposed projects that have not been scoped out, as outlined in the California Environmental Quality Act (CEQA). The City is requesting comments on the scope and content of this focused EIR.

A scoping session will be held on February 14, 2023 at 5:30 p.m. in the Council Chambers of the Civic Auditorium, 400 N. Douty Street, Hanford, CA 93230. The scoping session, which is part of the focused EIR process, is the time when the City solicits input from the public and agencies on specific topics they believe should be addressed in the environmental analysis. The scoping process is designed to enable the City to determine the scope and content of the focused EIR, identify the range of actions, and identify potentially significant environmental effects, alternatives, and mitigation measures to be analyzed in the focused EIR.

### ***Project Location***

The Project site is adjacent to 10 ½ Avenue to the west and between Hanford Armona Road and Houston Avenue in the City of Hanford, Kings County, CA. The Project is on Assessor Parcel Numbers (APN) 011-440-015 and 011-440-014, within Section 1, Township 19S, Range 21E, Mount Diablo Base and Meridian (MDB&M).

### ***Project Description***

The Applicant proposes the construction of 457 single-family residences, internal roads, a drainage retention basin, and a 5.82-acre park on an approximately 95-acre site (Project). Access to the proposed subdivision will be from 10 1/2 Avenue. The development will build 10 ½ Avenue with a minimum 34-foot road right of way (ROW).

In order for the Project to be constructed, approval of the following actions is required:

- Tentative Tract Map 938

Construction will take approximately 24 months, with a total buildout of the homes by Q4 2025. There will be six phases, with the following lots constructed per phase:

- Phase 1 – 106 lots
- Phase 2 – 65 lots
- Phase 3 – 78 lots
- Phase 4 – 67 lots
- Phase 5 – 67 lots
- Phase 6 – 69 lots

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on February 2 and ends on March 4, 2023. For further information, please contact Gabrielle de Silva Myers, 317 N. Douty Street, Hanford, CA 93230. (559) 585-2500

### ***Mailing Address and Phone Number of Contact Person***

Mel Mercado  
Forward Planning and Land Development Manager  
D.R. Horton, America's Builder – South  
419 W Murray Avenue  
Visalia, CA 93291

### ***Findings***

As Lead Agency, the City of Hanford finds that the Project will have a significant effect on the environment. The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 - Environmental Checklist*) has identified one or more potentially significant effects on the environment. Pursuant to CEQA Guidelines Section 115064 (a)(1), an Environmental Impact Report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less-than-significant levels. The City of Hanford has determined that preparation of a focused Environmental Impact Report for the Project is necessary.



## SECTION 1 - INTRODUCTION

### 1.1 - Overview

D.R. Horton (the Applicant) proposes to develop 457 residential units on approximately 95 acres as well as a park and appurtenant infrastructure consistent with the City of Hanford General Plan Designation R-L-5, Low Density Residential.

### 1.2 - California Environmental Quality Act

The City of Hanford is the Lead Agency for this Project pursuant to the CEQA Guidelines (Public Resources Code Section 15000 et seq.). The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 – Initial Study*) provides an analysis that examines the potential environmental effects of the construction and operation of the Project. Section 15063 of the CEQA Guidelines requires the Lead Agency to prepare an IS to determine whether a discretionary project will have a significant effect on the environment. A Mitigated Negative Declaration (MND) is appropriate when an IS has been prepared, and a determination can be made that no significant environmental effects will occur because revisions to the Project have been made or mitigation measures will be implemented that reduce all potentially significant impacts to less-than-significant levels. Section 15064 (a)(1) states that an Environmental Impact Report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less-than-significant levels. A Negative Declaration (ND) may be prepared instead if the Lead Agency finds that there is no substantial evidence in light of the whole record that the project may have a significant effect on the environment. An ND is a written statement describing the reasons why the proposed Project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, an ND or MND shall be prepared for a project subject to CEQA when either:

- The IS shows there is no substantial evidence in light of the whole record before the agency that the proposed Project may have a significant effect on the environment; or
- The IS identified potentially significant effects, but:
  - Revisions in the project plans or proposals made by or agreed to by the Applicant before the proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and
  - There is no substantial evidence in light of the whole record before the agency that the proposed Project as revised may have a significant effect on the environment.

Based on the IS, the Lead Agency has determined that the environmental review for the proposed application can potentially result in a significant impact and requires that a focused EIR be prepared.

### **1.3 - Impact Terminology**

The following terminology is used to describe the level of significance of impacts.

- A finding of “no impact” is appropriate if the analysis concludes that the Project would not affect a topic area in any way.
- An impact is considered “less than significant” if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered “less than significant with mitigation incorporated” if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of environmental commitments that have been agreed to by the Applicant.
- An impact is considered “potentially significant” if the analysis concludes that it could have a substantial adverse effect on the environment.

### **1.4 - Document Organization and Contents**

The content and format of this IS/MND is designed to meet the requirements of CEQA. The report contains the following sections:

- *Section 1 – Introduction:* This section provides an overview of CEQA requirements, intended uses of the IS/MND, document organization, and a list of regulations that have been incorporated by reference.
- *Section 2 – Project Description:* This section describes the Project and provides data on the site’s location.
- *Section 3 – Environmental Checklist:* This section contains the evaluation of 21 different environmental resource factors contained in Appendix G of the CEQA Guidelines. Each environmental resource factor is analyzed to determine whether the proposed Project would have an impact. One of four findings is made: no impact, less-than-significant impact, less than significant with mitigation, or significant and unavoidable. If the evaluation results in a finding of significant and unavoidable for any of the 21 environmental resource factors, then an Environmental Impact Report will be required.
- *Section 4 – List of Preparers:* This section identifies the individuals who prepared the IS.
- *Section 5 – Bibliography:* This section contains a full list of references that were used in the preparation of this IS.

### ***1.5 - Incorporated by Reference***

The following documents and/or regulations are incorporated into this IS/MND by reference:

- City of Hanford 2035 General Plan (2017)
- City of Hanford 2016-2024 Adopted Housing Element
- City of Hanford Urban Water Management Plan
- City of Hanford Water Information (2021)
- City of Hanford Recycling & Green Waste
- Cal Recycle (2022)
- Hanford Emergency Management Plan
- Kings County Airport Land Use Compatibility Plan
- Hanford Municipal Code
- California Building Code Title 24
- Kings County Safety Element

## **SECTION 2 - PROJECT DESCRIPTION**

### **2.1 - Introduction**

D.R. Horton (the Applicant) proposes to develop 457 residential units on approximately 95 acres as well as a park and appurtenant infrastructure consistent with the City of Hanford General Plan Designation R-L-5, Low Density Residential.

### **2.2 - Project Location**

The Project area is primarily located in the southern portion of Hanford's city limit, located between Hanford Armona Road and Houston Avenue, adjacent to the west of 10 ½ Avenue, and approximately one mile south of SR 198 (see Figure 2-1).

The Project is on Assessor Parcel Numbers (APN) 011-440-015 and 011-440-014, within Section 1, Township 19S, Range 21E, Mount Diablo Base and Meridian (MDB&M).

### **2.3 - Surrounding Land Uses**

Surrounding land uses consist of undeveloped and residential development to the north, a mix of commercial and undeveloped agricultural land to the east, agricultural land to the south, and residential land to the west.

### **2.4 - Proposed Project**

#### **2.4.1 - PROJECT DESCRIPTION**

The Applicant proposes the construction of 457 single-family residences, internal roads, a drainage retention basin, and a 5.82-acre park on an approximately 95-acre site (Project). Access to the proposed subdivision will be from 10 ½ Avenue. Since 10 ½ Avenue is not already fully built out, as a part of the project, the development will be required to build 10 ½ Avenue with a minimum 34-foot road right of way (ROW). This will include two travel lanes and a sidewalk, curb, and gutter. There is an existing residence on the property that will be demolished.

In order for the Project to be constructed, approval of the following actions is required:

- Tentative Tract Map 938

Construction will take approximately 24 months, with total buildout of the homes by Q4 2025. There will be six phases, with the following lots constructed per phase:

- Phase 1 – 106 lots
- Phase 2 – 65 lots
- Phase 3 – 78 lots
- Phase 4 – 67 lots

- Phase 5 – 67 lots
- Phase 6 – 69 lots

It is anticipated that the following pieces of equipment will be used during construction activities:

- Roller
- Large bulldozer
- Loaded trucks
- Excavator
- Generator
- Service truck
- Air compressor

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on February 2 and ended on March 4, 2023. For further information, please Gabrielle de Silva Myers, 317 N. Douty Street, Hanford, CA 93230, (559) 585-2500.

## **SECTION 3 - INITIAL STUDY**

### **3.1 - Environmental Checklist**

**1. Project Title:**

Tentative Tract Map 938: Lunaria Residential Development Project

**2. Lead Agency Name and Address:**

City of Hanford  
317 N. Douty Street  
Hanford, CA 93230

**3. Contact Person and Phone Number:**

Gabrielle de Siva Myers – (559) 585-2578

**4. Project Location:**

The Project site is adjacent to 10 1/2 Avenue to the west and between Hanford Armona Road and Houston Avenue in the City of Hanford, Kings County, CA. The Project is on Assessor Parcel Numbers (APN) 011-440-015 and 011-440-014, within Section 1, Township 19S, Range 21E, Mount Diablo Base and Meridian (MDB&M).

**5. Project Sponsor's Name and Address:**

Mel Mercado  
D.R. Horton  
419 West Murray Avenue  
Visalia, CA 93291

**6. General Plan Designation:**

Existing: City of Hanford – Low Density Residential

**7. Zoning:**

Existing: City of Hanford – Residential Low Density (R-L-5, 5,000 square feet)

**8. Description of Project:**

The Applicant proposes the construction of 457 single-family residences, internal roads, a drainage retention basin, and a 5.82-acre park on an approximately 95-acre site (Project). Access to the proposed subdivision will be from 10 1/2 Avenue. 10 1/2 Avenue is not already fully built out; as a part of the project, the development will be required to build 10 1/2 Avenue with a minimum 34-foot road right of way (ROW). This will include

two travel lanes and a sidewalk, curb, and gutter. There is an existing residence on the property that will be demolished.

In order for the Project to be constructed, approval of the following actions is required:

- Tentative Tract Map (TTM) 938

Construction will take approximately 24 months, with total buildout of the homes by Q4 2025. There will be six phases, with the following lots constructed per phase:

- Phase 1 – 106 lots
- Phase 2 – 65 lots
- Phase 3 – 78 lots
- Phase 4 – 67 lots
- Phase 5 – 67 lots
- Phase 6 – 69 lots

It is anticipated that the following pieces of equipment will be used during construction activities:

- Roller
- Large bulldozer
- Loaded trucks
- Excavator
- Generator
- Service truck
- Air compressor

## **9. Surrounding Land Uses and Setting:**

Surrounding land uses consist of undeveloped and residential development to the north, a mix of commercial and undeveloped agricultural land to the east, agricultural land to the south, and residential land to the west.

## **10. Other Public Agencies Whose Approval is Required:**

- San Joaquin Valley Air Pollution Control District

## **11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

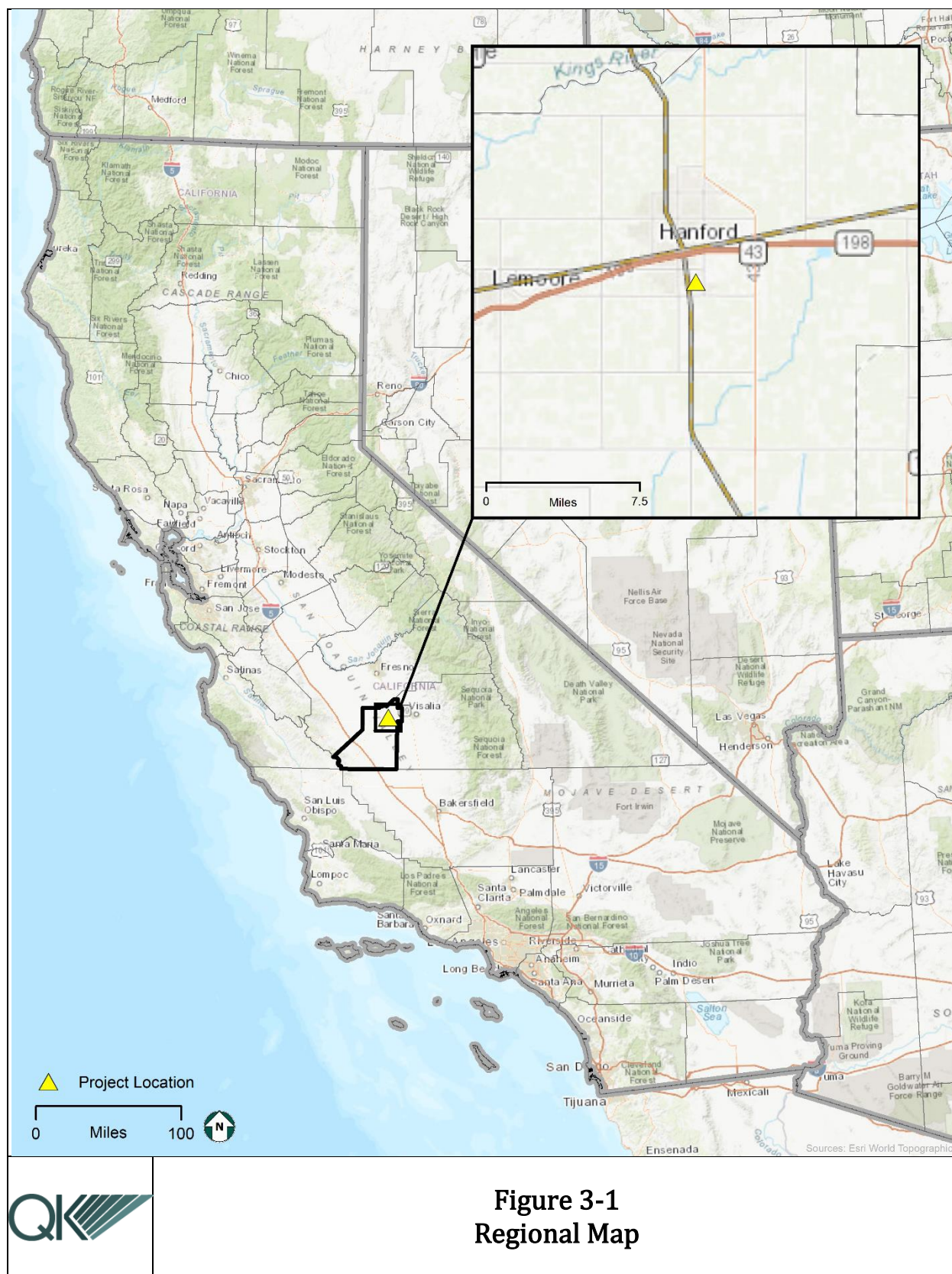
The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the Lead Agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed Project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or the Lead Agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1-2)). According to the most recent census data, California is home to 109 currently recognized Indian tribes. Tribes in California currently have nearly 100 separate reservations or rancherias. Kings County has a number of tribal groups in the area.

Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

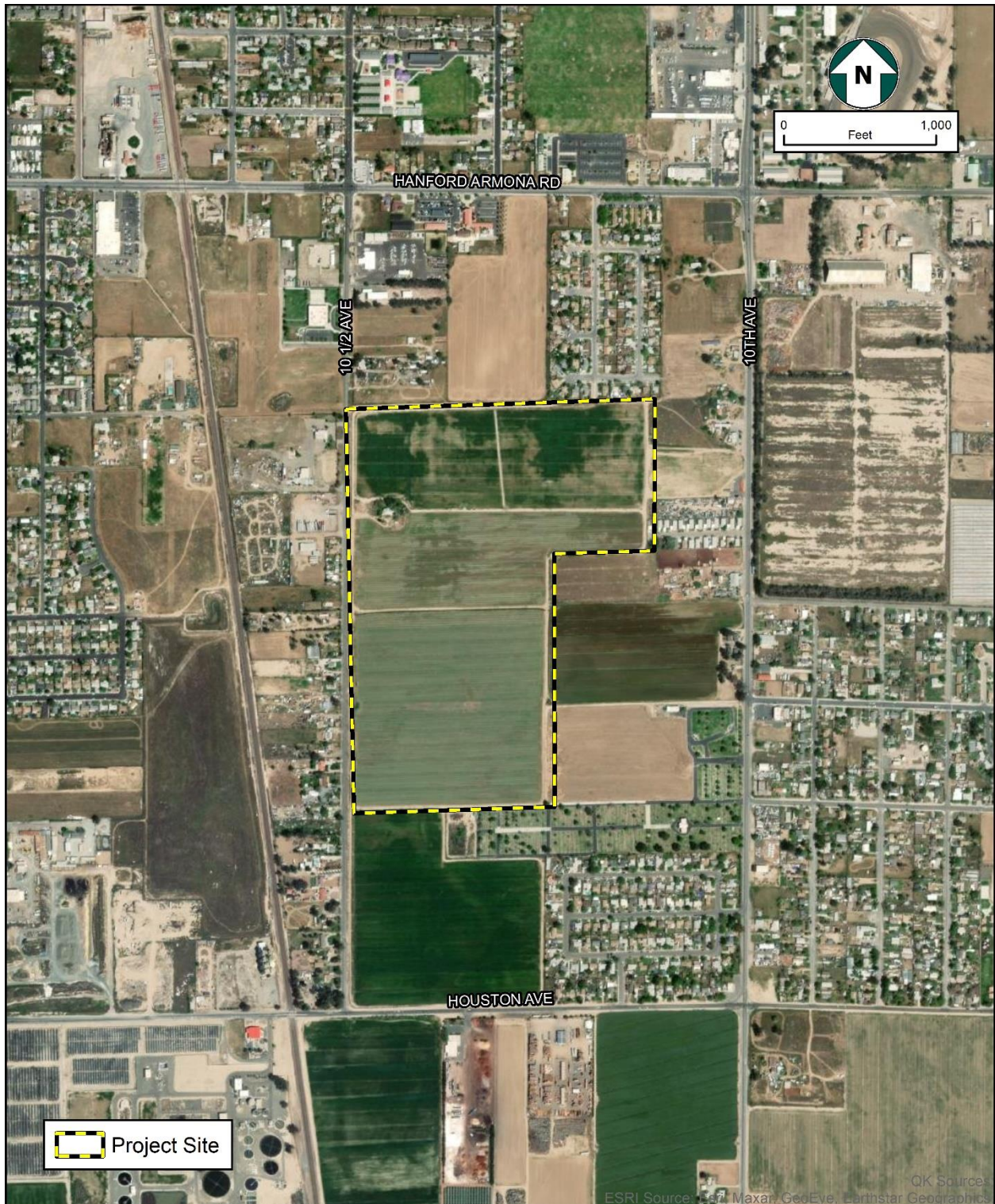
1 tribe has requested to be notified pursuant to Assembly Bill 52 (AB 52). A certified letter was mailed to the above-mentioned tribes on March 1, 2022. The 30-day comment period ended on April 1, 2022.

NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and Project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code Section 21082.3(c) contains provisions specific to confidentiality.



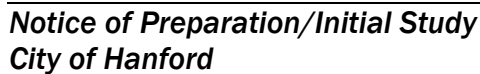






**Figure 3-2**  
**Project Site Area**





### 3.2 - Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |                                                        |                                                             |                                                             |
|--------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Aesthetics                    | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality                        |
| <input type="checkbox"/> Biological Resources          | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Energy                             |
| <input type="checkbox"/> Geology and Soils             | <input type="checkbox"/> Greenhouse Gas Emissions           | <input type="checkbox"/> Hazards and Hazardous Materials    |
| <input type="checkbox"/> Hydrology and Water Quality   | <input type="checkbox"/> Land Use and Planning              | <input type="checkbox"/> Mineral Resources                  |
| <input type="checkbox"/> Noise                         | <input type="checkbox"/> Population and Housing             | <input type="checkbox"/> Public Services                    |
| <input type="checkbox"/> Recreation                    | <input checked="" type="checkbox"/> Transportation          | <input type="checkbox"/> Tribal Cultural Resources          |
| <input type="checkbox"/> Utilities and Service Systems | <input type="checkbox"/> Wildfire                           | <input type="checkbox"/> Mandatory Findings of Significance |

### 3.3 - Determination

On the basis of this initial evaluation:

- ☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed Project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

---

Signature

Gabrielle Myers

---

Printed Name

---

Date

---

For

---

### 3.4 - Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a Lead Agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the Lead Agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The Lead Agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a. Earlier Analysis Used. Identify and state where they are available for review.
  - b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
  - a. The significance criteria or threshold, if any, used to evaluate each question.
  - b. The mitigation measure identified, if any, to reduce the impact to less than significance.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.1 - AESTHETICS

Except as provided in Public Resources Code Section 21099, would the Project:

- |    |                                                                                                                                                                                                                                                                                                                                                                          |                          |                          |                                     |                                     |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. | Have a substantial adverse effect on a scenic vista?                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. | Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?                                                                                                                                                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. | In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. | Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

#### Impact #3.4.1a – Would the Project have a substantial adverse effect on a scenic vista?

A scenic vista is an area identified or known for high scenic quality. Scenic vistas may be designated by a federal, State, or local agency and may also include an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. The City of Hanford does not designate any scenic vistas within its jurisdiction. There are very few scenic vistas within the Central Valley. The Coastal Range Mountains and the Sierra Nevada can be considered scenic vistas. The proposed Project is located approximately 40 miles from the Coastal Range and approximately 45 miles from the Sierra Nevada. Since there are no scenic vistas in the immediate proximity of the proposed Project site, there would be no impacts related to a scenic vista. Therefore, no impacts are anticipated, and no further analysis in the EIR is warranted.



**Impact #3.4.1b - Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

The proposed Project is not in the vicinity of a scenic highway as identified by the City of Hanford or Caltrans. The closest eligible scenic highway is a portion of State Route (SR) 198 that runs from SR 99 east through Visalia (California Department of Transportation, 2022). This portion of SR 198 is more than 14 miles east of the Project site and will not be visible or impacted by the Project. The site is flat with little topography and no trees or rock outcroppings. There would be no impacts related to these types of scenic resources.

Downtown Hanford is identified as the City's historic center (City of Hanford, 2017). Three buildings are listed on the National Registry of Historic Places and the State Register of Historic Places. The Kings County Courthouse is approximately five miles to the northwest, and the Carnegie Library and the Taoist Temple are approximately four miles to the northwest. Therefore, the Project would not have an impact on any of these historic buildings. There will be no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.1c - Would the Project in non-urbanized areas substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?**

The area surrounding the Project site consists of urban development and undeveloped agricultural land.

Several sections of the Hanford Municipal Code regulate physical development by controlling the appearance of new development and the placement of new development with consideration for surrounding uses. The Project development will comply with the General Plan, as the Project area is currently zoned R-L-5 Low Density Residential.

There are no scenic vistas within the surrounding area and existing urban areas near the Project site; therefore, the proposed Project will not substantially degrade the existing characteristics of the area. Therefore, impacts from the Project are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.1d - Except as provided in Public Resources Code Section 21099, would the Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?**

The Project would create a new source of light and glare, which may affect day and nighttime views of the area. Construction of the proposed Project would generally occur during daytime hours, typically from 7:00 a.m. to 8:00 p.m., per General Plan section 9.10.060 A.10. Lighting needed during construction would be directed downward and shielded to focus illumination on the desired work areas and prevent light spillage onto adjacent properties. Because lighting used to illuminate work areas would be shielded, focused downward, and turned off by

8:00 p.m., the potential for lighting to affect any residents adversely is minimal. Security lighting would also be shielded and focused downward to minimize light spill onto neighboring properties. Increased truck traffic and the transport of construction materials to the Project site would temporarily increase glare conditions during construction. However, this increase in glare would be minimal and of short duration. Construction activity would focus on specific areas on the sites, and any sources of glare would not be stationary for a prolonged period. Therefore, the proposed Project's construction would not create a new source of substantial glare that would affect daytime views in the area.

Operational impacts would be limited to residential lighting, including homes and streetlights. The Project exterior streetlights and residential lighting will be designed to minimize reflective glare and light scatter. The Project will comply with the applicable provisions of the Hanford Municipal Code Development Standards, such as Section 17.50.140 – Outdoor Lighting Standards (City of Hanford, 2022). Additionally, the California Building Code Title 24 contains standards for outdoor lighting that are intended to reduce light pollution and glare by regulating light power and brightness, shielding, and sensor controls. These requirements would substantially reduce potential nuisances from light or glare. Therefore, impacts resulting from the Project are considered to be less than significant, and no further analysis in the EIR is warranted.

.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.2 - AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:

|                                                                                                                                                                                                                                                                                            |                          |                          |                                     |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Conflict with existing zoning for agricultural use or a Williamson Act contract?                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| d. Result in the loss of forest land or conversion of forest land to non-forest use?                                                                                                                                                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?                                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

**Impact #3.4.2a – Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

CEQA uses the California Department of Conservation Division of Land Resource Protection's Farmland Mapping and Monitoring Program (FMMP) categories of "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland" to define "agricultural land" for the purposes of assessing environmental impacts (PRC Section 21060.1[a]). According to the California Department of Conservation Important Farmland Finder, the Project site is designated as approximately 88 acres of Prime Farmland, 6 acres of Farmland of Statewide Importance, and 0.20 acres of Unique Farmland (California Department of Conservation, 2022).

The City General Plan noted that over the 2014 to 2035 planning period, approximately 877 acres of Prime Farmland, 1,724 acres of Farmland of Statewide Importance, and 105 acres of Unique Farmland would be converted to non-agricultural use. Future development would have to adhere to the Hanford Municipal Code Chapter 16.40.110 (Right to Farm) and proposed goals and policies of the General Plan Update related to agriculture. However, the loss of this farmland due to the General Plan Update would be a significant and unavoidable impact, as there is no feasible mitigation to reduce impacts to a less-than-significant level (City of Hanford, 2016).

The City has not established a threshold of significance for the conversion of farmland to non-agricultural use. The loss of 88 acres of Prime Farmland represents approximately 10 percent loss, a 0.35 percent loss of Farmland of Statewide Importance, and 0.2 percent reduction in Unique Farmland within the City.

The most recent data available indicates that there is approximately 107,913 acres of Prime Farmland, 320,053 acres of Farmland of Statewide Importance and 20,531 acres of Unique Farmland available within the County of Kings (County of Kings, 2020). Based on the farmland designations within the Project site, the Project would result in the conversion of approximately 0.082% of Prime Farmland, 0.001% of Farmland of Statewide Importance, and 0.001% of Unique Farmland to residential use. The Project represents a very small loss of available farmland on a county-wide basis.

Therefore, in consideration of the Project's small conversion of agricultural land to a non-agricultural use and the current land use designation of residential development, impacts resulting from this conversion would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.2b – Would the Project conflict with existing zoning for agricultural use or a Williamson Act contract?**

The Project site is not subject to a Williamson Act Land Use contract. The Project area is zoned and designated for Low Density Residential by the City of Hanford Zoning Ordinance and is anticipated to have a non-agricultural land use. Therefore, there is no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.2c – Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined**

**by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?**

The Project site is not considered forest land or timberland. Therefore, the proposed Project will not conflict with any forest land or Timberland Production or result in any loss of forest land. Therefore, the Project will have no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.2d – Would the Project result in the loss of forest land or conversion of forest land to non-forest use?**

See Impacts #3.4.2a-c. There will be no impact on forest land, and no further analysis in the EIR is warranted.

**Impact #3.4.2e – Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

As noted above, the City has not established a threshold of significance for the conversion of farmland to non-agricultural use. Within City limits, the loss of 88 acres of Prime Farmland represents approximately 10 percent reduction in available farmland, a 0.35 percent loss of Statewide Importance, and 0.2 percent reduction in Unique Farmland. Additionally, when comparing the Project's conversion of Farmland to non-agricultural use within the County is considered a less than significant impact. As such, no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.3 - AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:

|    |                                                                                                                                                                                                |                          |                          |                                     |                          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. | Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. | Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The impact analyses in this section are based on an *Air Quality & Greenhouse Gas Impact Assessment* (VRPA Technologies, Inc., 2022) prepared for the Project, which is included in Appendix A.

### Discussion

#### Impact #3.4.3a – Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The proposed Project lies within the San Joaquin Valley Air Basin (SJVAB) and is under the San Joaquin Valley Air Pollution Control District (SJVAPCD) jurisdiction. Kings County is located in a non-attainment area for the 8-hour ozone standard, PM<sub>2.5</sub> standard, and PM<sub>10</sub>. The SJVAB is designated non-attainment of State PM<sub>10</sub>. To meet Federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple Air Quality Attainment Plan (AQAP) documents, including:

- 2016 Ozone Plan.
- 2007 PM<sub>10</sub> Maintenance Plan and Request for Redesignation.
- 2016 PM<sub>2.5</sub> Plan.

As discussed below, emissions of ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> associated with the construction and operation of the Project would not exceed the District's significance thresholds. As

shown in impact (b) below, the Project would not result in CO hotspots that would violate CO standards. Therefore, the Project would not contribute to air quality violations.

### ***Compliance with Applicable Control Measures***

The AQP contains a number of control measures, which are enforceable requirements through the adoption of rules and regulations. The rules and regulations that apply to this Project are provided below.

SJVAPCD Rule 9510 – Indirect Source Review (ISR) is a control measure in the 2006 PM<sub>10</sub> Plan that requires NO<sub>x</sub> and PM<sub>10</sub> emission reductions from development projects in the San Joaquin Valley. The NO<sub>x</sub> emission reductions help reduce the secondary formation of PM<sub>10</sub> in the atmosphere (primarily ammonium nitrate and ammonium sulfate) and reduce the formation of ozone. Reductions in directly emitted PM<sub>10</sub> reduce particles such as dust, soot, and aerosols. Rule 9510 is also a control measure in the 2016 Plan for the 2008 8-hour ozone standard. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through on-site measures or pay off-site mitigation fees. The Project is required to comply with Rule 9510.

Rule 8011 – General Requirements for Fugitive Dust Emission Sources. Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII. According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. For projects in which construction-related activities would disturb equal to or greater than one acre of surface area, the SJVAPCD recommends that demonstration of receipt of an SJVAPCD approved Dust Control Plan or Construction Notification Form before issuance of the first grading permit be made a condition of approval of TTM 938, and a note outlining the requirement be placed on all plans and specs. The Project is required to comply by preparing a Dust Control Plan or Construction Notification Form before issuance of the first grading permit.

Regulation VIII – Fugitive PM<sub>10</sub> Prohibitions. Rules 8011-8081 are designed to reduce PM<sub>10</sub> emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules. The Project is required to prepare a Dust Control Plan to comply with Regulation VIII.

Other control measures that apply to the Project are Rule 4641 - Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation, which requires reductions in VOC emissions during paving, and Rule 4601 - Architectural Coatings, which limits the VOC content of all types of paints and coatings sold in the San Joaquin Valley. These measures apply at the point of sale of the asphalt and the coatings, so project compliance is ensured.

The Project would comply with all applicable SJVAPCD rules and regulations and applicable control measures of the AQP. The Project complies with this criterion and would not conflict

with or obstruct the implementation of the applicable Air Quality Attainment Plan. As discussed under III. AIR QUALITY (b) and (c), the Project's emissions are less than significant for all criteria pollutants and would not result in inconsistency with the applicable air quality plan and will comply with applicable control measures of the air quality plan. Therefore, the Project is consistent with the applicable air quality plan.

The Project is consistent with the currently adopted General Plan for the City of Hanford and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct the implementation of any air quality plans. Therefore, no mitigation is needed. The impacts of the Project would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.3b – Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard?**

The SJVAPCD also prepared the *Guide for Assessing and Mitigation Air Quality Impacts* (GAMAQI), dated March 19, 2015. The GAMAQI is an advisory document that provides lead agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality impacts in environmental documents. Local jurisdictions are not required to utilize the methodology outlined therein. This document describes the criteria that SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether or not projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts.

The SJVAPCD has established thresholds of significance for determining environmental significance, which are provided in Table 3.4.3-1 below. Project-specific emissions that exceed the thresholds of significance for criteria pollutants would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the County is in non-attainment under applicable federal or State ambient air quality standards. It should be noted that a project is not characterized as cumulatively insignificant when project emissions fall below thresholds of significance.

**Table 3.4.3-1  
SJVAPCD Pollutant Thresholds of Significance**

| Criteria Pollutant | Significance Level       |                         |
|--------------------|--------------------------|-------------------------|
|                    | Construction (tons/year) | Operational (tons/year) |
| CO                 | 100 tons/yr              | 100                     |
| NO <sub>x</sub>    | 10                       | 10                      |
| ROG                | 10                       | 10                      |
| SO <sub>x</sub>    | 27                       | 27                      |
| PM <sub>10</sub>   | 15                       | 15                      |



|                   |    |    |
|-------------------|----|----|
| PM <sub>2.5</sub> | 15 | 15 |
|-------------------|----|----|

**Short-Term Impacts**

The annual emissions from the Project's construction phase will be less than the applicable SJVAPCD emission thresholds for criteria pollutants, as shown in Table 3.4.3-2 below. Therefore, construction emissions associated with the Project are considered less than significant.

**Table 3.4.3-2  
Project Construction Emissions**

| Pollutant                         | CO   | NOx  | ROG  | SOx  | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2e</sub> |
|-----------------------------------|------|------|------|------|------------------|-------------------|------------------|
| Construction Emissions            | 5.65 | 6.66 | 7.20 | 0.01 | 1.70             | 0.61              | 1011.80          |
| SJVAPCD Level of Significance     | 100  | 10   | 10   | 27   | 15               | 15                | None             |
| Does the Project Exceed Standard? | No   | No   | No   | No   | No               | No                | No               |

**Long-Term Impacts**

Emissions from long-term operations generally represent a project's most substantial air quality impact. Long-term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the Project site and area sources such as lawn maintenance equipment. Table 3.4.3-3 below summarizes the Project's operational impacts by criteria pollutants.

**Table 3.4.3-3  
Project Operational Emissions (tons/year)**

| Pollutant                         | CO    | NOx  | ROG  | SOx  | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2e</sub> |
|-----------------------------------|-------|------|------|------|------------------|-------------------|------------------|
| Project Operational Emissions     | 23.72 | 4.86 | 6.18 | 0.05 | 4.57             | 1.30              | 5999.30          |
| SJVAPCD Level of Significance     | 100   | 10   | 10   | 27   | 15               | 15                | None             |
| Does the Project Exceed Standard? | No    | No   | No   | No   | No               | No                | No               |

Results from Table 3.4.3-3 indicate that the annual operational emissions from the Project will be less than the SJVAPCD emission thresholds for criteria pollutants. Therefore, operational emissions associated with the Project are considered less than significant. Results of the analysis show that emissions generated from the construction and operation of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants. Therefore, the Project will have a less-than-significant impact. No further analysis in the EIR is warranted.

**Impact #3.4.3c – Would the Project expose sensitive receptors to substantial pollutant concentrations?**

Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses with the greatest potential to attract these sensitive receptors include

schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities.

### ***Short Term Construction***

Short-term impacts are mainly related to the construction phase of a project and are recognized to be short in duration. Construction air quality impacts are generally attributable to dust and exhaust pollutants generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth-moving activities comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate significant dust emissions. Further, dust generation is dependent on soil type and soil moisture. Exhaust pollutants are the non-useable gaseous waste products produced during the combustion process. Engine exhaust contains CO, HC, and NO<sub>x</sub> pollutants that are harmful to the environment. As noted in Table 3.4.3-2, the Project's impacts from construction emissions will be less than the SJVAPCD emission thresholds for criteria pollutants and are considered less than significant.

### ***Long term Operations***

Emissions from long-term operations generally represent a project's most substantial air quality impact. Long-term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the Project site and area sources such as lawn maintenance equipment. As noted in Table 3.4.3-3, the Project's operational impacts annual operational emissions will be less than the SJVAPCD emission thresholds for criteria pollutants. Therefore, operational emissions associated with the Project are considered less than significant.

### ***Toxic Air Contaminant (TAC)/Hazardous Air Pollutants (HAP) Impacts***

Existing air quality concerns within Hanford and the entire SJVAB are related to increases in regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

From a health risk perspective, the Project is a Type B project in that it may potentially place sensitive receptors in the vicinity of existing sources. The Project is located one mile from SR 198 and more than 4,000 feet from SR 41. The SJVAPCD recommends that new sensitive land uses shouldn't be sited within 500 feet of a freeway/urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day. Therefore, impacts related to exposure to criteria pollutants are considered less than significant.

Based on the analysis presented, impacts are anticipated to be less than significant with implementation of the Project. However, further analysis is warranted in the EIR.

**Impact #3.4.3d – Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc., warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

The proposed Project is a residential community located near other residential neighborhoods and agricultural land uses. The Project will not generate odorous emissions given the nature or characteristics of the Project. The intensity of an odor source's operations and its proximity to sensitive receptors influence the potential significance of odor emissions.

Two situations create a potential for odor impact. The first occurs when a new odor source is located near an existing sensitive receptor. The second occurs when a new sensitive receptor locates near an existing source of odor. According to the CBIA v. BAAQMD ruling (Alameda Superior Court Case No. RG10548693), impacts of existing sources of odors on the Project are not subject to CEQA review (California Building Industry Association v. Bay Area Air Quality Management District, 2015). Therefore, the analysis to determine if the Project would locate new sensitive receptors near an existing source of odor is provided for information only. The SJVAPCD has determined the common land use types that are known to produce odors in the SJVAB.

The Project will not generate odorous emissions, given the nature or characteristics of residential developments. The intensity of an odor source's operations and its proximity to sensitive receptors influence odor emissions' potential significance. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 3.4.3-5, along with a reasonable distance from the source within which the degree of odors could possibly be significant. None of the facilities shown in Table 3.4.3-5 are located within the vicinity of the Project. Therefore, no mitigation is needed.

Table 3.4.3-3 shows that operational emissions will be less than the SJVAPCD level of significance thresholds. The Project is not within SJVACPD potential odor sources shown in Table 3.4.3-5. Long-term potential odors in the area would be limited to vehicular and lawn equipment emissions once the Project site is operational. Therefore, the Project will have a less-than-significant impact, and no further analysis in the EIR is warranted.

**Table 3.4.3-4  
Screening Levels for Potential Odor Sources**

| <b>Type of Facility</b>                             | <b>Distance</b> |
|-----------------------------------------------------|-----------------|
| Wastewater Treatment Facility                       | 2 miles         |
| Sanitary Landfill                                   | 1 mile          |
| Transfer Station                                    | 1 mile          |
| Composting Facility                                 | 1 mile          |
| Petroleum Refinery                                  | 2 miles         |
| Asphalt Batch Plant                                 | 1 mile          |
| Chemical Manufacturing                              | 1 mile          |
| Fiberglass Manufacturing                            | 1 mile          |
| Painting/Coating Operations (e.g., auto body shops) | 1 mile          |
| Food Processing Facility                            | 1 mile          |
| Feed Lot/Dairy                                      | 1 mile          |
| Rendering Plant                                     | 1 mile          |

|                                                                                                                                                                                                                                                                                                                     | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>3.4.4 - BIOLOGICAL RESOURCES</b>                                                                                                                                                                                                                                                                                 |                                      |                                                                |                                     |                                     |
| Would the Project:                                                                                                                                                                                                                                                                                                  |                                      |                                                                |                                     |                                     |
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                        | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?                                                                                                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

The impact analyses in this section is based on a Biological Resources Evaluation prepared for the Project (QK, 2022a), included in Appendix B.

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## Discussion

**Impact #3.4.4a – Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Project activities have the potential to affect biological resources. A reconnaissance survey of the Project and a 250-foot buffer (Biological Survey Area, or BSA), where feasible, was conducted on March 18, 2022.

QK conducted a review of the literature and agency databases to obtain information on the occurrences of natural communities and special-status species known from the vicinity of the Project site. The California Natural Diversity Database (CDFW 2022a), California Native Plant Society (CNPS) Database (CNPS 2022), and U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species List (USFWS 2022a) were reviewed in March 2022 to assess whether occurrences of sensitive natural communities, federally-listed species, State-listed species, other species of special concern, or USFWS Critical Habitat Units that have been documented within the *Remnoy*, *Guernsey*, *Waukena*, *Burris Park*, *Hanford*, *Lemoore*, *Riverdale*, *Laton*, and *Stratford* U.S. Geological Survey (USGS) 7.5-minute quadrangles that encompass the Project site. To satisfy other standard search criteria, CNDDDB records within a 10-mile radius of the Project site were queried separately from the broader database search.

No natural plant communities occur within the BSA. The majority of the Project site was actively used for agricultural purposes. The Project site was actively being disked at the time of the survey. Patches of ruderal vegetation were observed along the edges of the Project site that included fiddleneck (*Amsinckia menziesii*), ripgut brome (*Bromus diandrus*), and wild oat (*Avena fatua*).

Only two special-status wildlife species, San Joaquin kit fox and Swainson's hawk, have the potential to occur within the BSA from time to time as transients.

### Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) has the potential to occur within the BSA. The nearest Swainson's hawk CNDDDB occurrence is approximately three miles northeast of the BSA, where nesting observations have been recorded since 2012. There is suitable nesting habitat within the BSA in the nearby residential properties to the west and east that could be used by a Swainson's hawk. The site provides a small area of foraging opportunities when the crops are harvested.

Impacts to nesting Swainson's hawks could occur during construction due to noise, vibration, and the presence of construction workers if the species is nesting near the Project.

---

**San Joaquin Kit Fox**

There is no evidence that the San Joaquin kit fox is present within the BSA. Surrounding land use and habitat conditions make it unlikely that the San Joaquin kit fox would be present other than as a transient forager. Direct impacts resulting in injury, death, or entrapment in trenches or pipes could occur if a fox travels into the construction area. Construction activities could result in crushing or destroying a den with a kit fox inside. Noise, vibration, and the presence of construction workers may alter normal behaviors, which could affect reproductive success.

**Nesting Birds**

The BSA contains suitable habitat for a wide variety of nesting bird species. No active or inactive bird nests were observed during the site survey. There is potential for birds to nest within the BSA in existing structures and trees and trees and utility poles in the surrounding urban areas. If there are active nests present during Project activities, nests could be destroyed, and Project activities could interfere with normal breeding behaviors, which could discourage breeding or lead to nest abandonment or failure.

Although it is unlikely that either of these species would be present on the Project site, to protect biological resources, avoidance and minimization measures will be included as a condition of approval of TTM 938 and added to all engineered plans and specs that would outline necessary steps to be taken prior to the start of construction. This includes a pre-activity survey for San Joaquin kit fox, American badger, Swainson's hawk nesting birds, and other special-status species be conducted within 14 days of the start of construction activities by a qualified biologist knowledgeable in the identification of these species. If no evidence of these special-status species is detected, no further action is required. If evidence of special-status species is observed, the qualified biologist would determine the appropriate actions to be taken, including monitoring during construction or additional protocol level surveys, to reduce impacts to the species. Measures also include actions to be taken such as limiting on-site speeds to 20 miles per hour, covering trenches, capping pipes, removing trash on a daily basis, prohibiting pets on site, etc., and these measures will be placed on all plans and specs.

With the implementation of these avoidance and minimization measures, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4b – Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Sensitive natural communities are designated by various resource agencies, including the CDFW, USFWS, Bureau of Land Management, U.S. Forest Service, or are designated by local agencies through policies, ordinances, and regulations.

There is no riparian habitat or sensitive natural communities within the Project boundaries, and no protected species were observed during the survey. Therefore, the Project's impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4c – Would the Project have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

The United States Army Corps of Engineers (USACE) has regulatory authority over the Clean Water Act (CWA), as provided for by the EPA. The USACE has established specific criteria for the determination of wetlands based upon the presence of wetland hydrology, hydric soils, and hydrophilic vegetation. There are no federally protected wetlands or vernal pools that occur within the Project.

Wetlands, streams, reservoirs, sloughs, and ponds typically meet the criteria for federal jurisdiction under Section 404 of the CWA and State jurisdiction under the Porter-Cologne Water Quality Control Act. Streams and ponds typically meet the criteria for State jurisdiction under Section 1602 of the California Fish and Game Code.

A review of the National Hydrography Dataset (NHD) and National Wetlands Inventory (NWI) identifies a historic water feature that runs within the Project site. The feature is classified by the NHD as a canal ditch. The NWI identifies it as a perennial-flow, semi-permanently flooded streambed with an unconsolidated bottom that is anthropogenic in origin. The drainage is shown on the NHD and NWI as northwest to south, traversing and crossing through the western half of the Project site. However, this feature was not present during the survey (QK, 2022a). There are no other identified water features, federal waters, or wetlands located on or near the Project. Therefore, the Project's impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4d – Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Wildlife movement corridors also referred to as dispersal corridors or landscape linkages, are generally defined as linear features along which animals can travel from one habitat or resource area to another. Wildlife movement corridors can be large tracts of land connecting regionally important habitats that support wildlife in general, such as stop-over habitat that supports migrating birds or large contiguous natural habitats that support animals with large home ranges (e.g., coyotes, mule deer). They can also be small-scale movement corridors, such as riparian zones, that provide connectivity and cover to support the movement at a local scale.

There are no known wildlife movement corridors or habitat linkages that intersect the BSA. The Project is situated within an area developed for urban and agricultural use and does not provide a linkage between suitable natural habitats for most wildlife species. Due to the disturbed condition of the Project, there is no substantial movement of wildlife onto or off of



the Project site. Therefore, the Project's impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.4e – Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

The City of Hanford General Plan contains policies aimed at the preservation of biological resources and promotes coordination with federal and State resource agencies. The General Plan outlines a work plan with implementation measures to uphold these policies, including biological resource review for proposed projects and development of mitigation measures for these projects. The City of Hanford Valley Oak Ordinance establishes policies for care, trimming, and removal of Valley Oaks.

However, there are no Valley Oaks on the Project site. The Project is consistent with the General Plan, the Valley Oak Tree Ordinance, and any other local ordinances or policies related to biological resources. The Project would have no impact, and no further analysis in the EIR is warranted.

**Impact #3.4.4f – Would the Project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?**

The Project is located within an area covered by the PG&E San Joaquin Valley Operation and Maintenance Habitat Conservation Plan (HCP). That HCP only applies to maintenance and operations of PG&E facilities and does not apply to this Project. There are no other pertinent HCP or NCCP within the Project area. The Project would have no impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.5 - CULTURAL RESOURCES

Would the Project:

- |    |                                                                                                                                   |                          |                          |                                     |                          |
|----|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?      | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. | Disturb any human remains, including those interred outside of formal cemeteries?                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The discussion below is based on the Cultural Resources Technical Memo completed for the Project, attached as Appendix C (QK, 2022b).

#### Discussion

#### Impact #3.4.5a – Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?

The City maintains a Local Register of Historic Structures within its General Plan, which features approximately 340 buildings, including residential, commercial, civic, and religious structures. These are categorized into exceptional, focus, and background structures. Exceptional structures or sites are those having preeminent historical, cultural, architectural, archaeological, or aesthetic significance, considered candidates for nomination to the National Register of Historic Places. Currently, four of these buildings have national and State historic designations: the Bank of Italy Building on East Main Street; the U.S. Post Office on West Acequia Avenue; Hyde House on South Court Street; and the Pioneer statue in Mooney Grove Park. None of these are located near the Project, and therefore, there would be no impact.

A cultural resources records search (RS #22-164) was conducted at the Southern San Joaquin Valley Information Center, CSU Bakersfield, to determine whether the proposed Project would impact cultural resources. The records search covered an area within one-half mile of the Project and included a review of the National Register of Historic Places, California Points of Historical Interest, California Registry of Historic Resources, California Historical Landmarks, California State Historic Resources Inventory, and a review of cultural resource reports on file.

The records search indicated that, although it was included in a brief cultural resource assessment of the general area, the subject property had never been surveyed for cultural resources. Four cultural resource studies have been conducted within one-half mile of the Project (QK, 2022b).

One historic cultural resource, the People's Ditch (P-16-000246), passes through the property. This is an active irrigation ditch that was originally constructed in the 1870s. However, this drainage is no longer observable on the property due to previous agricultural activities and, therefore, will not be impacted by the Project (QK, 2022a).

One cultural resource, the historic route of the AT&SF Railroad (P-16-000120), is located within one-half mile of the Project but will not be impacted.

A Sacred Lands File request was also submitted to the Native American Heritage Commission. A response dated June 20, 2022, indicates negative results.

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a half-mile radius of the proposed Project, the potential to encounter subsurface cultural, historical, or archaeological resources is minimal.

Although there is no obvious evidence of historical or archaeological resources on the Project site, there is the potential during construction for the discovery of cultural resources. Grading, trenching, and other ground-disturbing actions can damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical resources.

In the unlikely event construction of the Project inadvertently uncovers previously unknown cultural resources, avoidance and minimization measures will be added to all engineered plans and specs that would outline necessary steps to be taken prior to the start of construction. These measures require all work in the immediate vicinity of the discovery of cultural resources find would halt until a qualified archaeologist can evaluate the find and make recommendations. In addition, prior to any ground disturbance, if the City of Hanford receives a request from a Native American tribal group, a surface inspection of the site will be conducted by a tribal monitor, and the tribe will have the opportunity to provide a Native American Monitor during ground-disturbing activities, dependent upon the availability and interest of the tribe.

With the implementation of these measures, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.5b – Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?**

See Impact #3.4.5a above.

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a half-mile radius of the proposed Project, the potential to encounter subsurface cultural resources is minimal. However, there is still a possibility that historical or archaeological materials may be exposed during construction. Grading, trenching, and other ground-disturbing actions can damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical or archaeological resources. As noted above, avoidance and minimization measures will be included as conditions of approval of TTM 938, and added to all engineered plans and specs that would outline the required steps to be taken to reduce potential impacts to cultural resources. No further analysis in the EIR is warranted.

**Impact #3.4.5c – Would the Project disturb any human remains, including those interred outside of formal cemeteries?**

There are no known cemeteries or burials on or near the Project. Although unlikely, subsurface construction activities, such as trenching and grading, associated with the proposed Project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. However, considered unlikely, subsurface construction activities could cause a potentially significant impact to previously undiscovered human burial sites. The cultural resources and Sacred Lands File records searches did not indicate the presence of human remains, burials, or cemeteries within or in the vicinity of the Project site. No human remains have been discovered at the Project site, and no burials or cemeteries are known to occur within the area of the site. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites.

Avoidance and minimization measures will be added to all engineered plans and specs that would outline necessary steps to be taken in the unlikely event construction of the Project inadvertently uncovers previously unknown human remains. This measure will be in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), Senate Bill 447 (Chapter 44, Statutes of 1987 and \Section 7050.5(c), in the event of the discovery of human remains, at the direction of the county coroner. With the implementation of this condition of approval, impacts would be less than significant, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.6 - ENERGY

Would the Project:

- |                                                                                                                                                                                  |                          |                          |                                     |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The impact analyses in this section are based on *available data and the Air Quality & Greenhouse Gas Impact Assessment (VRPA Technologies, Inc., 2022)* prepared for the Project, which is included in Appendix A.

### Discussion

**Impact #3.4.6a – Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation?**

CEQA Guidelines require consideration of the potentially significant energy implications of a project. CEQA requires mitigation measures to reduce “wasteful, inefficient, and unnecessary” energy usage (Public Resources Code Section 21100, subdivision [b][3]). The means to conserve energy include decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources.

### Construction

#### ON-ROAD VEHICLES (CONSTRUCTION)

Due to the nature of the Project, construction of the Project would be limited to the Project site and would only generate on-site (off-road) construction trips and would not contribute to on-road vehicle trips during Project construction (from construction workers and vendors).

#### OFF-ROAD VEHICLES (CONSTRUCTION)

Off-road construction vehicles would use diesel fuel during the proposed Project's construction phase. Based on the total amount of CO<sub>2</sub> emissions expected to be generated by the proposed Project (as provided by the CalEEMod output) and a CO<sub>2</sub> to diesel fuel

conversion factor (provided by the U.S. Environmental Protection Agency), the proposed Project would use a total of approximately 100,054 gallons of diesel fuel for off-road construction vehicles for the entirety of the Project's construction (United States Environmental Protection Agency, 2022). A non-exhaustive list of constructive off-road vehicles expected to be used during the proposed Project's construction phase includes cranes, forklifts, generator sets, tractors, excavators, and dozers.

Short-term energy use during the construction phase would be in the form of fuel consumption (e.g., gasoline and diesel fuel) to operate heavy equipment, light-duty vehicles, and machinery. Energy demand during the construction phase would be the result of transportation of materials, construction equipment, and construction worker vehicle trips. Compliance with local and regional regulations during construction would minimize fuel consumption. Energy-saving strategies will be implemented where possible to further reduce the Project's energy consumption during the construction phase. Strategies being implemented include those recommended by the CARB that may reduce the Project's energy consumption, including diesel anti-idling measures, light-duty vehicle technology, alternative fuels such as biodiesel blends and ethanol, and heavy-duty vehicle design measures to reduce energy consumption.

### **Operations**

CalEEMod uses the California Commercial End-Use Survey (CEUS) database to develop energy intensity values for non-residential buildings. The energy use from residential land uses is calculated based on the Residential Appliance Saturation Survey (RASS). Similar to CEUS, this is a comprehensive energy use assessment that includes the end-use for various climate zones in California. As shown in Table 3.4.6-1, the Project would use approximately 1.06486e+007 (10,548,600) of natural gas per year and approximately 3,532,460 kWh of electricity per year.

**Table 3.4.6-1**  
**Project Operational Natural Gas and Electricity Usage**

| <b>Emissions<sup>(a)</sup></b> | <b>Natural Gas<br/>(kBTU/year)</b> | <b>Electricity<br/>(kWh/year)</b> |
|--------------------------------|------------------------------------|-----------------------------------|
| Single-Family Housing          | 10,548,600                         | 3,532,460                         |

Source: (VRPA Technologies, Inc., 2022)

Long-term operation of the proposed includes electricity and natural gas service to power internal and exterior building lighting and heating and cooling systems.

### **ELECTRICITY AND NATURAL GAS**

Electricity and natural gas used by the proposed Project would be used primarily to power residential homes. Total annual electricity (kWh) and natural gas (kBTU) usage associated with the operation of the proposed Project are shown in Table 3.4.6-1.

The Project would be required to comply with California's Title 24 energy efficiency requirements and other applicable City development standards. That would include the installation of solar panels on each home's rooftop, which would provide energy from a renewable power source to offset energy generated by fossil fuel-run. The Project will be required to comply with all applicable standards and building codes included in the 2019 California Green Building Standards Code regarding the use of energy-efficient appliances and lighting, low-flow toilets and faucets, drip irrigation, etc. Therefore, the Project will have a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.6b – Would the Project Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?**

See Impact #3.4.6a above.

The construction and the operation of the Project would comply with State and local plans and regulations. The proposed Project would be in compliance with all applicable federal, State, and local regulations regulating energy usage. The Project will comply with Title 24 Energy Efficiency Standards and CalGreen Code requirements for solar-ready roofs, electric vehicle charging, and water conservation. Energy would also be indirectly conserved through water-efficient landscaping requirements consistent with the City Landscaping Ordinance.

Stringent solid waste recycling requirements applicable to Project construction and operation would reduce energy consumed in solid waste disposal. In summary, the Project will implement all mandatory federal, State, and local conservation measures, project design features, and voluntary energy conservation measures to reduce energy demands further. Therefore, the Project will not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Project-related impacts are less than significant, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.7 - GEOLOGY AND SOILS

Would the Project:

- a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
  - ii. Strong seismic ground shaking?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
  - iii. Seismic-related ground failure, including liquefaction?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
  - iv. Landslides?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
- b. Result in substantial soil erosion or the loss of topsoil?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
- c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
- d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
- e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?
 

|                          |                          |                          |                                     |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|-------------------------------------|
- f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
 

|                          |                          |                                     |                          |
|--------------------------|--------------------------|-------------------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|--------------------------|



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**Discussion**

**Impact #3.4.7a(i) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?**

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) requires the delineation of zones along active faults in California. Within these zones, cities, and counties must regulate certain development, including withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to reduce the hazard of fault rupture; however, surface fault rupture is not necessarily restricted to the area within the Alquist-Priolo Zone. The Alquist-Priolo Act prohibits the location of most structures for human occupancy across active fault traces.

There are no designated Alquist-Priolo zones in the City of Hanford according to the General Plan (City of Hanford, 2017). No portion of the proposed Project is located within an earthquake fault zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act. Therefore, the proposed Project's development would not expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving rupture of a known earthquake fault.

All new structures are required to conform to current seismic protection standards in the California Building Code. By adhering to the 2019 California Building Code and City development standards, the Project will have a less-than-significant impact of endangering people and structures associated with earthquakes. No further analysis in the EIR is warranted.

**Impact #3.4.7a(ii) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic groundshaking?**

See discussion of Impact #3.4.7a(i) above.

The greatest potential for seismic activity in the City is posed by the San Andreas Fault, which is located approximately 45 miles southwest of the proposed Project. The White Wolf Fault, located near Arvin and Bakersfield to the southwest of Kern County, has the potential to cause seismic hazards for the County to a much lesser degree than the San Andreas Fault. Kings County does not have any major fault system within its boundaries.

The Uniform Building Code has four seismic zones in the US, ranging from I to IV; the higher the number, the higher the earthquake danger. All of California lies within Zone III or IV, and Kings County is within Zone III, which equates to the potential to experience 0.3

meters/second squared ground acceleration, which would result in very strong to severe perceived shaking and a moderate to heavy potential.

Secondary hazards from earthquakes include ground shaking/rupture. Since there are no known faults within the immediate area, ground shaking/rupture from surface faulting, seiches, and landslides would not be hazards in the area. While such seismic shaking would be less severe from an earthquake that originates at a greater distance from the Project site, the side effects could potentially be damaging to residential buildings and supporting infrastructure. The Project is required to design residential buildings and associated infrastructure to withstand substantial ground shaking in accordance with all applicable State law and applicable codes included in the California Building Code (CBC) Title 24 for earthquake construction standards and building standards code including those relating to soil characteristics (California Building Standards Commission, 2019). The Project will adhere to all applicable local and State regulations to reduce any potentially significant impacts to structures resulting from strong seismic ground shaking at the Project site. Therefore, Project impacts would be less than significant, and no further analysis on the EIR is warranted.

**Impact #3.4.7a(iii) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?**

See discussion of Impacts #3.4.7a(i) and a(ii) above.

Liquefaction occurs when saturated, loose materials are weakened and transformed from a solid to a near-liquid state as a result of increased pore water pressure. For liquefaction to occur, surface and near-surface soil must be saturated and relatively loose. Liquefaction occurs more often in areas under young alluvium where the groundwater table is above 50 feet below the ground surface. In the City, the range is generally between 120 feet to 160 feet below ground surface; therefore, the potential for liquefaction at the proposed Project site is unlikely.

According to the Kings County Safety Element, the risk of liquefaction within the County is considered minimal. The Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. The proposed Project would comply with all applicable mitigation measures to avoid any potential impacts to structures resulting from liquefaction at the proposed Project site. Because the Project site is within an area of low seismic activity, and the soils associated with the Project are not suitable for liquefaction, impacts will be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.7a(iv) – Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?**

See discussion of Impacts #3.4.7a(i) through a(iii) above.

Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as the geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides.

The entire City of Hanford is located within an area of low landslide incidence, but there is still a possibility that landslides could occur within the City as a result of erosion, slope weakening through saturation, or stresses by earthquakes that make slopes fail. Geotechnical and soil studies that identify potential hazards, including landslides, would be required prior to grading activities as part of the plan check and development review process for the physical development of the area. Such technical studies would provide structural design, as needed, pursuant to the California Building Code requirements to reduce hazards to people and structures as a result of landslides.

Additionally, Kings County is listed to have “Low” to “Moderate” risk landslide areas located in the remote uninhabited sections of southwest Kings County. The Project site is within the Landslide Incidence Low (less than 1.5 percent of the area involved), and the development will have a less-than-significant impact (Kings County, 2009). As impacts are anticipated to be less than significant, no further analysis in the EIR is warranted.

**Impact #3.4.7b – Would the Project result in substantial soil erosion or the loss of topsoil?**

See discussion of Impacts #3.4.7a(i) through a(iv) above.

The Project site is underlain by four soil types, Nord complex, Nord fine sandy loam, Kimberlina fine sandy loam, saline-alkali, and Wasco sandy loam (QK, 2022a). Construction activities associated with the proposed Project will disturb surface vegetation and soils during construction and expose these disturbed areas to erosion by wind and water. To reduce the potential for soil erosion and loss of topsoil during construction, the Project would comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit from the State of California Central Valley Regional Water Quality Control Board (RWQCB) during construction. Under the NPDES, the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) are required for construction activities that would disturb an area of one acre or more. An SWPPP must identify potential sources of erosion or sedimentation and identify and implement best management practices (BMPs) that ensure reduced erosion. If an SWPPP was not required, the Project would implement the standard BMPs. Typical BMPs intended to control erosion include sandbags, silt fencing, street sweeping, etc. Compliance with local grading and erosion control ordinances would also help minimize adverse effects associated with erosion and sedimentation. Any stockpiled soils would be watered and/or covered to prevent loss due to wind erosion as part of the SWPPP during construction.

The Project will comply with all the City's grading requirements outlined in Title 24 and Appendix J of the California Building Code. The Project is not expected to result in substantial soil erosion or the loss of topsoil.

Once constructed, the Project will have both impermeable surfaces as well as permeable surfaces. Impermeable surfaces would include existing roadways, driveways, and structures. Permeable surfaces would include open areas of the site and any landscaped areas. Overall, the development of the Project would not result in conditions where substantial surface soils would be exposed to wind and water erosion. Therefore, within implementation of the mitigation measures, the project is expected to result in a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.7c – Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

See discussion in Impact #3.4.7a(iii) and 3.4.7a(iv) above.

There are no slopes on or near the property, and the Project would not expose the people or structures to significant risks from landslides.

The proposed Project will comply with all City and State regulations pertaining to construction, including the Hanford Municipal Code. In addition, the California Geologic Society, in implementing the CA Seismic Hazards Mapping Program, has not identified any seismically induced landslide hazard zones in Hanford (City of Hanford, 2017). Therefore, complying with the existing regulatory framework would be adequate to reduce any potential impacts to less-than-significant levels. No further analysis in the EIR is warranted.

**Impact #3.4.7d – Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

See Impact #3.4.7a(iii), 3.4.7a(iv) and Impact #3.4.7c above.

Expansive soils are fine-grained soils that can undergo a significant increase in volume with an increase in water content, as well as a significant decrease in volume with a decrease in water content. The City and surrounding area's soils contain percentages of clay that generally range between 7-27 percent. When a soil has 35 percent or more clay content, it is considered clayey soil. Since the soils types in the City generally do not contain 35 percent clay content, the potential for expansive soils within the City of Hanford and its surrounding is low (City of Hanford, 2017). The soils found within the Project site are sandy and loamy and not considered to have a high clay content.

Additionally, the Project would comply with all applicable California Code of Regulations and the most recent California Building Standards Code, which provides criteria for the appropriate design of buildings. The proposed Project would not be located on any identified

expansive soils, as defined in the California Building Code. No further analysis in the EIR is warranted.

**Impact #3.4.7e – Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?**

The proposed Project would not include septic tanks or alternative wastewater disposal systems. The dwelling units will be required to connect to the existing City sewer system. Therefore, there would be no impact related to the use of septic systems, and no further analysis in the EIR is warranted.

**Impact #3.4.7f – Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

The Project site does not have any known paleontological resources or unique geologic features. There is no evidence that cultural resources of any type (including historical, archaeological, paleontological, or unique geologic features) exist on the Project site. Nevertheless, there is some possibility that a buried site may exist in the area and be obscured by vegetation, fill, or other historical activities, leaving no surface evidence.

However, the City's 2035 General Plan Goal 06 requires the protection of paleontological resources. Avoidance and minimization measures will be added to all engineered plans and specs that would outline necessary steps to be taken in the unlikely event construction of the Project inadvertently uncovers previously unknown paleontological resources. These measures require all work in the immediate vicinity of the discovery of paleontological resources find would halt until a qualified professional can evaluate the find and make recommendations. With the implementation of these measures, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.8 - GREENHOUSE GAS EMISSIONS

Would the Project:

- |                                                                                                                                    |                          |                          |                                     |                          |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?        | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The impact analyses in this section are based on an *Air Quality & Greenhouse Impact Assessment* (VRPA Technologies, Inc., 2022), which is attached as Appendix A.

### Discussion

There have been legislative and regulatory activities that directly and indirectly affect climate change and GHGs in California. The primary climate change legislation in California is AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing greenhouse gases (GHG) emissions in California. GHGs, as defined under AB 32, include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. The California Air Resources Board is the State agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. SB 32 was signed by the Governor in 2016, which would require the State Board to ensure that statewide greenhouse gas emissions are reduced to 40 percent below the 1990 level by 2030.

#### Impact #3.4.8a – Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The SJVAPCD acknowledges the current absence of numerical thresholds and recommends a tiered approach to establish the significance of the GHG impacts on the environment.

- i. If a project complies with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, then the project would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.
- ii. If a project does not comply with an approved GHG emission reduction plan or mitigation program, it would be required to implement best performance standards (BPS).

- iii. If a project is not implementing BPS, it should demonstrate that its GHG emissions would be reduced or mitigated by at least 29 percent compared to Business as Usual (BAU).

The South Coast Air Quality Management District (SCAQMD) guidance identifies a threshold of 10,000 MTCO<sub>2</sub>eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. Although the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table 3.4.8-1 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 38 percent less than the threshold identified by the SCAQMD (VRPA Technologies, Inc., 2022).

**Table 3.4.8-1**  
**Project Operational Greenhouse Gas Emissions**

| <b>Summary Report</b>                | <b>CO<sub>2</sub>e</b> |
|--------------------------------------|------------------------|
| Project operation Emissions Per Year | 6,206.03 MT/yr         |

The proposed Project would emit greenhouse gases such as carbon dioxide (CO<sub>2</sub>), methane, and nitrous oxide from the exhaust of construction equipment and the exhaust of vehicles for residents and construction equipment and delivery trips during construction. The increased rate of greenhouse gas emissions would not be considered cumulatively significant per the California Global Warming Solutions Act of 2006. As stated in the SJVAPCD's GAMAQI, projects whose emissions have been reduced or mitigated, consistent with AB 32 – California Global Warming Solutions Act of 2006, should be considered to have a less-than-significant impact on global climate change. Although project-related activities of the proposed Project could result in temporary emissions of GHGs, the proposed Project as a whole is not expected to generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Implementation of the Project will not result in Project-specific or site-specific significant adverse impacts from greenhouse gas emissions. Therefore, no mitigation is required, impacts are less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.8b – Would the Project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

On December 11, 2008, CARB adopted its initial Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan.

Senate Bill (SB) 375 aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. CARB has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region 2020 and 2035.

There is no proposed long-term use of large pieces of stationary source equipment or use of diesel-powered vehicles that generate GHG emissions. Once site preparation has been completed, there will be minimal use of any large construction equipment. Because the proposed Project will be consistent with the applicable General Plan land use designation of High Density Residential, it can be concluded that the proposed Project would not conflict with the approved General Plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit. Below is a list of applicable strategies in the Scoping Plan and the Project's consistency with those strategies.

- California Light-Duty Vehicle GHG Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicles, alternative and renewable fuel, and vehicle technology programs for long-term climate change goals.
- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or Lead Agency since it is a statewide measure. When this measure is implemented, standards would be applicable to light-duty vehicles that would access the residential development. The Project would not conflict with or obstruct this reduction measure.
- Energy Efficiency – Pursuit of a comparable investment in energy efficiency from all retail providers of electricity in California. Maximize energy efficiency building and appliance standards.
- The Project is consistent with this reduction measure. Though this measure applies to the State to increase its energy standards, the Project would comply with this measure through existing regulations. The Project would not conflict with or obstruct this reduction measure.
- Low Carbon Fuel – Development and adoption of the low carbon fuel standard.
- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or Lead Agency since it is a statewide measure. When this measure is implemented, standards would be applicable to the fuel used by vehicles that would access the residential development. The Project would not conflict with or obstruct this reduction measure.

The SJVAPCD does not have thresholds or guidance regarding the significance of construction-related emissions. Overall, the impacts during the construction phase would be short-term and temporary. Since there are no current significance thresholds and because construction-related impacts are considered temporary, they are generally considered less than significant. In addition, the construction of the proposed Project would still have to



comply with the SJVAPCD's regulations and requirements, as discussed in the air quality section. The Project will not generate significant long-term emissions over the life of the Project. Based on the assessment above, the Project will not conflict with an applicable plan, policy, or regulation adopted to reduce the emissions of greenhouse gases. Therefore, any impacts would be less than significant, and no further analysis in the EIR is warranted.

|                                                                                                                                                                                                                                                                                     | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>3.4.9 - HAZARDS AND HAZARDOUS MATERIALS</b>                                                                                                                                                                                                                                      |                                      |                                                                |                                     |                                     |
| Would the Project:                                                                                                                                                                                                                                                                  |                                      |                                                                |                                     |                                     |
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                                                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?                                                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| e. For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                         | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?                                                                                                                                            | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.9a – Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency or if it has characteristics defined as hazardous by such an agency. The California Code of Regulation (CCR) defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10). Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications and, to a limited extent, in residential areas. Hazardous wastes are defined in the same manner.

### ***Project Construction***

Project construction-related activities may involve the use and transport of hazardous materials. These materials may include fuels, oils, mechanical fluids, and other chemicals used during construction-related activities. These materials could expose human health or the environment to undue risks associated with their use, and no significant impacts will occur during construction activities.

Transportation, storage, use, and disposal of hazardous materials during construction activities will be required to comply with applicable federal, State, and local statutes and regulations. U.S. Department of Transportation and Caltrans regulate the transportation of hazardous materials. Additionally, the City's routes that have been designated for hazardous materials transport would be used. Any hazardous waste or debris that is generated during the construction of the proposed Project would be collected and transported away from the site and disposed of at an approved off-site landfill or other such facilities. In addition, sanitary waste generated during construction would be managed through portable toilets located at reasonably accessible on-site locations.

Hazardous materials such as paint, bleach, water treatment chemicals, gasoline, oil, etc., may be used during construction. These materials are stored in appropriate storage locations and containers in the manner specified by the manufacturer and disposed of in accordance with local, federal, and State regulations. Residential construction generally uses fewer hazardous chemicals or chemicals in relatively small quantities and concentrations compared to commercial or industrial uses. No significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous waste during construction or operation of the new residential development would occur.

### ***Project Operation***

Once constructed, the use of such materials as paint, bleach, etc., is considered common for residential developments. It would be unlikely for such materials to be stored or used in such quantities that would be considered a significant hazard. The Project will not generate or use hazardous materials outside health department requirements. Operation activities will

comply with the California Building Code, local building codes, and applicable safety measures.

Based on the analysis above, Project construction and operation are not anticipated to result in significant impacts due to the transportation, use, or disposal of hazardous materials. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.9b – Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Hazardous materials handling on the Project site over the long-term construction of the Project may result in soil and groundwater contamination from accidental spills. Construction of the Project would require preparing and implementing an SWPPP, as noted in Impact #3.4.7b. An SWPPP is a State requirement under the National Pollution Discharge Elimination System (NPDES) general permit for construction sites over one acre. The SWPPP identifies potential sources of pollution from the Project that may affect the stormwater discharge quality and requires that best management practices (BMPs) be implemented to prevent contamination at the source. Implementing BMPs during construction would contain accidental spills of hazardous materials, and soil and groundwater contamination would be minimized or prevented. Due to the size of the Project, each construction phase would be required to prepare and implement an SWPPP.

Valley Fever or coccidioidomycosis is prevalent in the Central San Joaquin Valley of California. This disease, which affects both humans and animals, is caused by the inhalation of arthroconidia (spores) of the fungus *Coccidioides immitis* (CI). CI spores are found in the top few inches of soil, and the fungus's existence in most soil areas is temporary. The proposed Project can generate fugitive dust and suspend Valley Fever spores with the dust that could then reach nearby sensitive receptors. It is possible that on-site workers could be exposed to valley fever as fugitive dust is generated during construction. Implementation of dust control measures throughout the construction period would reduce fugitive dust emissions. Therefore, the exposure to Valley Fever would be minimized by implementing these dust control measures as required by the Air District. Dust from the construction of the proposed Project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and impacts would be reduced to less-than-significant levels.

All Project plans would comply with State and local codes and regulations. Construction and operational activities will also be required to comply with the California fire code to reduce the risk of potential fire hazards. The City's Fire Department will be responsible for enforcing provisions of the fire code.

A review of the State of California Department of Toxic Substances Control (DTSC) Envirostor database available via the DTSC's internet website indicated that no sites, including State response sites, voluntary cleanup sites, school cleanup sites, or military or

school evaluation sites are listed for the subject site or adjacent properties. Additionally, no Federal Superfund – National Priorities List (NPL) sites were determined to be located within a one-mile radius of the subject site (Department of Toxic Substances Control, 2022).

Review of State of California Department of Conservation, Geological Energy Management Division (CalGEM, formerly DOGGR) Online Mapping System indicated that no plugged and abandoned or producing oil wells are located on or adjacent to the subject site (CalGEM, 2022).

As noted in Impact #3.4.9a above, if there is a use of hazardous materials during the Project's construction phase, the safe handling and storage of hazardous materials consistent with applicable local and State regulations will be required.

The proposed Project is not anticipated to create a significant hazard to the public or the environment; as mentioned previously in Impact #3.4.9a above, the residential Project would not routinely transport, use, dispose of, or discharge hazardous materials into the environment, and impacts would be less than significant. No further analysis in the EIR is warranted.

**Impact #3.4.9c – Would the Project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

The nearest schools to the site are the Kings Community School, approximately 700 feet northwest, and Lincoln Elementary School, approximately 2,500 feet north of the Project site. Construction activities for residential development could temporarily use hazardous materials and or substances, such as lubricant and diesel fuel, during construction. Exhaust from construction and related activities are expected to be of short duration, minimal, and not significant (VRPA Technologies, Inc., 2022). All future construction-related activities resulting from the proposed Project would be subject to local, State, and federal laws related to hazardous materials and substances emissions. However, construction of the Project would require the use of minimal hazardous materials and require implementation of BMPs when handling any hazardous materials, substances, or waste. As noted in Impact #3.4.9a, emissions from construction and related activities are expected to be minimal and not significant. Once constructed, residential development is not expected to result in hazardous emissions; therefore, the Project would have a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.9d – Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and, as a result, would it create a significant hazard to the public or the environment?**

As noted in Impact #3.4.9b, there are no known existing hazardous material conditions on the Project property. The property is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and the Department of Toxic

Substances Control (DTSC). The Project itself will not generate or use hazardous materials outside health department requirements.

Therefore, because the Project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, it can be seen there is a less-than-significant impact of hazards to the public or environment. Therefore, a less-than-significant impact is seen, and no further analysis in the EIR is warranted.

**Impact #3.4.9e – Would the Project for a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?**

The Project site is located approximately one mile southwest of the Hanford Municipal Airport, which is included in the adopted Kings County Airport Land Use Compatibility Plan (ALUCP). The eastern portion of the Project site is within the Airport Land Use Compatibility Overlay District (City of Hanford, 2017b). According to the County General Plan, residential developments are not permitted within the Aviation Land Use Compatibility Overlay Zone if the noise contour is 70 Community Noise Equivalent Level (CNEL) or higher. The Project is not within the Airport's Noise Contour zones, and the highest noise level from the airport is 65 CNEL (City of Hanford, 2010). Therefore, there would not be excessive noise or create a safety hazard for the people residing or working in the Project area.

The construction and operation of the Project would not result in the generation of noise levels beyond those that exist in the surrounding area. The construction and operation of the Project would not result in the generation of noise levels beyond those that exist in the surrounding area. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.9f – Would the Project impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?**

The 2015 Kings County Emergency Operations Plan (EOP) establishes emergency procedures and policies and identifies responsible parties for emergency response in the County, including the incorporated City of Hanford (Kings County, 2015). The EOP includes policies that would prevent new development from interfering with the emergency response of evacuation plans.

Development of the proposed Project has the potential to strain the emergency response and recovery capabilities of federal, State, and local government. Compliance with the General Plan policies to ensure adequate emergency response and maintain current plans reduces the impact of the development. The proposed Project is consistent with the policy of the General Plan. Additionally, the proposed Project would not inhibit the ability of local roadways to continue to accommodate emergency response and evacuation activities. The proposed Project would not interfere with the City's adopted emergency response plan, and there would be no impact.

The Project site and surrounding area are relatively flat, with little to no topography that might obscure visibility to motorists. Additionally, roadway improvements have been proposed to maintain traffic safety with the anticipated increase in vehicle trips. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.9g – Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?**

The majority of the City is located within a zone considered by Cal Fire to have low to no potential for wildland fires. Additionally, the proposed Project site is not located within proximity of a wildland area (City of Hanford, 2017).

The Hanford City Fire Department Station #2, located approximately 0.25 miles away, would provide fire protection services to the proposed Project. Kings County Fire Station #4 is approximately 2.5 miles east. Given that the Project is not surrounded by wildland areas and is in proximity to existing fire services, the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. There would be no impact related to wildfires, and further analysis in the EIR is not warranted.

|                                                                                                                                                                                                                        | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>3.4.10 - HYDROLOGY AND WATER QUALITY</b>                                                                                                                                                                            |                                      |                                                                |                                     |                                     |
| Would the Project:                                                                                                                                                                                                     |                                      |                                                                |                                     |                                     |
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?                                  | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would? |                                      |                                                                |                                     |                                     |
| i. Result in substantial erosion or siltation on- or off-site;                                                                                                                                                         | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| ii. Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;                                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iii. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or                              | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iv. Impede or redirect flood flows?                                                                                                                                                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?                                                                                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?                                                                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |



---

**Discussion****Impact #3.4.10a – Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?**

See Impact #3.4.7b.

During construction, potential impacts on water quality arising from erosion and sedimentation are expected to be temporary conditions during the construction of new development. The proposed development must draft and comply with an approved SWPPP that specifies BMPs to prevent construction pollutants from contacting stormwater to keep all erosion products from moving off-site and into receiving waters during construction. In addition, prior to the commencement of construction activities, the Project proponent would be required to adhere to the requirements of the City Grading Code. The intention is to eliminate or reduce non-stormwater discharge to storm sewer systems and other waters of the United States.

Furthermore, as shown in Figure 3-3, TTM 938 includes an approximately four-acre stormwater retention that has been designed to control stormwater runoff and erosion, both during and after construction. Project-specific drainage improvements would reduce the proposed Project's potential to violate water quality standards during construction to a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.10b – Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?**

The Project site is located within the Tulare Lake Subbasin, which is identified as being critically over-drafted and subject to Sustainable Groundwater Management Act (SGMA) requirements. The proposed Project site is located within the South Fork Kings Groundwater Sustainability Agency (GSA), Basin ID No. 5-022.12, "exclusive local agency" per Water Code §10723(c). In compliance with the Sustainable Groundwater Management Act (SGMA), a Groundwater Sustainability Plan (GSP) was submitted by the GSA to the Department of Water Resources (DWR), but it is not yet certified.

The City currently utilizes local groundwater as its sole source of municipal water supply. The City's municipal water system extracts its water supply from underground aquifers via 14 active groundwater wells within the city limits. In corporation with the Peoples Ditch Company and the Kings County Water District, excess Kings River water and stormwater flows are conveyed to 125 acres of drainage and slough basins located throughout the City to help replenish groundwater. The basins account for approximately 586 acre-feet of available water retention. The City plans to add approximately 317 acre-feet of additional basins located along major drainage channels for groundwater recharge and flood protection.

The current and future efforts of the City and Kings County Water District, coupled with the requirement to comply with the Sustainable Groundwater Management Act through the Groundwater Sustainability Plan process, ensure that future development as an implementation of the General Plan would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there be a net deficit in aquifer volume or a lowering of the local groundwater table level.

**Construction**

The City currently uses groundwater pumped from the Tulare Lake Basin to meet its water demand. Like any activity in Hanford, groundwater would be used for construction. Water would be used for dust control during grading and construction and for minor activities such as washing construction equipment and vehicles. Water demands generated by the Project during the construction phase would be temporary and not substantial. It is anticipated that groundwater supplies would be adequate to meet construction water demands generated by the Project without depleting the underlying aquifer or lowering the local groundwater table. Therefore, Project construction would not deplete groundwater supplies, and impacts would be less than significant.

Project construction would not substantially prevent or inhibit incidental groundwater recharge on-site during precipitation events. As the Project is constructed, portions of the site would remain pervious and would allow infiltration that presently occurs during precipitation events to continue to occur. Therefore, Project construction would not substantially deplete area groundwater supplies or interfere substantially with groundwater recharge, and impacts would be less than significant.

**Operation**

The proposed Project consists of 457 dwelling units, and the average household size in Hanford is 3.0 (U.S. Census Bureau, 2022); therefore, the Project will house approximately 1,371 people. According to the City's 2015 Urban Water Management Plan (UWMP), the actual water used in 2015 was 219 gallons per capita per day (gpcd) (City of Hanford, 2015); therefore, the proposed Project would result in estimated water demand of 63,304.14 gallons per day ( $1,371 \text{ people} \times 219 \text{ gallons/day} = 300,249 \text{ gallons/day}$ ) or 336.3 acre-feet per year.

The Project will follow requirements as applicable in the City of Hanford and Kings County Groundwater Sustainability Plan (Greater Kaweah Groundwater Sustainability Agency, 2020). Given that the water needed for the Project's construction and operations are nominal, the Project's construction and operations would not substantially deplete groundwater supplies or conflict with any future adopted groundwater management plan.

Since the Project is consistent with the General Plan designation, the Project's water usage has been accounted for in the EIR for the most current General Plan Update. This Project's groundwater usage would not change the baseline condition of groundwater water supplies in the basin beyond the baseline condition already analyzed in the current General Plan EIR.

Therefore, the Project's construction and operations would not substantially deplete groundwater supplies or interfere significantly with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10c(i) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site?**

The Project site is relatively flat, and grading would be minimal. The topography of the site would not appreciably change because of grading activities. The site does not contain any blue-line water features, including streams or rivers. The Project has a proposed stormwater retention basin that will collect and maintain stormwater runoff on the site, allowing for percolation of the captured water back into the underlying aquifer.

However, the Project would develop areas of impervious surfaces that would reduce the rate of percolation at the site, but areas of open space would allow for the percolation of stormwater to recharge the aquifer. Water would also be directed into the City's existing stormwater sewer system. The Project would comply with applicable City development standards and codes. Therefore, the Project would have a less-than-significant impact on drainage patterns or cause substantial erosion or siltation on or off the site.

As discussed in Impact #3.4.10a above, potential impacts on water quality from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts due to soil disturbance would be less than significant after implementing the SWPPP and BMPs required by the NPDES. No drainages or other water bodies are present on the Project site, and therefore, the proposed Project would not change the course of any such drainages.

The existing drainage pattern of the site and area would be affected by Project development because of the increase in impervious surfaces at the site. The Project design includes natural features such as landscaping and vegetation that would allow for the percolation of stormwater. However, there will be an addition in impervious surfaces that could increase the potential for stormwater runoff and soil erosion. The Project would connect to existing City stormwater sewer infrastructure. The Project will comply with all applicable local building codes and regulations to minimize impacts during construction and post-construction, and impacts related to erosion or siltation on- or off-site are less than significant. No further analysis in the EIR is warranted.

**Impact #3.4.10c(ii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

See also Impact #3.4.10c(i) above.

The Project site is flat, and no drainages or other water bodies are present. Therefore, the development of the site would not change the course of any such drainages that may potentially result in on- or off-site flooding. Water would be used during the temporary construction phase of the Project (e.g., for dust suppression). However, any water used for dust control would be mechanically and precisely applied and generally infiltrate or evaporate before running off.

With the construction of the Project, runoff patterns and concentrations could be altered by grading activities associated with the Project. Improper design of the access road or building pads could alter drainage patterns that would cause flooding on- or off-site. The potential for the construction of the proposed Project to alter existing drainage patterns would be minimized through compliance with the preparation of an SWPPP and compliance with City development standards and codes. With the implementation of such measures, the Project would not substantially increase the amount of runoff to result in flooding on- or off-site. Impacts would be reduced to less-than-significant levels.

Additionally, with the approval of grading plans and site development requirements by the City Building Division that incorporates BMPs and design standards, the new development operations would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10c(iii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

Please see Impact #3.4.10c(i)-(ii) above.

Water would be used during the temporary construction phase of the proposed Project (e.g., for dust suppression). However, any water used for dust control would be mechanically and precisely applied and would generally infiltrate or evaporate prior to running off.

The Project would comply with all applicable State and City codes and regulations. The Project will construct a stormwater retention basin on-site to capture stormwater, and engineering calculations will support the storm drainage plan to ensure that the Project does not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, the Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10c(iv) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through**

**the addition of impervious surfaces, in a manner which would impede or redirect flood flows?**

Please see response #3.4.10a through c(iii) above.

The Project would comply with all applicable State and City codes and regulations. The Project will construct a stormwater retention basin on-site to capture stormwater. Engineering calculations will support the storm drainage plan to ensure that the Project does not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, the Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

The Project site is within an area of minimal flood hazard. There are no development restrictions associated since these are areas determined to be outside the 0.2 percent annual chance floodplain. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.10d – Would the Project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?**

The Project site is not located near the ocean or a steep topographic feature (i.e., mountain, hill, bluff, etc.), nor is it located by the ocean or lake large enough to be inundated by tsunami or seiches. The Project area is flat and does not contain slopes steep enough to cause a mudflow, avalanche, or significant ground-related risks. The Project site is not located within the 100-year floodplain, and there do not appear to be any significant levees that could potentially affect people or structures if they were to fail.

There is no potential for the inundation of the Project site by seiche. Therefore, the Project would not contribute to inundation by seiche, tsunami, or mudflow. There would be no impact from the Project, and no further analysis in the EIR is warranted.

**Impact #3.4.10e – Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

See response #3.4.10b above.

The water demand from this Project would not result in a significant impact due to depleted groundwater resources or interference with groundwater recharge. Per the City's 2015 UWMP, the City's existing system has a total supply capacity of 32 million gallons per day with an average daily demand of 30.2 million gallons (City of Hanford, 2015). Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.11 - LAND USE AND PLANNING

Would the Project:

- |    |                                                                                                                                                                                    |                          |                          |                          |                                     |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a. | Physically divide an established community?                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### Discussion

#### Impact #3.4.11a – Would the Project physically divide an established community?

The Project is surrounded by undeveloped property and residential developments. Furthermore, where the Project abuts an existing subdivision's stub street or un-subdivided land, a stub street intended for connection is proposed to increase connectivity between communities.

The Project would increase an established community within the area and promote orderly land use development by providing the ability to develop the 95 acres, which is a supported goal under the General Plan, and, therefore, would have no impact. The Project proposes connecting to existing roadways, providing future connectivity access, and not dividing an established or future community. Future development would not be built in a pre-existing community area and would not create any physical barrier between an established community. Therefore, the Project would not result in an impact, and no further analysis in the EIR is warranted.

#### Impact #3.4.11b – Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Project is consistent with the General Plan and has a Low Density Residential land use designation. The Project proposes a gross density of 4.81 per acre, within the allowable density between two and 10 units per acre.

The subdivision TTM 938 is also consistent with the R-L-5 Low Density Residential zoning for the site. All parcels meet the required lot size, frontage, width, and depth of the R-L-5 Low Density Residential zone district. The proposed residential use is allowed within this land

use designation, and the Project does not exceed the maximum density; therefore, the Project is consistent with applicable land use plans and policies. No further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.12 - MINERAL RESOURCES

Would the Project:

- |    |                                                                                                                                                                     |                          |                          |                          |                                     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a. | Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. | Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### Discussion

#### Impact #3.4.12a – Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

The California Department of Conservation, Geological Survey classifies lands into Aggregate and Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1974. These MRZs identify whether known or inferred significant mineral resources are present in areas. Lead agencies are required to incorporate identified MRZs resource areas delineated by the State into their General Plans. Neither the Project site nor the surrounding area is designated as a Mineral Resources Zone in the City of Hanford General Plan or Zoning Ordinance, nor is it currently being utilized for mineral extraction. The Project site is also not within a California Geologic Energy Management (CalGEM) identified oilfield or gas field.

The Project design does not include mineral extraction. The Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State and would therefore have no impact. No further analysis in the EIR is warranted.

#### Impact #3.4.12b – Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

See Impact #3.4.12a above.

No portion of the City or nearby vicinity is designated for mineral resources or zoned for mineral resources (City of Hanford, 2017). Therefore, the Project would not result in the loss of availability of a locally important mineral resources recovery site delineated on a local



general plan, specific plan, or any other land use, and there would be no impact. No further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.13 - NOISE

Would the Project result in:

- |    |                                                                                                                                                                                                                                                                                                        |                          |                          |                                     |                          |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Generation of excessive groundborne vibration or groundborne noise levels?                                                                                                                                                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. | For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.13a – Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Land uses deemed sensitive receptors include schools, hospitals, rest homes, and long-term care and mental care facilities, which are considered to be more sensitive to ambient noise levels than others. The nearest sensitive land uses include widely spaced residential homes to the south and west.

Stationary noise sources can also influence the population, and unlike mobile, transportation-related noise sources, these sources generally have a more permanent and consistent impact on people. These stationary noise sources involve various industrial uses, commercial operations, agricultural production, school playgrounds, high school football games, HVAC units, generators, lawn maintenance equipment, and swimming pool pumps.

During the Project's construction phase, noise-generating activities will be present; however, it will be temporary, and any machinery used as a part of the construction of the Project will be muffled. Construction activities would be temporary in nature and are

anticipated to occur during normal daytime working hours. Construction is anticipated to take approximately 24 months to complete.

The operation of the facility would not generate noise levels significantly higher than the existing levels in the Project area. This generated noise is not anticipated to exceed thresholds consistent with the City's General Plan Noise Element or Municipal Code. Short-term noise-related impacts would be temporary and require compliance with applicable regulations and policies of the General Plan to ensure further that construction-related impacts would be handled to the greatest extent feasible.

There are no specific construction noise thresholds established by the City other than the noise-generating construction activities that are only allowed to occur between the hours of 7:00 a.m. and 8:00 p.m. However, the proposed Project's construction would be temporary and would occur between 7:00 a.m. to 8:00 p.m., five days a week for approximately 24 months (City of Hanford, 2022). No demolition or pile-driving will occur during the construction phase of the Project.

Once constructed, the Project would not significantly increase traffic on local roadways. Residential activities could also increase ambient noise levels in the immediate Project vicinity. Activities that could be expected to generate noise include cars entering and exiting the development and mechanical systems related to heating, ventilation, and air conditioning systems located on residential buildings. However, this noise would be similar to those generated by the nearby existing residential development and would not be of a level that exceeds thresholds. Therefore, these increases in ambient noise are considered less than significant and consistent with applicable standards. No further analysis in the EIR is warranted.

**Impact #3.4.13b – Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?**

The proposed Project is expected to create temporary groundborne vibration as a result of the construction activities (during site preparation and grading). According to the U.S. Department of Transportation, Federal Railroad Administration, vibration is sound radiated through the ground. The rumbling sound caused by the vibration is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB). The background vibration velocity level in residential areas is usually around 50 VdB. A list of typical vibration-generating equipment is shown in Table 3.4.13-1. However, the Project does not propose to use this specific equipment. The table is meant to illustrate typical vibration levels for various pieces of equipment.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people.

**Table 3.4.13-1**  
**Different Levels of Groundborne Vibration**

| <b>Vibration Velocity Level</b> | <b>Equipment Type</b> |
|---------------------------------|-----------------------|
| 94 VdB                          | Vibratory roller      |
| 87 VdB                          | Large bulldozer       |
| 87 VdB                          | Caisson drilling      |
| 86 VdB                          | Loaded trucks         |
| 79 VdB                          | Jackhammer            |
| 58 VdB                          | Small bulldozer       |

Source: (Federal Transit Administration, 2006) Note: 25 feet from the corresponding equipment.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations (Federal Highway Administration (FHWA), U.S. Department of Transportation, 2017). In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative even for sustained pile driving. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The typical vibration produced by construction equipment is illustrated in Table 3.4.13-2.

**Table 3.4.13-2**  
**Typical Vibration Levels for Construction Equipment**

| <b>Equipment</b>           | <b>Reference peak particle velocity at 25 feet (inches/second)<sup>1</sup></b> | <b>Approximate peak particle velocity at 100 feet (inches/second)<sup>2</sup></b> |
|----------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Large Bulldozer            | 0.089                                                                          | 0.011                                                                             |
| Loaded Trucks              | 0.076                                                                          | 0.010                                                                             |
| Small Bulldozer            | 0.003                                                                          | 0.000                                                                             |
| Auger/drill Rigs           | 0.089                                                                          | 0.011                                                                             |
| Jackhammer                 | 0.035                                                                          | 0.004                                                                             |
| Vibratory Hammer           | 0.070                                                                          | 0.009                                                                             |
| Vibratory Compactor/roller | 0.210                                                                          | 0.026                                                                             |

Notes:

1 – Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006. Table 12-2.

2 – Calculated using the following formula:  $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where:  $PPV_{(equip)}$  = the peak particle velocity in/sec of the equipment adjusted for the distance  $PPV_{(ref)}$  = the reference vibration level in/sec from Table 12-2 of the FTA Transit Noise and Vibration Impact Assessment Guidelines  
 $D$  = the distance from the equipment to the receiver

With regard to the proposed Project, groundborne vibration would be generated during site clearing and grading activities on-site facilitated by the implementation of the proposed Project. As indicated in Table 3.4.13-2, based on the FTA data, vibration velocities from typical heavy construction equipment that would be used during Project construction range from 0.076 to 0.210 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. As demonstrated in Table 3.4.13-2, vibration levels at 100 feet would range from 0.010 to 0.026 PPV. Therefore, the anticipated vibration levels would not exceed the 0.2 inch-per-second PPV significance threshold during construction operations at the nearest receptors, approximately 100 feet to the east and south.

Typical outdoor sources of perceptible groundborne vibration are construction equipment and traffic on rough roads. For example, if a roadway is smooth, the groundborne vibration from traffic is barely perceptible.

Typically, groundborne vibration generated by construction activity attenuates rapidly with distance from the source of the vibration. Therefore, vibration issues are generally confined to distances of less than 500 feet (U.S. Department of Transportation, 2005). Potential sources of temporary vibration during construction of the proposed Project would be minimal and would include transportation of equipment to the site.

Construction activity would include various site preparation, grading, fabrication, and site cleanup work. Construction would not involve the use of equipment that would cause high groundborne vibration levels, such as pile-driving or blasting. Once constructed, the proposed Project would not have any components that would generate high vibration levels. Thus, the construction and operation of the proposed Project would not result in any vibration, and impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.13c – Would the Project result in for a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?**

The Project site is approximately one mile west of the Hanford Municipal Airport. The site is partially located within any Compatibility Zone boundary identified for the Airport in the Kings County ALUCP (Kings County, 1994). The noise levels associated with the airport operations do not contribute significantly to the overall noise environment at the Project site as the Project is not within the noise contour impact map (City of Hanford, 2010). Therefore, the Project would not expose people residing or working in the Project area to excessive noise levels, and there would be no impact. No further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less- than<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.14 - POPULATION AND HOUSING

Would the Project:

- |                                                                                                                                                                                                                     |                          |                          |                                     |                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Induce substantial population unplanned growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.14a – Would the Project induce substantial population unplanned growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

According to the 2019 U.S. Department of Finance population estimates, the population in Hanford is 57,990 people (United States Census Bureau, 2020). The City is expected to increase its population by 32,010 residents in the next 20 years. The City's General Plan goals include encouraging residential developments to meet the future population growth needs. The Project proposed 457 new housing units, and the average number of persons per household is 3.0. Therefore, the Project will house approximately 1,371 people and would be within the range of projected growth within the City. Regional Housing Needs Allocation (RHNA) from the California Department of Housing and Community Development specifies the number of units, by affordability level, that needs to be accommodated.

**Table 3.4.14-1  
Regional Housing Needs 2014-2024 (Hanford)**

| Housing Type   | Federal Standards |
|----------------|-------------------|
| Extremely Low  | 549               |
| Very Low       | 548               |
| Low            | 821               |
| Low Moderate   | 865               |
| Above Moderate | 2,049             |
| <b>Total</b>   | <b>4,832</b>      |

Source: (City of Hanford, 2022)

The Project directly induces population growth in an area by proposing new residential development. However, the population of the City is expected to grow by more than 50 percent over the next 20 years, furthering the need for additional dwelling units. The RHNA states that the City of Hanford will need to provide an additional 15,695 dwelling units by 2035. The proposed Project will provide an estimated additional 457 single-family units. The Project is also consistent with the density allowed in the General Plan planned for population growth. The Project will help the City of Hanford work toward attaining a sufficient housing supply for its residents. Therefore, impacts will be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.14b – Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

See Impact#3.4.14a above.

The Project site is undeveloped and does not necessitate the demolition of any existing houses. Construction of the Project is anticipated to last 24 months and would likely be completed by construction workers residing in the City or the surrounding area; they would not require new housing. Therefore, the Project will not displace existing people or housing, necessitating housing replacement elsewhere. The Project would have no impact, and no further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|

### 3.4.15 - PUBLIC SERVICES

Would the Project:

- a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:

|                             |                          |                          |                                     |                          |
|-----------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| i. Fire protection?         | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| ii. Police protection?      | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iii. Schools?               | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| iv. Parks?                  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| v. Other public facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.15a(i) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services - Fire Protection?**

The City of Hanford Fire Department Station #2 is located approximately 0.25 miles south of the Project site.

Prior to the recordation of the proposed TTM 938, the developer will be required to pay development impact fees. A portion of those funds will be specifically earmarked for the use of the Fire Department to maintain an adequate level of service within its service boundary. The entire Project, whether submitted in phases or not, will be subject to review by the City of Hanford Engineering, Public Works, and Fire Department in order to determine whether the Project's infrastructure design is in compliance with City policies for development. The Project's water system will be reviewed to verify that the system can supply the required fire



flow for fire protection purposes. The establishment of gallons-per-minute requirements for fire flow shall be based on the review of the City of Hanford Fire Department.

Development of the Project will increase the need for fire protection services and expand the service area and response times of the local City Fire Department. As previously mentioned, the Project will be required to adhere to any conditions/policies pertaining to the construction of infrastructure needed for the Hanford Fire Department to provide an adequate level of fire protection service.

According to the General Plan and the standard review procedures for development projects within the City of Hanford, the Project's plans and permits will be reviewed for input from the Fire Department. The Project's proposed construction would be located adjacent to existing residential areas, which the City Fire Department already serves. The developer will be required to pay development impact fees to offset growth in population in the area that would impact fire protection. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(ii) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Police Protection?**

The Hanford Police Department (VPD) provides police protection in the City of Hanford and collaborates with other law enforcement agencies and the District Attorney's office on crime prevention. The City has approximately 143 sworn officers that are working out of two districts. The Project site is located approximately 1.4 miles south of the City of Hanford Police Station. The Project proposes development in an area adjacent to residential development and undeveloped agricultural land. The Project proposes additional residential development in a previously undeveloped location, which will increase the need for police services. However, the Project will pay appropriate development fees based on the adopted fee calculations and is responsible for constructing any infrastructure needed to serve the Project. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(iii) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Schools?**

There are six elementary school districts and one high school district within the City of Hanford. The Martin Luther King Jr. Elementary School is approximately 0.5 miles southwest of the Project site; Roosevelt Elementary School is approximately 1 mile northwest, and Hanford West High School is approximately 1.7 miles northwest.

The increased population generated by the proposed Project would increase the number of students attending local schools and could significantly impact these facilities by requiring new facilities. The proposed Project would require the payment of developer fees for each new residential construction to offset the District's student classroom capacity. The developer will pay appropriate impact fees at the time of building permits. According to Government Code Section 65996, the development fees authorized by SB 50 are deemed "full and complete school facilities mitigation." School districts would utilize the General Plan and codes to establish new school sites and make decisions on school amenities and facility size. The development will be subject to school impact fees to mitigate any increased impacts on school facilities. The Project will result in a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(iv) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Parks?**

The Project is within the boundaries of the Hanford Parks and Recreation District. The proposed Project includes uses that would increase the use of park and recreation facilities in the area. The City presently owns and maintains 24 parks.

A parks facilities development impact fee is established on the issuance of all residential building permits for development in the Hanford city area to pay for parks and recreational facilities improvements. Each developer will pay this development fee prior to issuance of a building permit or dedicate parkland as a part of their proposed project. The Project is proposing a centralized 5.8-acre public park to offset park impacts. The final determination will be made by the City of Hanford. With the proposed 5.8-acre public park being proposed to offset park impacts, the Project will result in a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.15a(v) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Other Public Facilities?**

The City provides a wide range of public services to the public besides those services previously mentioned above. The City also provides animal control services, refuse pick-up, library facilities, and drainage management. These services are generally funded through the general fund, usage fees, fines, penalties, or impact fee collection.

In the City of Hanford, all jurisdictions collect planning and building fees and impact fees for new development, as necessary. Since the demand for other public facilities is driven by population, the proposed Project would be required to pay fees to offset the demand for that

service. Therefore, the Project would have a less-than-significant impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
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### 3.4.16 - RECREATION

Would the Project:

- |                                                                                                                                                                                              |                          |                          |                                     |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.16a – Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

See Impact #3.4.15a(ii) above.

The City's inventory of parks and recreation facilities ranges from a rose garden to softball and baseball fields to community centers. Park facilities are classified into nine categories: private recreational space, mine-park or pocket park, neighborhood parks, community parks, special use parks, dual-purpose stormwater basin park, indoor recreational facilities, school parks, and regional parks. Recreational facilities span from picnic shelters to sports fields. Hanford maintains 229.17 acres of park and grounds, including inspection of Landscape Assessment Districts and right of way and median landscaped acreage. Additionally, several elementary schools within Hanford provide public open space during non-school hours. The Project proposes to include the construction of a 5.8-acre park for use by the residents of the subdivision.

With the addition of the new 5.8-acre park, the Project would not require the construction of additional recreational facilities due to the existing ratio of at least 5.06 acres per 1,000 residents, where the City of Hanford 2035 General Plan, Goal 9 states that parks be provided at a combined ratio of 3.5 acres per 1,000 residents. Several City parks are nearby the Project, including Centennial and Home Garden Community Park. The Project is not expected to require the construction or expansion of additional City recreational facilities. However, the City of Hanford requires that the Project developer pay park impact fees for parkland,

community centers, recreational facilities, park amenities, vehicle equipment, and impact fee studies to offset any potential impacts from new development.

Although the proposed Project would increase the use of park and recreation facilities in the area, it will not result in the physical deterioration of existing parks or recreational facilities. There would be a less-than-significant impact with the payment of the impact fees and the construction of the 5.8-acre subdivision park. No further analysis in the EIR is warranted.

**Impact #3.4.16b – Would the Project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?**

See Impact #3.4.16a.

The Project proposes to construct and dedicate a 5.8-acre park to be utilized by the immediate community and public. The Project does not propose the construction or expansion of any recreational facilities. There will be no impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
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### 3.4.17 - TRANSPORTATION AND TRAFFIC

Would the Project:

|    |                                                                                                                                                               |                                     |                          |                                     |                          |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. | Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| c. | Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. | Result in inadequate emergency access?                                                                                                                        | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

#### **Impact #3.4.17a – Would the Project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

The subject Project site is located along Avenue 10 1/2 between Hanford Armona Road and Houston Avenue. The Project could potentially significantly impact the local circulation system and level of service at nearby intersections. A Traffic Impact Analysis will be prepared, and impacts to the circulation system will be analyzed within the EIR.

#### **Impact #3.4.17b – Would the Project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?**

CEQA Guidelines Section 15064.3 subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts shift the focus from driver delay to a reduction of vehicular greenhouse gas emissions through the creation of multimodal vehicle trips. Vehicle miles traveled (VMT) is a measure of the total number of miles driven for various purposes and is sometimes expressed as an average per trip or per person.

In the case of this Project, the anticipated VMT impacts could potentially exceed established significance thresholds. As such, an in-depth VMT analysis is required and will be further analyzed in the EIR.

**Impact #3.4.17c – Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

The Project will be designed to meet current standards and safety regulations. All intersections will be constructed to comply with the City and Caltrans regulations and design and safety standards of Chapter 33 of the California Building Code (CBC) and the guidelines of Title 24 to create safe and accessible roadways.

Vehicles exiting the subdivision will be provided with a clear view of the roadway without obstructions. Landscaping associated with the entry driveways could impede such views if improperly installed. Specific circulation patterns and roadway designs will incorporate all applicable safety measures to ensure that hazardous design features or inadequate emergency access to the site or other areas surrounding the Project area would not occur.

Therefore, the Project will have a less-than-significant impact with the incorporated design features and all applicable rules and regulations. No further analysis in the EIR is warranted.

**Impact #3.4.17d – Would the Project result in inadequate emergency access?**

See the discussion in Impact #3.4.9f

State and City fire codes establish standards by which emergency access may be determined. The proposed Project would have to provide adequate unobstructed space for fire trucks to turn around. The proposed Project site would have adequate internal circulation capacity, including entrance and exit routes to provide adequate unobstructed space for fire trucks and other emergency vehicles to gain access and to turn around. The proposed Project would not inhibit the ability of local roadways to continue to accommodate emergency response and evacuation activities. Therefore, the Project would result in a less-than-significant impact associated with emergency access. No further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
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### 3.4.18 - TRIBAL CULTURAL RESOURCES

Would the Project:

- a. Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
- i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
  - ii. A resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe.

☐☐☒☐☐☐☒☐

### Discussion

**Impact #3.4.18a(i) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?**

See also *Section 3.4.5 - Cultural Resources*.



Native American Tribal Consultation was completed for the Project in compliance with Assembly Bill 52 (AB 52), CEQA, and the Public Resources Code.

A Sacred Land Files search was requested from the Native American Heritage Commission (NAHC) to identify previously recorded sacred sites or cultural resources of special importance to tribes and provide contact information for local Native American representatives who may have information about the Project area. A response was received on June 20, 2022, indicating negative results that did not indicate the presence of any cultural places within the Project site and within a half-mile buffer around the Project site. The City of Hanford, as Lead Agency, sent consultation request letters pursuant AB 52 to the tribal groups on the NAHC list.

The Lead Agency has not received information from a local tribal group indicating that the Project would impact tribal cultural resources.

Although there is no obvious evidence of historical or archaeological resources on the Project site, there is the potential during construction for the discovery of cultural resources. Grading, trenching, and other ground-disturbing actions can damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical resources.

The General Plan EIR determined that new development could affect known and previously unknown archaeological resources. The EIR also included policies that specifically address sensitive archaeological resources and their protection, which includes:

- Policy 045—Consult with appropriate Native American associations about potential archaeological sites in the beginning stages of the development review process.
- Policy 046—Require archaeological studies by a certified archeologist in areas of archeological potential significance prior to approval of development projects.
- Policy 047—Consult with the California Archaeological Inventory Southern San Joaquin Valley at California State University, Bakersfield about potential cultural sites on projects that could have an impact on cultural resources.
- Policy 048—Halt construction at a development site if cultural resources are encountered.

An inventory was conducted for the General Plan Update and this site was not listed as having a potential cultural resource. Consultation was conducted with the Santa Rosa Tachi Yokut Tribe for this project, a response was not received. Compliance with General Plan Policy 048, set forth above is required as a condition of approval of TTM 938 and these measures will be added to all engineered plans and specs that would outline the necessary steps to be taken. The condition of approval will require the project proponent to adhere to the policies set forth in the Hanford General Plan pertaining to preservation of Cultural Resources, including Policy 048.

Due to the prior meeting with the Tachi Yokut Tribe on January 10, 2017, the lead agency is requiring as a Condition of Approval that a Burial Treatment Plan be entered into by the applicant/developer prior to any earth disturbing activities. This condition was requested by the Tachi Yokut Tribe for all projects requiring an initial study

These measures will be added to all engineered plans and specs that outline the necessary steps to be taken prior to the start of construction in the unlikely event construction of the Project inadvertently uncovers previously unknown tribal cultural resources. These measures require all work in the immediate vicinity of the discovery of cultural resources find would halt until a qualified archaeologist can evaluate the find and make recommendations. In addition, prior to any ground disturbance, if the City of Hanford receives a request from a Native American tribal group, a surface inspection of the site will be conducted by a tribal monitor, and the tribe will have the opportunity to provide a Native American Monitor during ground-disturbing activities, dependent upon the availability and interest of the tribe.

With the implementation of these measures, impacts are considered to be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.18a(ii) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the Lead Agency shall consider the significance of the resource to a California Native American tribe?**

See discussion in *Section 3.4.5 - Cultural Resources* and Impact #3.14.18(i) above.

With the implementation of these measures, the Project would not cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. The Project would result in a less-than-significant impact, and no further analysis in the EIR is warranted.

|  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact |
|--|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------|
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### 3.4.19 - UTILITIES AND SERVICE SYSTEMS

Would the Project:

- |                                                                                                                                                                                                                                                                                     |                          |                          |                                     |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?                                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?                                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?                                                                                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.19a – Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which would cause significant environmental effects?**

The proposed Project would be developed on land that has already been designated for residential development in the General Plan. The City has indicated that the infrastructure necessary to serve the Project is available and sufficient.

The proposed Project is located within the planned service area for the City services. The Project proposes to construct new wet and dry utility infrastructure to connect to the existing City and private service provider infrastructure. Services that will be installed during the construction of the Project include water, wastewater, storm drain drainage connections, natural gas, electric power, and telecommunications facilities. The proper sizing and placement of the utilities will be designed per the City and other utility development design standards.

See *Section 3.4.10 - Hydrology and Water Quality* for a discussion of wastewater disposal. The Project will not require the construction of new water or wastewater treatment facilities. The City's Wastewater Treatment Facility is currently up to date with all wastewater treatment requirements set forth by the Central Valley Regional Water Quality Control Board. The City's WWTF would continue to comply with the requirements set forth by the Central Valley Regional Water Quality Control Board, as required by law. Therefore, the proposed Project would have a less-than-significant impact.

The proposed Project would be subject to the payment of any applicable connection charges and/or fees and extension of services in a manner that is compliant with the City's development standards, specifications, and policies. All applicable local, State, and federal requirements and best management practices will be incorporated into the construction and operation of the Project. Therefore, impacts would be considered less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.19b – Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?**

As noted in Impact #3.4.10b, the water demand for the proposed Project would result in 300,249 gallons per day (1,371 people x 219 gallons/day = 300,249 gallons/day) or 336.3 acre-feet per year). Water usage for construction is minimal to that required for occupancy of constructed land uses. Even on a short-term basis, such usage does not require the water volumes required for human occupancy of residences and other structures, waste disposal, and year-round landscaping. Water usage for construction dust control, trench and roadway soils compaction, landscaping, and related activities and usage is sporadic rather than long-term. Its quantification for analysis is difficult, but it clearly does not approximate or approach long-term water demand.

Future population growth in the area would create an increase in water usage. Water supply demand was addressed under the Urban Water Management Plan, which concluded that the Tulare Lake Groundwater Subbasin would continue to supply water to meet the City's projected water demands through the year 2035.

It is important to note that the water usage was considered and analyzed in the certified General Plan EIR. Such water usage is approximately the same as that required for Project implementation. The Project will obtain its water from the City of Hanford's municipal water system. The site is within the City of Hanford Water Management Plan service area (City of

Hanford, 2020). The City's groundwater has historically been capable of reliably meeting the City's water demands. It is projected that with the expected population growth when the Project is completed, the supply of water will meet the demand (City of Hanford, 2020). Based on these estimates, the Project's construction and operations would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.19c – Would the Project result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?**

Under the General Plan Update, it was determined that planned improvements and expansion development through various goals and policies would assist in providing wastewater services to the study area as development continues (City of Hanford, 2017). The current capacity of the WWTF is designed to accommodate 8.0 mgd, which is expected to provide adequate services to population growth for the foreseeable future, as planned in the General Plan.

Hanford's existing wastewater system includes a treatment facility south of Houston Avenue and east of 11th Avenue and 21 sanitary sewer lift stations at various locations throughout the City. The City has plans for pump replacements or upgrades at each of its locations within the next several years. The City's wastewater treatment facility provides for treatment, disposal, and reuse of effluent, which meets all of the State's discharge requirements for Hanford. The City's plant treats nearly 1.75 billion gallons of sewage each year. The facility is a major part of the City's effort to keep the environment clean and to provide a water resource for agricultural irrigation and reuse.

The proposed Project will be reviewed by the Department of Public Works, and any applicable fees will be determined. The payment of the fees would help reduce the impacts of the Project related to wastewater treatment. It is anticipated that an increase of 457 homes would result in a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.19d – Would the Project Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

The 1989 California Integrated Waste Management Act (AB 939) requires California counties to attain specific waste diversion goals. In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the proposed project design. Reusing and recycling construction debris would reduce operating expenses and save valuable landfill space.

When developed, the City of Hanford would provide for solid waste collection and disposal for the proposed Project site. The City has achieved a 50 percent diversion rate from the landfill and has incorporated a green waste program and recycling at the Materials Recycling Facility. Project development is subject to payment of Refuse and Recycling Impact Fee and compliance with all statutes and regulations related to solid waste. Therefore, impacts would be less than significant.

Kings Waste Recycling Authority (KWRA) will remove solid waste produced from construction and operation. The KWRA is a key element that helps the City of Hanford meet the State's recycling goals. Refuse from both municipal and commercial haulers is sorted at the KWRA facility to recover recyclable materials, including wood/green waste processed for compost, ferrous/metallic items, plastic and glass, newspaper, scrap paper, junk mail, magazines, paperboard, and cardboard. The KWRA does not operate an active landfill. Waste is hauled by transfer trucks from the Material Recover Facility (MRF) to the State permitted 320-acre Chemical Waste Management Landfill site in Kettleman Hills, approximately 45 miles west of the MRF. A combined MRF and Transfer Station (TS) was constructed near the old landfill southeast of Hanford. The MRF and TS facility includes a small but complete Household Hazardous Waste collection station. KWRA operates the MFR and TS as an enterprise function, with all revenue coming from solid waste disposal fees and the sale of recovered recyclable materials and compost. Responsibilities of the KWRA include the siting, permitting, financing, construction, and operation of landfills, and an MRF and TS. Additional responsibilities include all activities and waste diversion goals required by the State and the closure, post-closure monitoring, and liabilities of all identified former landfills in Kings County.

### **Construction**

Non-hazardous construction refuse and solid waste would be collected and recycled or disposed of at the KWRA facility (City of Hanford, 2017). Any hazardous waste generated during construction would be disposed of at an approved location.

The Kettleman Hills Landfill has a maximum permit capacity of 18.4 million cubic yards (mcy) and a remaining capacity of 17.4 mcy and is expected to remain operational until at least 2030 (Cal Recycle, 2022).

The solid waste generated by construction activities is not expected to exceed the capacity of the landfill. Additionally, the construction period for the Project is expected to be up to 24 months, and the landfill that would serve the Project will be in operation during the construction period.

### **Operation**

The Project would produce waste that would be collected and disposed of at the local landfill by a licensed waste hauler. Workers would generate small amounts of typical household refuse during maintenance visits. Some refuse will be sent for recycling as a part of the City's recycling efforts.

In compliance with federal, State, and local statutes and regulations related to solid waste, the Project would dispose of all waste generated on-site at an approved solid waste facility. The Project does not conflict with federal, State, or local regulations related to solid waste. The proposed Project would be served by a landfill with the sufficient permitted capacity to accommodate the Project's solid waste disposal needs in compliance with federal, State, and local statutes and regulations related to solid waste. Therefore, the Project would have a less-than-significant impact, and no further analysis in the EIR is warranted.

**Impact #3.4.19e – Would the Project comply with federal, state, and local statutes and regulations related to solid waste?**

See Impact #3.4.19d.

The Project would result in a less-than-significant impact, and no further analysis in the EIR is warranted.

|                                                                                                                                                                                                                                                                    | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less-than-<br>Significant<br>Impact | No<br>Impact             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------------------|
| <b>3.4.20 - WILDFIRE</b>                                                                                                                                                                                                                                           |                                      |                                                                |                                     |                          |
| Would the Project:                                                                                                                                                                                                                                                 |                                      |                                                                |                                     |                          |
| a. Substantially impair an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?                                                       | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?                                                                            | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

#### Impact #3.4.20a – Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

See Impact #3.4.9f regarding emergency response.

Access to the site for emergency vehicles to the site would be maintained throughout the construction period. The Project would not interfere with any local or regional emergency response or evacuation plans and would not result in a substantial alteration to the adjacent and area circulation system. Impacts related to fire hazards and emergency response plans would be less than significant. No further analysis in the EIR is warranted.

#### Impact #3.4.20b – Would the Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?



The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels, and fuel moisture contents), and topography (degree of slope). Fuels such as grass are highly flammable because they have a high surface area to mass ratio and require less heat to reach the ignition point. Steep slopes contribute to fire hazards by intensifying the effects of wind and making fire suppression difficult.

The Project site and surrounding area are relatively flat and without steep slopes. The site is located in a predominately urban area with some ongoing agricultural activities, which is not considered at significant risk of wildlife. Therefore, impacts would be less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.20c – Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

See discussion in Impact #3.4.20a-b.

The Project proposes to construct 457 single-family residences and includes the development of infrastructure (water, sewer, electrical power lines, and storm drainage) required to support the proposed residential uses. The Project would require installing or maintaining additional electrical distribution lines and natural gas lines to connect the residences to the existing utility grid. However, the Project would be constructed in accordance with all local, State, and federal regulations regarding power lines and other related infrastructure, as well as fire suppression requirements. The design of all proposed utilities will be subject to the review and approval of the City. The Project will also be subject to payment of development fees to offset impacts on City services. It will ensure the viability of the utility infrastructure's ability for fire protection and suppression activities. Therefore, impacts for the Project would be considered less than significant, and no further analysis in the EIR is warranted.

**Impact #3.4.20d – Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

The Project site is not located in or near an SRA or an LRA Fire Hazard Severity Zone. Thus, the proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. The Project site is within the Federal Emergency Management Agency (FEMA) Area of Minimal Flood Hazard. Therefore, the proposed Project would have no impact, and no further analysis in the EIR is warranted.

| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|----------------------------------------------------------------|------------------------------------|--------------|
|--------------------------------------|----------------------------------------------------------------|------------------------------------|--------------|

### 3.4.21 - MANDATORY FINDINGS OF SIGNIFICANCE

- |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                          |                                     |                          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)                                                                                                                                         | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| c. | Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                                                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

### Discussion

**Impact #3.4.21a – Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?**

As evaluated in this IS, the Project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory including paleontological resources. Avoidance and minimization

measures have been recommended to be added to all engineered plans and specs. By implementing these measures related to cultural, paleontological, and biological resources. The incremental effects of the proposed Project would not contribute to a cumulative adverse impact on these resources. Therefore, the Project would have a less-than-significant impact. No further analysis in the EIR is warranted.

**Impact #3.4.21b - Does the Project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)?**

The Project has the potential to contribute a cumulatively significant impact on the City’s circulation system and impacts related to VMT, as identified in this Initial Study. Such impacts could occur as a result of full buildout of the Project. Therefore, the preparation of a focused EIR is warranted to evaluate the Project’s contribution to transportation impacts related to the City’s circulation system and VMT. The EIR will evaluate the proposed Project’s contribution to cumulative impacts in this area.

**Impact #3.4.21c - Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?**

The ways in which people can be subject to substantial adverse effects from projects include potential exposure to significant levels of local air pollutants; potential exposure to seismic and flooding hazards; potential exposure to hazardous materials; potential exposure to contamination from hazardous materials; and potential exposure to excessive noise levels. The risks from these potential hazards would be avoided or reduced to less-than-significant levels through compliance with existing laws, regulations, or avoidance and minimization measures placed on all engineered plans and specs. All direct and indirect impacts attributable to the Project were identified and determined to be less than significant, except for the Project’s contribution to transportation impacts related to the City’s circulation system and VMT.

The EIR will evaluate the proposed Project’s contribution to impacts in this area, and preparation of a focused EIR is warranted for this Project.

## **SECTION 4 - LIST OF PREPARERS**

### **4.1 - Lead Agency**

- Jason Waters – Community Development Director
- Gabrielle de Silva Myers, Senior Planner

### **4.2 - QK**

- Jaymie Brauer – Principal Planner
- Thomas Kobayashi – Senior Associate Planner

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# 1.0 Introduction

## 1.1 Description of the Region/Project

The Project Applicant is proposing to develop a 443-unit single-family residential tract via tentative subdivision map (Project) on two APN's 011-440-015 and 011-440-014 with total land area of 95 acres in the City of Hanford, CA. The Project site is located in the southern portion of Hanford's city limit located between Hanford Armona Road and Houston Avenue adjacent to west of 10 ½ Avenue and approximately 1 mile south of SR198.

This Air Quality & Greenhouse Gas Impact Assessment has been prepared for the purpose of identifying potential project-specific or site-specific air quality impacts that may result from the Project. Figures 1 and 2 show the location of the Project along with major roadways and highways.

The City of Hanford is located in Kings County one of the most polluted air basins in the country – the San Joaquin Valley Air Basin (SJVAB). The surrounding topography includes foothills and mountains to the east and west. These mountain ranges direct air circulation and dispersion patterns. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Hanford is characterized by hot, dry summers and cool winters with the notable presence of Tule fog.

## 1.2 Regulatory

Air quality within the Project area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the City of Hanford and Kings County are discussed below along with their individual responsibilities.

### 1.2.1 Federal Agencies

#### ✓ U.S. Environmental Protection Agency (EPA)

The Federal Clean Air Bill first adopted in 1967 and periodically amended since then, established federal ambient air quality standards. A 1987 amendment to the Bill set a deadline for the attainment of these standards. That deadline has since passed. The other Clean Air Act (CAA) Bill Amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources. The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the 1990 amendments.

The CAA and the national ambient air quality standards identify levels of air quality for six "criteria" pollutants, which are considered the maximum levels of ambient air pollutants

considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants include ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

CAA Section 176(c) (42 U.S.C. 7506(c)) and EPA transportation conformity regulations (40 CFR 93 Subpart A) require that each new RTP and Transportation Improvement Program (TIP) be demonstrated to conform to the State Implementation Plan (SIP) before the RTP and TIP are approved by the Metropolitan planning organization (MPO) or accepted by the U.S. Department of Transportation (DOT). The conformity analysis is a federal requirement designed to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). However, because the State Implementation Plan (SIP) for particulate matter 10 microns or less in diameter (PM<sub>10</sub>), particulate matter 2.5 microns or less in diameter (PM<sub>2.5</sub>), and Ozone address attainment of both the State and federal standards, for these pollutants, demonstrating conformity to the federal standards is also an indication of progress toward attainment of the State standards. Compliance with the State air quality standards is provided on the pages following this federal conformity discussion.

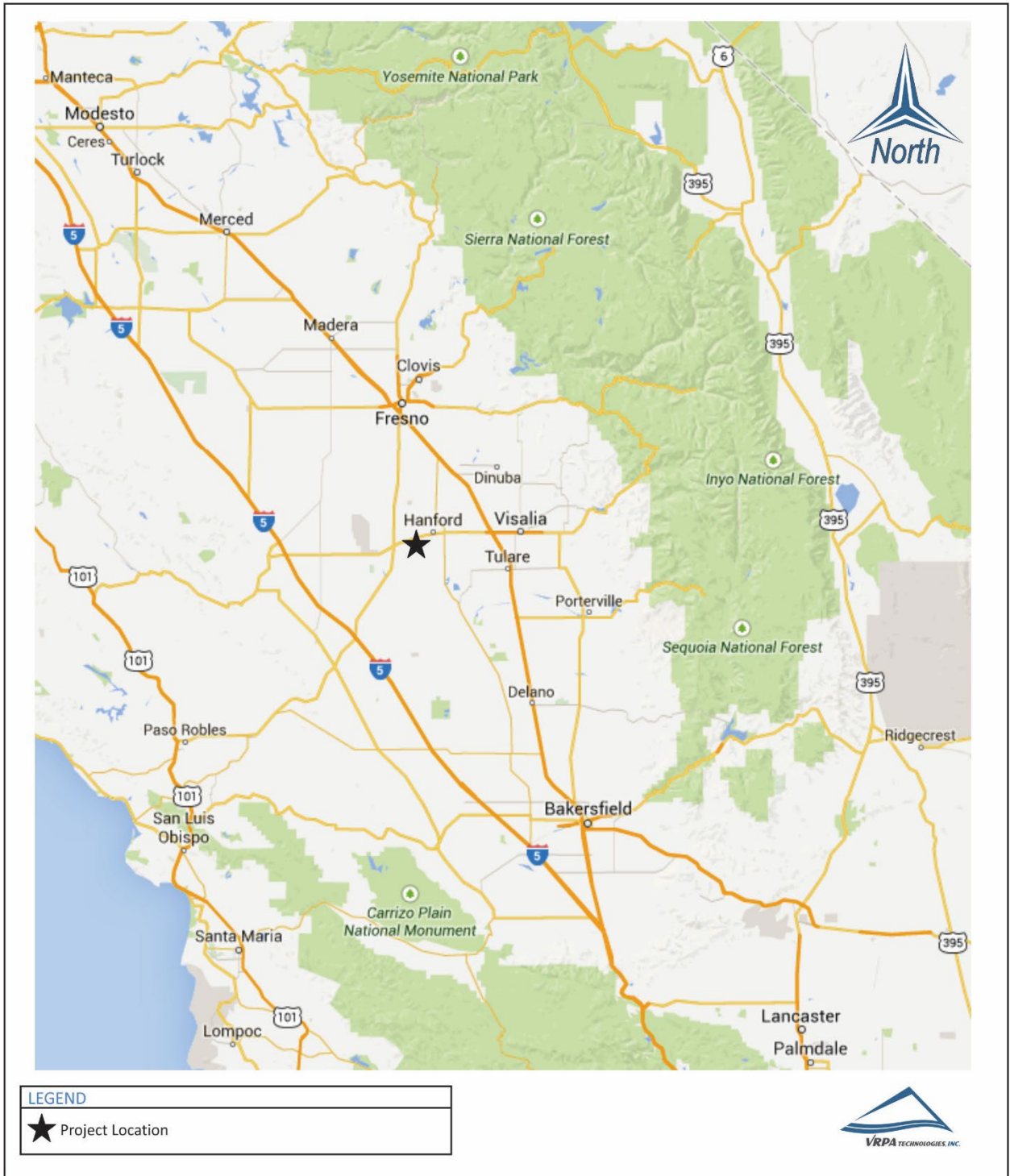
The EPA approved San Joaquin Valley reclassification of the ozone (8-hour) designation to extreme nonattainment in the Federal Register on May 5, 2010, even though the San Joaquin Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard. In accordance with the CAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. In the Federal Register on October 26, 2015, the EPA revised the primary and secondary standard to 0.070 parts per million (ppm) to provide increased public health protection against health effects associated with long- and short-term exposures. The previous ozone standard was set in 2010 at 0.075 ppm.

Kings County is located in a nonattainment area for the 8-hour ozone standard, PM<sub>2.5</sub> standard, and PM<sub>10</sub> standard.



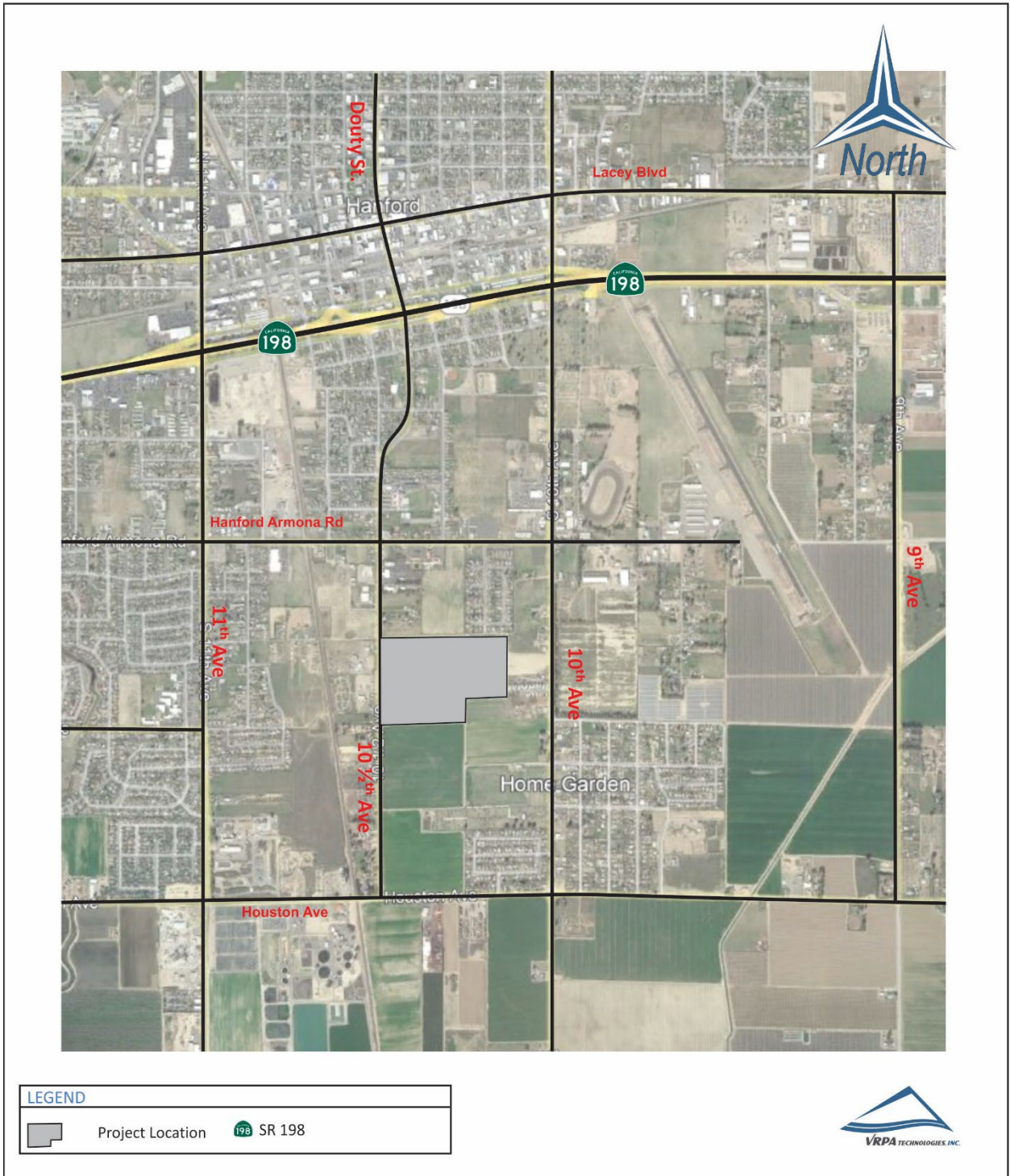
## Lunaria Project Development AQ/GHG&HRA

### Figure



**Lunaria Project Development AQ/GHG&HRA**  
**Project Location**

**Figure**  
**2**



### 1.2.2 Federal Regulations

#### ✓ **National Environmental Policy Act (NEPA)**

NEPA provides general information on the effects of federally funded projects. The Act was implemented by regulations included in the Code of Federal Regulations (40CFR6). The code requires careful consideration concerning environmental impacts of federal actions or plans, including projects that receive federal funds. The regulations address impacts on land uses and conflicts with state, regional, or local plans and policies, among others. They also require that projects requiring NEPA review seek to avoid or minimize adverse effects of proposed actions and to restore and enhance environmental quality as much as possible.

#### ✓ **State Implementation Plan (SIP)/ Air Quality Management Plans (AQMPs)**

To ensure compliance with the NAAQS, EPA requires states to adopt SIP aimed at improving air quality in areas of nonattainment or a Maintenance Plan aimed at maintaining air quality in areas that have attained a given standard. New and previously submitted plans, programs, district rules, state regulations, and federal controls are included in the SIPs. Amendments made in 1990 to the federal CAA established deadlines for attainment based on an area's current air pollution levels. States must enact additional regulatory programs for nonattainment's areas in order to adhere with the CAA Section 172. In California, the SIPs must adhere to both the NAAQS and the California Ambient Air Quality Standards (CAAQS).

To ensure that State and federal air quality regulations are being met, Air Quality Management Plans (AQMPs) are required. AQMPs present scientific information and use analytical tools to identify a pathway towards attainment of NAAQS and CAAQS. The San Joaquin Valley Air Pollution Control District (SJVAPCD) develops the AQMPs for the region where the Kings County Association of Governments (KCAG) operates. The regional air districts begin the SIP process by submitting their AQMPs to the California Air Resources Board (CARB). CARB is responsible for revising the SIP and submitting it to EPA for approval. EPA then acts on the SIP in the Federal Register. The items included in the California SIP are listed in the Code of Federal Regulations Title 40, Chapter 1, Part 52, Subpart 7, Section 52.220.

#### ✓ **Transportation Control Measures**

One particular aspect of the SIP development process is the assessment of available transportation control measures (TCMs) as a part of making progress towards clean air goals. TCMs are defined in Section 108(f)(1) of the CAA and are strategies designed to reduce vehicle miles traveled, vehicle idling, and associated air pollution. These goals are generally achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.



✓ **Energy Policy Act of 1992 (EPAct)**

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAct. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of alternative fueled vehicles (AFVs). States are also required by the act to consider a variety of incentive programs to help promote AFVs.

### 1.2.3 State Agencies

✓ **California Air Resources Board (CARB)**

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing its own air quality legislation called the California Clean Air Act (CCAA), adopted in 1988. CARB was created in 1967 from the merging of the California Motor Vehicle Pollution Control Board and the Bureau of Air Sanitation and its Laboratory.

CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. Whereas CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. CARB combines its data with all local district data and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by CARB, and attainment plans adopted by the Air Pollution Control Districts (APCDs) and Air Quality Management District's (AQMDs) and approved by CARB.

States may establish their own standards, provided the State standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to California Health and Safety Code (CH&SC) [§39606(b)] and its predecessor statutes.

The CH&SC [§39608] requires CARB to "identify" and "classify" each air basin in the State on a pollutant-by-pollutant basis. Subsequently, CARB designated areas in California as nonattainment based on violations of the CAAQSs. Designations and classifications specific to the SJVAB can be found in the next section of this document. Areas in the State were also classified based on severity of air pollution problems. For each nonattainment class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five percent-per-

year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. In addition, air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that lays out a program to attain and maintain the CCAA mandates.

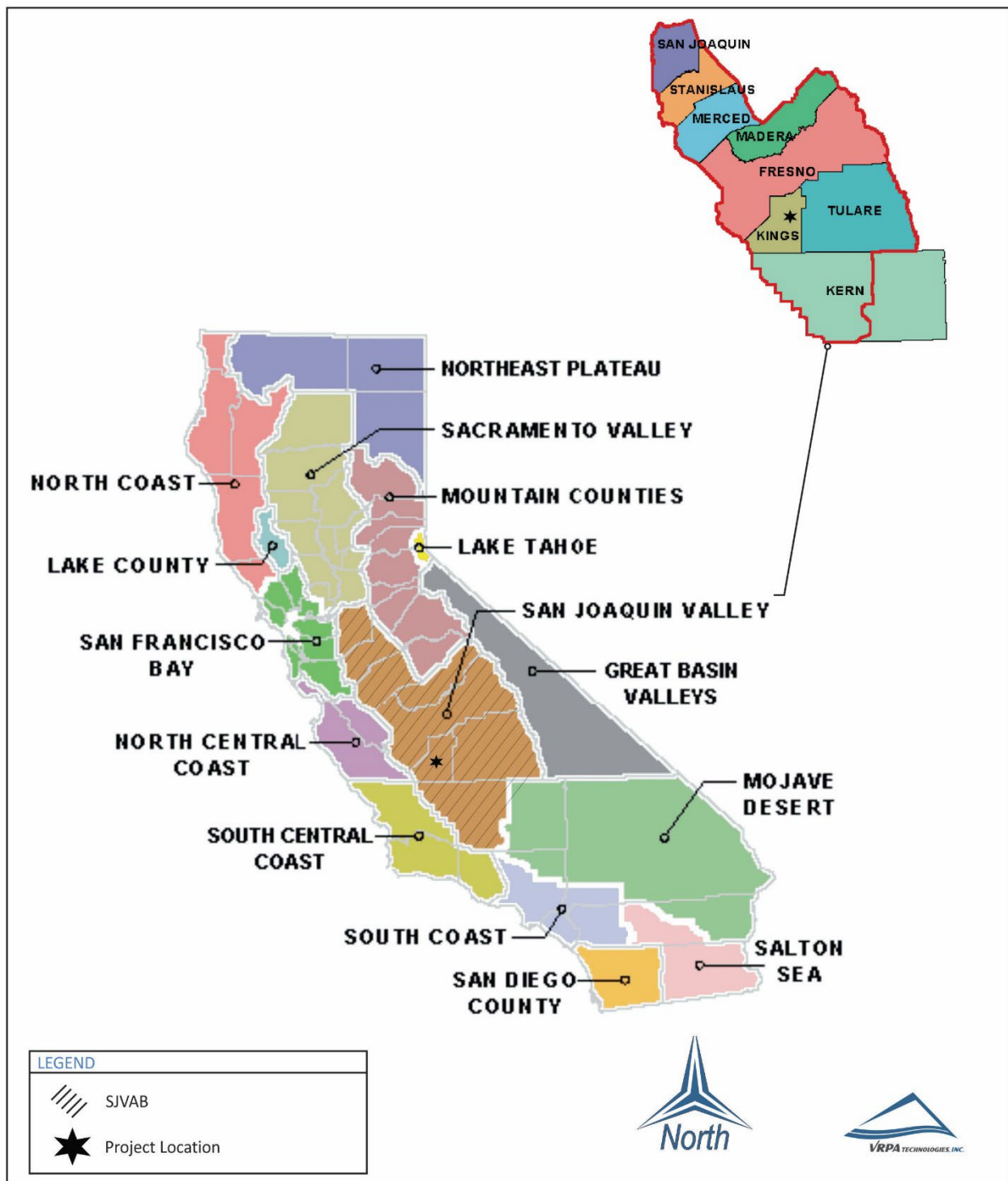
CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Kings County Association of Governments (KCAG) region, CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005. KCAG's 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted in August 2018, projects that the Kings County region would achieve the prescribed emissions targets.

Other CARB duties include monitoring air quality. CARB has established and maintains, in conjunction with local APCDs and AQMDs, a network of sampling stations (called the State and Local Air Monitoring [SLAMS] network), which monitor the present pollutant levels in the ambient air.

Kings County is in the CARB-designated, SJVAB. A map of the SJVAB is provided in Figure 3. In addition to Kings County, the SJVAB includes Fresno, Kern, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. Federal and State standards for criteria pollutants are provided in Table 1.

**Lunaria Project Development AQ/GHG&HRA**  
**San Joaquin Valley Air Basin**

**Figure**  
**3**



**Table 1**  
**Ambient Air Quality Standards**

| Pollutant                                         | Averaging Time          | California Standards <sup>1</sup>  |                                                        | National Standards <sup>2</sup>                         |                                   |                                                                     |
|---------------------------------------------------|-------------------------|------------------------------------|--------------------------------------------------------|---------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------|
|                                                   |                         | Concentration <sup>3</sup>         | Method <sup>4</sup>                                    | Primary <sup>3,5</sup>                                  | Secondary <sup>3,6</sup>          | Method <sup>7</sup>                                                 |
| Ozone (O <sub>3</sub> ) <sup>8</sup>              | 1 Hour                  | 0.09 ppm (180 µg/m <sup>3</sup> )  | Ultraviolet Photometry                                 | --                                                      | Same as Primary Standard          | Ultraviolet Photometry                                              |
|                                                   | 8 Hour                  | 0.070 ppm (137 µg/m <sup>3</sup> ) |                                                        | 0.070 ppm (137 µg/m <sup>3</sup> )                      |                                   |                                                                     |
| Respirable Particulate Matter (PM10) <sup>9</sup> | 24 Hour                 | 50 µg/m <sup>3</sup>               | Gravimetric or Beta Attenuation                        | 150 µg/m <sup>3</sup>                                   | Same as Primary Standard          | Inertial Separation and Gravimetric Analysis                        |
|                                                   | Annual Arithmetic Mean  | 20 µg/m <sup>3</sup>               |                                                        | --                                                      |                                   |                                                                     |
| Fine Particulate Matter (PM2.5) <sup>9</sup>      | 24 Hour                 | --                                 | --                                                     | 35 µg/m <sup>3</sup>                                    | Same as Primary Standard          | Inertial Separation and Gravimetric Analysis                        |
|                                                   | Annual Arithmetic Mean  | 12 µg/m <sup>3</sup>               | Gravimetric or Beta Attenuation                        | 12.0 µg/m <sup>3</sup>                                  | 15 µg/m <sup>3</sup>              |                                                                     |
| Carbon Monoxide (CO)                              | 1 Hour                  | 20 ppm (23 mg/m <sup>3</sup> )     | Non-Dispersive Infrared Photometry (NDIR)              | 35 ppm (40 mg/m <sup>3</sup> )                          | --                                | Non-Dispersive Infrared Photometry (NDIR)                           |
|                                                   | 8 Hour                  | 9.0 ppm (10 mg/m <sup>3</sup> )    |                                                        | 9 ppm (10 mg/m <sup>3</sup> )                           | --                                |                                                                     |
|                                                   | 8 Hour (Lake Tahoe)     | 6 ppm (7 mg/m <sup>3</sup> )       |                                                        | --                                                      | --                                |                                                                     |
| Nitrogen Dioxide (NO <sub>2</sub> ) <sup>10</sup> | 1 Hour                  | 0.18 ppm (339 µg/m <sup>3</sup> )  | Gas Phase Chemiluminescence                            | 100 ppb (188 µg/m <sup>3</sup> )                        | --                                | Gas Phase Chemiluminescence                                         |
|                                                   | Annual Arithmetic Mean  | 0.030 ppm (57 µg/m <sup>3</sup> )  |                                                        | 0.053 ppm (100 µg/m <sup>3</sup> )                      | Same as Primary Standard          |                                                                     |
| Sulfur Dioxide (SO <sub>2</sub> ) <sup>11</sup>   | 1 Hour                  | 0.25 ppm (655 µg/m <sup>3</sup> )  | Ultraviolet Fluorescence                               | 75 ppb (196 µg/m <sup>3</sup> )                         | --                                | Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method) |
|                                                   | 3 Hour                  | --                                 |                                                        | --                                                      | 0.5 ppm (1300 µg/m <sup>3</sup> ) |                                                                     |
|                                                   | 24 Hour                 | 0.04 ppm (105 µg/m <sup>3</sup> )  |                                                        | 0.14 ppm (for cetain areas) <sup>11</sup>               | --                                |                                                                     |
|                                                   | Annual Arithmetic Mean  | --                                 |                                                        | 0.030 ppm (for cetain areas) <sup>11</sup>              | --                                |                                                                     |
| Lead <sup>12,13</sup>                             | 30 Day Average          | 1.5 µg/m <sup>3</sup>              | Atomic Absorption                                      | --                                                      | --                                | High Volume Sampler and Atomic Absorption                           |
|                                                   | Calendar Quarter        | --                                 |                                                        | 1.5 µg/m <sup>3</sup> (for certain areas) <sup>11</sup> | Same as Primary Standard          |                                                                     |
|                                                   | Rolling 3-Month Average | --                                 |                                                        | 0.15 µg/m <sup>3</sup>                                  |                                   |                                                                     |
| Visibility Reducing Particles <sup>14</sup>       | 8 Hour                  | See footnote 14                    | Beta Attenuation and Transmittance through Filter Tape | No National Standards                                   |                                   |                                                                     |
| Sulfates                                          | 24 Hour                 | 25 µg/m <sup>3</sup>               | Ion Chromatography                                     |                                                         |                                   |                                                                     |
| Hydrogen Sulfide                                  | 1 Hour                  | 0.03 ppm (42 µg/m <sup>3</sup> )   | Ultraviolet Fluorescence                               |                                                         |                                   |                                                                     |
| Vinyl Chloride <sup>12</sup>                      | 24 Hour                 | 0.01 ppm (26 µg/m <sup>3</sup> )   | Gas Chromatography                                     |                                                         |                                   |                                                                     |

See footnotes on next page ...

**Footnotes:**

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
  2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
  3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
  4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
  5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
  6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
  7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
  8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
  9. On December 14, 2012, the national annual PM<sub>2.5</sub> primary standard was lowered from 15 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>. The existing national 24-hour PM<sub>2.5</sub> standards (primary and secondary) were retained at 35 µg/m<sup>3</sup>, as was the annual secondary standard of 15 µg/m<sup>3</sup>. The existing 24-hour PM<sub>10</sub> standards (primary and secondary) of 150 µg/m<sup>3</sup> also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
  10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
  11. On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
- Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
  13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
  14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.



#### 1.2.4 State Regulations

##### ✓ CARB Mobile-Source Regulation

The State of California is responsible for controlling emissions from the operation of motor vehicles in the State. Rather than mandating the use of specific technology or the reliance on a specific fuel, CARB's motor vehicle standards specify the allowable grams of pollutant per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved.

##### ✓ California Clean Air Act

The CCAA was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. The CCAA establishes more stringent ambient air quality standards than those included in the Federal CAA. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the CH&SC [§39606(b)], which are similar to the federal standards. The SJVAPCD is one of 35 AQMDs that have prepared air quality management plans to accomplish a five percent (5%) annual reduction in emissions documenting progress toward the State ambient air quality standards.

##### ✓ Tanner Air Toxics Act

California regulates Toxic Air Contaminants (TACs) primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of Hazardous Air Pollutants (HAPs) as TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators).

These rules and standards provide for:

- More stringent emission standards for some new urban bus engines, beginning with 2002 model year engines.
- Zero-emission bus demonstration and purchase requirements applicable to transit agencies
- Reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule.

✓ **AB 1493 (Pavley)**

AB 1493 (Pavley) enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB would apply to 2009 and later model year vehicles. CARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicles by an estimated 18 percent in 2020 and by 27 percent in 2030 [Association of Environmental Professionals (AEP) 2007)]. In 2005, the CARB requested a waiver from U.S. EPA to enforce the regulation, as required under the CAA. Despite the fact that no waiver had ever been denied over a 40-year period, the then Administrator of the EPA sent Governor Schwarzenegger a letter in December 2007, indicating he had denied the waiver. On March 6, 2008, the waiver denial was formally issued in the Federal Register. Governor Schwarzenegger and several other states immediately filed suit against the federal government to reverse that decision. On January 21, 2009, CARB requested that EPA reconsider denial of the waiver. EPA scheduled a re-hearing on March 5, 2009. On June 30, 2009, EPA granted a waiver of CAA preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year.

✓ **Assembly Bill 32 (California Global Warming Solutions Act of 2006)**

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 required that statewide GHG emissions be reduced to 1990 levels by 2020. December 31, 2020 is the deadline for achieving the 2020 GHG emissions cap. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions

to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2020 would represent an approximate 25 to 30 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions.

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan adopted in December of 2008. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit.

✓ **Senate Bill 375**

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPO's regional transportation plan. CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Kings County Association of Government (KCAG), CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005. KCAG 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted in August 2018, projects that the Kings County region would achieve the prescribed emissions targets.

This law also extends the minimum time period for the regional housing needs allocation cycle from five years to eight years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

✓ **Executive Order B-30-15**

Executive Order B-30-15, which was signed by Governor Brown in 2016, establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires MPO's to implement measures that will achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.

✓ **California Global Warming Solutions Act of 2006: emissions limit, or SB 32**

SB 32 is a California Senate bill expanding upon AB 32 to reduce greenhouse gas (GHG) emissions. The lead author is Senator Fran Pavley and the principal co-author is Assembly member Eduardo Garcia. SB 32 was signed into law on September 8, 2016, by Governor Brown. SB 32 sets into law the mandated reduction target in GHG emissions as written into Executive Order B-30-15. SB 32 requires that there be a reduction in GHG emissions to 40% below the 1990 levels by 2030. Greenhouse gas emissions include carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons. The California Air Resources Board (CARB) is responsible for ensuring that California meets this goal. The provisions of SB 32 were added to Section 38566 of the Health and Safety Code subsequent to the bill's approval. The bill went into effect January 1, 2017. SB 32 builds onto Assembly Bill (AB) 32 written by Senator Fran Pavley and Assembly Speaker Fabian Nunez passed into law on September 27, 2006. AB 32 required California to reduce greenhouse gas emissions to 1990 levels by 2020 and SB 32 continues that timeline to reach the targets set in Executive Order B-30-15. SB 32 provides another intermediate target between the 2020 and 2050 targets set in Executive Order S-3-05.

### 1.2.5 *Regional Agencies*

✓ **San Joaquin Valley Air Pollution Control District**

The SJVAPCD is the agency responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Kings County and throughout the SJVAB. The District also has responsibility for monitoring air quality and setting and enforcing limits for source emissions. CARB is the agency with the legal responsibility for regulating mobile source emissions. The District is precluded from such activities under State law.

The District was formed in mid-1991 and prepared and adopted the San Joaquin Valley Air Quality Attainment Plan (AQAP), dated January 30, 1992, in response to the requirements of the State CCAA. The CCAA requires each non-attainment district to reduce pertinent air contaminants by at least five percent (5%) per year until new, more stringent, 1988 State air quality standards are met.

Activities of the SJVAPCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

The SJVAPCD has prepared the following State Implementation Plans to address ozone, PM-10 and PM2.5 that currently apply to non-attainment areas:

- The 2016 Ozone Plan (2008 standard) was adopted by SJVAPCD on June 16, 2016 and

subsequently adopted by ARB on July 21, 2016.

- The 2013 1-Hour Ozone Plan (revoked 1997 standard) was adopted by the SJVAPCD on September 19, 2013. EPA withdrew its approval of the plan due to litigation. The District plans to submit a “redesignation substitute” to EPA to maintain its attainment status for this revoked ozone standard.
- The 2007 PM-10 Maintenance Plan (as revised in 2015) was approved by EPA on July 8, 2016 (effective September 30, 2016).
- The 2012 PM2.5 Plan (as revised in 2015) was approved by EPA on August 16, 2016 (effective September 30, 2016).

The SJVAPCD Plans identified above represent SJVAPCD’s plan to achieve both state and federal air quality standards. The regulations and incentives contained in these documents must be legally enforceable and permanent. These plans break emissions reductions and compliance into different emissions source categories.

The SJVAPCD also prepared the *Guide for Assessing and Mitigation Air Quality Impacts* (GAMAQI), dated March 19, 2015. The GAMAQI is an advisory document that provides Lead Agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality impacts in environmental documents. Local jurisdictions are not required to utilize the methodology outlined therein. This document describes the criteria that SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether or not projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts.

### 1.2.6 Regional Regulations

The SJVAPCD has adopted numerous rules and regulations to implement its air quality plans. Following, are significant rules that will apply to the Project.

#### ✓ Regulation VIII – Fugitive PM10 Prohibitions

Regulation VIII is comprised of District Rules 8011 through 8081, which are designed to reduce PM<sub>10</sub> emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc. The proposed Project will be required to comply with this regulation. Regulation VIII control measures are provided below:

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*

2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*
7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

✓ **Rule 8021 – Construction, Demolition, Excavation, and Other Earthmoving Activities**

District Rule 8021 requires owners or operators of construction projects to submit a Dust Control Plan to the District if at any time the project involves non-residential developments of five or more acres of disturbed surface area or moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project. The proposed Project will meet these criteria and will be required to submit a Dust Control Plan to the District in order to comply with this rule.

✓ **Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations**

If asphalt paving will be used, then paving operations of the proposed Project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

✓ **Rule 9510 – Indirect Source Review (ISR)**

The purpose of this rule is to fulfill the District's emission reduction commitments in the PM10 and Ozone Attainment Plans, achieve emission reductions from construction activities, and to provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures. The rule is expected to reduce nitrogen oxides and particulates throughout the San Joaquin Valley by more than 10 tons per day.

### 1.2.7 Local Plans

#### ✓ City of Hanford General Plan

California State Law requires every city and county to adopt a comprehensive General Plan to guide its future development. The General Plan essentially serves as a “constitution for development”— the document that serves as the foundation for all land use decisions. The City of Hanford 2035 General Plan Update (2018) includes various elements, including air quality and greenhouse gases, that address local concerns and provides goals and policies to achieve its development goals.



## 2.0 Environmental Setting

This section describes existing air quality within the San Joaquin Valley Air Basin and in Kings County, including the identification of air pollutant standards, meteorological and topological conditions affecting air quality, and current air quality conditions. Air quality is described in relation to ambient air quality standards for criteria pollutants such as, ozone, carbon monoxide, and particulate matter. Air quality can be directly affected by the type and density of land use change and population growth in urban and rural areas.

### 2.1 Geographical Location

The SJVAB is comprised of eight counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Encompassing 24,840 square miles, the San Joaquin Valley is the second largest air basin in California. Cumulatively, counties within the Air Basin represent approximately 16 percent of the State's geographic area. The Air Basin is bordered by the Sierra Nevada Mountains on the east (8,000 to 14,492 feet in elevation), the Coastal Range on the west (4,500 feet in elevation), and the Tehachapi Mountains on the south (9,000 feet elevation). The San Joaquin Valley is open to the north extending to the Sacramento Valley Air Basin.

### 2.2 Topographic Conditions

Kings County is located within the San Joaquin Valley Air Basin [as determined by the California Air Resources Board (CARB)]. Air basins are geographic areas sharing a common "air shed." A description of the Air Basin in the County, as designated by CARB, is provided in the paragraph below. Air pollution is directly related to the region's topographic features, which impact air movement within the Basin.

Wind patterns within the SJVAB result from marine air that generally flows into the Basin from the San Joaquin River Delta. The Coastal Range hinders wind access into the Valley from the west, the Tehachapi's prevent southerly passage of airflow, and the high Sierra Nevada Mountain Range provides a significant barrier to the east. These topographic features result in weak airflow that becomes restricted vertically by high barometric pressure over the Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500-3,000 feet).

### 2.3 Climate Conditions

Hanford is located in one of the most polluted air basins in the country. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Hanford is characterized by warm, dry summers and cool winters with significant Tule fog.



Ozone, classified as a “regional” pollutant, often afflicts areas downwind of the original source of precursor emissions. Ozone can be easily transported by winds from a source area. Peak ozone levels tend to be higher in the southern portion of the Valley, as the prevailing summer winds sweep precursors downwind of northern source areas before concentrations peak. The separate designations reflect the fact that ozone precursor transport depends on daily meteorological conditions.

Other primary pollutants, carbon monoxide (CO), for example, may form high concentrations when wind speed is low. During the winter, Hanford experiences cold temperatures and calm conditions that increase the likelihood of a climate conducive to high CO concentrations.

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble, so precipitation and fog tends to “reduce” CO concentrations in the atmosphere. PM10 is somewhat “washed” from the atmosphere with precipitation. Precipitation in the San Joaquin Valley is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast. In the winter, this high- pressure system moves southward, allowing Pacific storms to move through the San Joaquin Valley. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Ranges. Significant precipitation also occurs on the western side of the Sierra Nevada. On the valley floor, however, there is some down slope flow from the Coast Ranges and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the San Joaquin Valley is produced by those storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. It is usually associated with an influx of moisture into the San Joaquin Valley through the San Francisco area during an anomalous flow pattern in the lower layers of the atmosphere. Although the hourly rates of precipitation from these storms may be high, their rarity keeps monthly totals low.

Precipitation on the San Joaquin Valley floor and in the Sierra Nevada decreases from north to south. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center, receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. This is primarily because the Pacific storm track often passes through the northern part of the state while the southern part of the state remains protected by the Pacific High. Precipitation in the San Joaquin Valley Air Basin (SJVAB) is confined primarily to the winter months with some also occurring in late summer and fall. Average annual rainfall for the entire San Joaquin Valley is approximately 5 to 16 inches. Snowstorms, hailstorms, and ice storms occur infrequently in the San Joaquin Valley and severe occurrences of any of these are very rare.

The winds and unstable air conditions experienced during the passage of storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates strong

low-level temperature inversions and very stable air conditions. This situation leads to the San Joaquin Valley's famous Tule Fogs. The formation of natural fog is caused by local cooling of the atmosphere until it is saturated (dew point temperature). This type of fog, known as radiation fog, is more likely to occur inland. Cooling may also be accomplished by heat radiation losses or by horizontal movement of a mass of air over a colder surface. This second type of fog, known as advection fog, generally occurs along the coast.

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM<sub>10</sub>. Ozone levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large numbers of fireplaces are in use. A secondary peak in CO concentrations occurs during morning commute hours when a large number of motorists are on the road and the surface inversion has not yet broken.

The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NO<sub>x</sub>), lowering pollutant concentrations. At the same time, fog could help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM<sub>10</sub> and PM<sub>2.5</sub> standards.

## 2.4 Anthropogenic (Man-made) Sources

In addition to climatic conditions (wind, lack of rain, etc.), air pollution can be caused by anthropogenic or man-made sources. Air pollution in the SJVAB can be directly attributed to human activities, which cause air pollutant emissions. Human causes of air pollution in the Valley consist of population growth, urbanization (gas-fired appliances, residential wood heaters, etc.), mobile sources (i.e., cars, trucks, airplanes, trains, etc.), oil production, agriculture, and other socioeconomic activities. The most significant factors, which are accelerating the decline of air quality in the SJVAB, are the Valley's rapid population growth and its associated increases in traffic, urbanization, and industrial activity.

Carbon monoxide emissions overwhelmingly come from mobile sources in the San Joaquin Valley; on-road vehicles contributed 34 percent, while other mobile vehicles, such as trains, planes, and off-road vehicles, contribute another 20 percent in 2012 according to emission projections from the CARB. Motor vehicles account for significant portions of regional gaseous and particulate emissions. Local large employers such as industrial plants can also generate substantial regional gaseous and particulate emissions. In addition, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.).

Ozone is the result of a photochemical reaction between Oxides of nitrogen (NO<sub>x</sub>) and Reactive Organic Gases (ROG). Mobile sources contribute 84 percent of all NO<sub>x</sub> emitted from anthropogenic sources based on data provided in Appendix B of the Air District's 2016 Ozone

Plan. In addition, mobile sources contribute 26 percent of all the ROG emitted from sources within the San Joaquin Valley.

The principal factors that affect air quality in and around Hanford are:

1. The sink effect, climatic subsidence and temperature inversions and low wind speeds
2. Automobile and truck travel
3. Increases in mobile and stationary pollutants generated by local urban growth

Automobiles, trucks, buses and other vehicles using hydrocarbon (HC) fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

Other sources may not seem to fit into any one of the major categories or they may seem to fit in a number of them. These could include agricultural uses, dirt roads, animal shelters; animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. For Kings County, this category includes several agriculturally related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities. Finally, industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Kings County consist of agricultural production and processing operations.

The primary contributors of PM<sub>10</sub> emissions in the San Joaquin Valley are farming activities (22%) and road dust, both paved and unpaved (35%) in 2020 according to emission projections from the CARB. Fugitive windblown dust from “open” fields contributed 14 percent of the PM<sub>10</sub>.

The four major sources of air pollutant emissions in the SJVAB include industrial plants, motor vehicles, construction activities, and agricultural activities. Industrial plants account for significant portions of regional gaseous and particulate emissions. Motor vehicles, including those from large employers, generate substantial regional gaseous and particulate emissions. Finally, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.). In addition to these primary sources of air pollution, urban areas upwind from Kings County including areas north and west of the San Joaquin Valley, can cause or generate emissions that are transported into Kings County. All four of the major pollutant sources affect ambient air quality throughout the Air Basin.

#### **2.4.1 Motor Vehicles**

Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

### **2.4.2 Agricultural and Other Miscellaneous Activities**

Other sources may not seem to fit into any one of the major categories or they may seem to fit in a number of them. These could include agricultural uses, dirt roads, animal shelters, animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. For Hanford, this category includes several agriculturally related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities.

### **2.4.3 Industrial Plants**

Industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Kings County consist of agricultural production and processing operations.

## **2.5 San Joaquin Valley Air Basin Monitoring**

SJVAPCD and the CARB maintain numerous air quality monitoring sites throughout each County in the Air Basin to measure ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. The closest monitoring station to the Project is located at Hanford-S Irwin Monitoring station. The station monitors particulates, ozone, carbon monoxide, and nitrogen dioxide. Monitoring data for the past three years is summarized in Table 2.

Table 3 identifies the Kings County's attainment status. As indicated, the SJVAB is nonattainment for Ozone (1 hour and 8 hour) and PM. In accordance with the FCAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. The FCAA contains provisions for changing the classifications using factors such as clean air progress rates and requests from States to move areas to a higher classification.

On April 16, 2004 EPA issued a final rule classifying the SJVAB as extreme nonattainment for Ozone, effective May 17, 2004 (69 FR 20550). The (federal) 1-hour ozone standard was revoked on June 6, 2005. However, many of the requirements in the 1-hour attainment plan (SIP) continue to apply to the SJVAB. The current ozone plan is the (federal) 8-hour ozone plan adopted in 2007. The SJVAB was reclassified from a "serious" nonattainment area for the 8-hour ozone standard to "extreme" effective June 4, 2010.

**Table 2**  
**Maximum Pollutant Levels at**  
**Hanford-S Irwin Monitoring Station**

| Pollutant                           | Time Averaging                 | 2018                    | 2019                    | 2020                    | Standards            |                         |
|-------------------------------------|--------------------------------|-------------------------|-------------------------|-------------------------|----------------------|-------------------------|
|                                     |                                | Maximums                | Maximums                | Maximums                | National             | State                   |
| Ozone (O <sub>3</sub> )             | 1 hour                         | 0.108 ppm               | 0.093 ppm               | 0.103 ppm               | 0.099 ppm            | 0.101 ppm               |
| Ozone (O <sub>3</sub> )(70 ppm)     | 8 hour                         | 0.082 ppm               | 0.076 ppm               | 0.088 ppm               | 0.070 ppm            | 0.070 ppm               |
| Nitrogen Dioxide (NO <sub>2</sub> ) | 1 hour                         | 56.3 ppm                | 62.9 ppm                | 51.9 ppm                | 48 ppm               | 60 ppm                  |
| Nitrogen Dioxide (NO <sub>2</sub> ) | Annual Average                 | 9 ppm                   | 8 ppm                   | 9 ppm                   | 8 ppm                | 8 ppm                   |
| Particulates (PM <sub>10</sub> )    | 24 hour                        | 174.2 µg/m <sup>3</sup> | 211.7 µg/m <sup>3</sup> | 180.4 µg/m <sup>3</sup> | 48 µg/m <sup>3</sup> | 48 µg/m <sup>3</sup>    |
| Particulates (PM <sub>10</sub> )    | Federal Annual Arithmetic Mean | 47.3 µg/m <sup>3</sup>  | 44.8 µg/m <sup>3</sup>  | 51.5 µg/m <sup>3</sup>  | 48 µg/m <sup>3</sup> | 48 µg/m <sup>3</sup>    |
| Particulates (PM <sub>2.5</sub> )   | 24 hour                        | 107.8 µg/m <sup>3</sup> | 48.2 µg/m <sup>3</sup>  | 147 µg/m <sup>3</sup>   | 35 µg/m <sup>3</sup> | 100.4 µg/m <sup>3</sup> |
| Particulates (PM <sub>2.5</sub> )   | Federal Annual Arithmetic Mean | 17.7 µg/m <sup>3</sup>  | 12.1 µg/m <sup>3</sup>  | 19.8 µg/m <sup>3</sup>  | 65 µg/m <sup>3</sup> | 16 µg/m <sup>3</sup>    |

Source: California Air Resources Board (ADAM) Air Pollution Summaries

\* Means there was insufficient data available to determine the value.

**Table 3**  
**Kings County Attainment Status**

| Pollutant                     | Designation/Classification         |                   |
|-------------------------------|------------------------------------|-------------------|
|                               | Federal Standards                  | State Standards   |
| Ozone - 1 Hour                | Revoked in 2005                    | Nonattainment     |
| Ozone - 8 Hour                | Nonattainment/Extreme <sup>a</sup> | No State Standard |
| PM10                          | Attainment                         | Nonattainment     |
| PM2.5                         | Nonattainment                      | Nonattainment     |
| Carbon Monoxide               | Unclassified/Attainment            | Unclassified      |
| Nitrogen Dioxide              | Unclassified/Attainment            | Attainment        |
| Sulfur Dioxide                | Unclassified/Attainment            | Attainment        |
| Lead (Particulate)            | Unclassified/Attainment            | Attainment        |
| Hydrogen Sulfide              | No Federal Standard                | Unclassified      |
| Sulfates                      | No Federal Standard                | Attainment        |
| Visibility Reducing Particles | No Federal Standard                | Unclassified      |

Source: CARB Website, 2022

a. Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

Notes:

National Designation Categories

Non-Attainment Area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Unclassified/Attainment Area: Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant or meets the national primary or secondary ambient air quality standard for the pollutant.

State Designation Categories

Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.

Attainment: A pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a three-year period.

Non-attainment: A pollutant is designated non-attainment if there was at least one violation of a State standard for that pollutant in the area.

Non-Attainment/Transitional: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the standard for the pollutant.

## 2.6 Air Quality Standards

The FCAA, first adopted in 1963, and periodically amended since then, established National Ambient Air Quality Standards (NAAQS). A set of 1977 amendments determined a deadline for the attainment of these standards. That deadline has since passed. Other CAA amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources.

In 1988, the State of California passed the CCAA (State 1988 Statutes, Chapter 568), which set forth a program for achieving more stringent California Ambient Air Quality Standards. The CARB implements State ambient air quality standards, as required in the CCAA, and cooperates with the federal government in implementing pertinent sections of the FCAA Amendments (FCAAA). Further, CARB regulates vehicular emissions throughout the State. The SJVAPCD regulates stationary sources, as well as some mobile sources. Attainment of the more stringent State PM10 Air Quality Standards is not currently required.

The EPA uses six "criteria pollutants" as indicators of air quality and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called the NAAQS.

The SJVAPCD operates regional air quality monitoring networks that provide information on average concentrations of pollutants for which State or federal agencies have established ambient air quality standards. Descriptions of nine pollutants of importance in Kings County follow.

### 2.6.1 Ozone (1-hour and 8-hour)

The most severe air quality problem in the Air Basin is the high level of ozone. Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level, or "bad" ozone, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up, where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is what is known as a photochemical pollutant. It needs reactive organic gases (ROG), NO<sub>x</sub>, and sunlight. ROG and NO<sub>x</sub> are emitted from various sources throughout Kings County. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically NO<sub>x</sub> and ROG. Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard in 1994. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the Northeast.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

#### ✓ **Health Effects**

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children



inhale more air per pound of body weight than adults, and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

The CARB found ozone standards in Kings County nonattainment of Federal and State standards.

### **2.6.2 Suspended PM (PM10 and PM2.5)**

Particulate matter pollution consists of very small liquid and solid particles that remain suspended in the air for long periods. Some particles are large or concentrated enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter is emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. PM10 refers to particles less than or equal to 10 microns in aerodynamic diameter. PM2.5 refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM10. Particulates of concern are those that are 10 microns or less in diameter. These are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects.

In the western United States, there are sources of PM10 in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM10 and PM2.5 can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM10 and PM2.5. In addition to those listed previously, secondary particles can also be formed as precipitates from chemical and photochemical reactions of gaseous sulfur dioxide (SO<sub>2</sub>) and NO<sub>x</sub> in the atmosphere to create sulfates (SO<sub>4</sub>) and nitrates (NO<sub>3</sub>). Secondary particles are of greatest concern during the winter months where low inversion layers tend to trap the precursors of secondary particulates.

The District's 2008 PM2.5 Plan built upon the aggressive emission reduction strategy adopted in

the 2007 Ozone Plan and strives to bring the valley into attainment status for the 1997 NAAQS for PM<sub>2.5</sub>. The District's 2012 PM<sub>2.5</sub> Plan provides multiple control strategies to reduce emissions of PM<sub>2.5</sub> and other pollutants that form PM<sub>2.5</sub>. The plan's comprehensive control strategy includes regulatory actions, incentive programs, technology advancement, policy and legislative positions, public outreach, participation and communication, and additional strategies.

### ✓ **Health Effects**

PM<sub>10</sub> and PM<sub>2.5</sub> particles are small enough—about one-seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings. PM<sub>10</sub> can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. PM<sub>10</sub> and PM<sub>2.5</sub> can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM<sub>10</sub>. These "sensitive populations" include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM<sub>10</sub> exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM<sub>10</sub> can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

The CARB found PM<sub>10</sub> standards in Kings County in attainment of Federal standards and nonattainment for State standards. The CARB found PM<sub>2.5</sub> standards in Kings County nonattainment of Federal and State standards.

### **2.6.3 Carbon Monoxide (CO)**

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, contributes more than two thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall

downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

✓ **Health Effects**

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

The CARB found CO standards in Kings County as unclassified/attainment of Federal standards and attainment for State standards.

#### 2.6.4 Nitrogen Dioxide (NO<sub>2</sub>)

Nitrogen oxides (NO<sub>x</sub>) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO<sub>x</sub> is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NO<sub>x</sub> is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates. EPA regulates only nitrogen dioxide (NO<sub>2</sub>) as a surrogate for this family of compounds because it is the most prevalent form of NO<sub>x</sub> in the atmosphere that is generated by anthropogenic (human) activities.<sup>1</sup>

✓ **Health Effects**

NO<sub>x</sub> is an ozone precursor that combines with Reactive Organic Gases (ROG) to form ozone.

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<sup>1</sup> United States Environmental Protection Agency (EPA), Nitrogen Oxides (NO<sub>x</sub>). Why and How They Are Controlled, 456/F-99-006R, November 2019

See the ozone section above for a discussion of the health effects of ozone.

Direct inhalation of NO<sub>x</sub> can also cause a wide range of health effects. NO<sub>x</sub> can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO<sub>2</sub>) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO<sub>2</sub> may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NO<sub>x</sub> are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO<sub>2</sub> may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NO<sub>x</sub> can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NO<sub>x</sub> can also impair visibility. NO<sub>x</sub> is a major component of acid deposition in California. NO<sub>x</sub> may affect both terrestrial and aquatic ecosystems. NO<sub>x</sub> in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO<sub>2</sub> is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO<sub>2</sub> include experimental studies on animals, controlled laboratory studies on humans, and observational studies.

In animals, long-term exposure to NO<sub>x</sub> increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO<sub>2</sub>, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO<sub>2</sub> concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NO<sub>x</sub> contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

The CARB found NO<sub>2</sub> standards in Kings County as unclassified/attainment of Federal standards and attainment for State standards.

### 2.6.5 Sulfur Dioxide (SO<sub>2</sub>)

The major source of sulfur dioxide (SO<sub>2</sub>) is the combustion of high-sulfur fuels for electricity generation, petroleum refining and shipping. High concentrations of SO<sub>2</sub> can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO<sub>2</sub> levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO<sub>2</sub>, in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO<sub>2</sub> also is a major precursor to PM<sub>2.5</sub>, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

The CARB found SO<sub>2</sub> standards in the Kings County as unclassified for Federal standards and attainment for State standards.

### 2.6.6 Lead (Pb)

Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels; however, the use of leaded fuel has been mostly phased out. Since this has occurred the ambient concentrations of lead have dropped dramatically.

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

The CARB found Lead standards in Kings County as unclassified/attainment of Federal standards and attainment for State standards.

### 2.6.7 Toxic Air Contaminants (TAC)

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TAC) are another

group of pollutants of concern. TAC are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TAC is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TAC are regulated on the basis of risk rather than specification of safe levels of contamination. The ten TAC are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (diesel PM). Caltrans' guidance for transportation studies references the Federal Highway Administration (FHWA) memorandum titled "Interim Guidance on Air Toxic Analysis in NEPA Documents" which discusses emissions quantification of six "priority" compounds of 21 Mobile Source Air Toxics (MSAT) identified by the United States Environmental Protection Agency (USEPA). The six "priority" compounds are diesel exhaust (particulate matter and organic gases), benzene, 1,3-butadiene, acetaldehyde, formaldehyde, and acrolein.

Some studies indicate that diesel PM poses the greatest health risk among the TAC listed above. A 10-year research program (California Air Resources Board 1998) demonstrated that diesel PM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to diesel PM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

Diesel PM differs from other TAC in that it is not a single substance but a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TAC, however, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. The CARB has made preliminary concentration estimates based on a diesel PM exposure method. This method uses the CARB emissions inventory's PM10 database, ambient PM10 monitoring data, and the results from several studies to estimate concentrations of diesel PM. Table 4 depicts the CARB Handbook's recommended buffer distances associated with various types of common sources.

Existing air quality concerns within Hanford and the entire SJVAB are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

**TABLE 4**  
**Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities\***

| SOURCE CATEGORY                              | ADVISORY RECOMMENDATIONS                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Freeways and High-Traffic Roads <sup>1</sup> | - Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.                                                                                                                                                                                                                                                                                                   |
| Distribution Centers                         | - Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).<br><br>- Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points. |
| Rail Yards                                   | - Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.<br><br>- Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.                                                                                                                                                                                                                                        |
| Ports                                        | - Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.                                                                                                                                                                                                                                                  |
| Refineries                                   | - Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.                                                                                                                                                                                                                                                                 |
| Chrome Platers                               | - Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.                                                                                                                                                                                                                                                                                                                                                                           |
| Dry Cleaners Using Perchloroethylene         | - Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.<br><br>- Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.                                                                                                       |
| Gasoline Dispensing Facilities               | - Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.                                                                                                                                                                                                         |

1: The recommendation to avoid siting new sensitive land uses within 500 feet of a freeway was identified in CARB's Air Quality and Land Use Handbook published in 2005. CARB recently published a technical advisory to the Air Quality and Land Use Handbook indicating that new research has demonstrated promising strategies to reduce pollution exposure along transportation corridors.

**\*Notes:**

- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
- Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
- A summary of the basis for the distance recommendations can be found in the ARB Handbook: Air Quality and Land Use Handbook: A Community Health Perspective.

Source: SJVAPCD 2022



### 2.6.8 Odors

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 5 along with a reasonable distance from the source within which, the degree of odors could possibly be significant. The Project does not propose any uses that would be potential odor sources; however, the information presented in Table 5 will be used as a screening level analysis to determine if the Project would be impacted by existing odor sources in the study area. Such information is presented for informational purposes, but it is noted that the environment's effect on the Project, including exposure to potential odors, would not be an impact for CEQA purposes.



**TABLE 5**  
**Screening Levels for Potential Odor Sources**

| Type of Facility                                   | Distance |
|----------------------------------------------------|----------|
| Wastewater Treatment Facilities                    | 2 miles  |
| Sanitary Landfill                                  | 1 mile   |
| Transfer Station                                   | 1 mile   |
| Compositing Facility                               | 1 mile   |
| Petroleum Refinery                                 | 2 miles  |
| Asphalt Batch Plant                                | 1 mile   |
| Chemical Manufacturing                             | 1 mile   |
| Fiberglass Manufacturing                           | 1 mile   |
| Painting/Coating Operations (e.g. auto body shops) | 1 mile   |
| Food Processing Facility                           | 1 mile   |
| Feed Lot/Dairy                                     | 1 mile   |
| Rendering Plant                                    | 1 mile   |

Source: SJVAPCD 2022

#### 2.6.9 Naturally Occurring Asbestos (NOA)

Asbestos is a term used for several types of naturally occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Asbestos is commonly found in ultramafic rock and near fault zones. The amount of asbestos that is typically present in these rocks' ranges from less than 1% up to approximately 25% and sometimes more. It is released from ultramafic rock when it is broken or crushed. This can happen when cars drive over unpaved roads or driveways, which are surfaced with these rocks, when land is graded for building purposes, or at quarrying operations. Asbestos is also released naturally through weathering and erosion. Once released from the rock, asbestos can become airborne and may stay in the air for long periods of time. Asbestos is hazardous and can cause lung disease and cancer dependent upon the level of exposure. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem.

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021.

#### 2.6.10 Greenhouse Gas Emissions

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the

atmosphere because of human activities are:

- ✓ **Carbon Dioxide (CO<sub>2</sub>):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement, asphalt paving, truck trips). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- ✓ **Methane (CH<sub>4</sub>):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- ✓ **Nitrous Oxide (N<sub>2</sub>O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- ✓ **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").

## 3.0 Air-Quality Impacts

### 3.1 Methodology

The impact assessment for air quality focuses on potential effects the Project might have on air quality within the Hanford region. The SJVAPCD has established thresholds of significance for determining environmental significance. These thresholds separate a project's short-term emissions from its long-term emissions. The short-term emissions are mainly related to the construction phase of a project, which are recognized to be short in duration. The long-term emissions are primarily related to the activities that will occur indefinitely as a result of Project operations. Impacts will be evaluated both on the basis of CEQA Appendix G criteria and SJVAPCD significance criteria. The impacts to be evaluated will be those involving construction and operational emissions of criteria pollutants. The SJVAPCD has established thresholds for certain pollutants shown in Table 6.

**Table 6**  
**SJVAPCD Air Quality Thresholds of Significance**

| Project Type                                                      | Ozone Precursor Emissions (tons/year) |                 |     |                 |                  |                   |
|-------------------------------------------------------------------|---------------------------------------|-----------------|-----|-----------------|------------------|-------------------|
|                                                                   | CO                                    | NO <sub>x</sub> | ROG | SO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
| Construction Emissions                                            | 100                                   | 10              | 10  | 27              | 15               | 15                |
| Operational Emissions<br>(Permitted Equipment and Activities)     | 100                                   | 10              | 10  | 27              | 15               | 15                |
| Operational Emissions<br>(Non-Permitted Equipment and Activities) | 100                                   | 10              | 10  | 27              | 15               | 15                |

Source: SJVAPCD 2022

#### 3.1.1 CalEEMod

CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

The model is an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable such as CEQA and NEPA documents, pre-project planning, compliance with local air quality rules and regulations, etc.

## 3.2 Short-Term Impacts

Short-term impacts are mainly related to the construction phase of a project and are recognized to be short in duration. Construction air quality impacts are generally attributable to dust and exhaust pollutants generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth moving activities do comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate significant dust emissions. Further, dust generation is dependent on soil type and soil moisture. Exhaust pollutants are the non-useable gaseous waste products produced during the combustion process. Engine exhaust contains CO, HC, and NO<sub>x</sub> pollutants which are harmful to the environment.

Adverse effects of construction activities cause increased dust-fall and locally elevated levels of total suspended particulate. Dust-fall can be a nuisance to neighboring properties or previously completed developments surrounding or within the Project area and may require frequent washing during the construction period.

PM<sub>10</sub> emissions can result from construction activities of the Project. The SJVAPCD has determined that compliance with Regulation VIII and other control measures will constitute sufficient mitigation to reduce PM<sub>10</sub> impacts to a level considered less-than significant for most development projects. Even with implementation of District Regulation VIII and District Rule 9510, large development projects may not be able to reduce project specific construction impacts below District thresholds of significance.

Ozone precursor emissions are also an impact of construction activities and can be quantified through calculations. Numerous variables factored into estimating total construction emission include: level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and amount of materials to be transported onsite or offsite. Additional exhaust emissions would be associated with the transport of workers and materials. Because the specific mix of construction equipment is not presently known for this Project, construction emissions were estimated using CalEEMod Model defaults for construction equipment.

Table 7 shows the CalEEMod estimated construction emissions that would be generated from construction of the Project. Results of the analysis show that emissions generated from construction of the Project will not exceed the SJVAPCD emission thresholds.

**Table 7**  
**Project Construction Emissions (tons/year)**

| Summary Report                    | CO   | NO <sub>x</sub> | ROG  | SO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> e |
|-----------------------------------|------|-----------------|------|-----------------|------------------|-------------------|-------------------|
| Project Construction Emissions    | 5.65 | 6.66            | 7.20 | 0.01            | 1.70             | 0.61              | 1011.80           |
| SJVAPCD Level of Significance     | 100  | 10              | 10   | 27              | 15               | 15                | None              |
| Does the Project Exceed Standard? | No   | No              | No   | No              | No               | No                | No                |

Source: CalEEMod

### 3.3 Long-Term Emissions

Long-Term emissions from the Project would be generated primarily by mobile source (vehicle) emissions from the Project site and area sources such as lawn maintenance equipment.

#### 3.3.1 Localized Operational Emissions – Ozone/Particulate Matter

The Kings County area is nonattainment for Federal and State air quality standards for ozone, attainment of Federal standards for PM<sub>10</sub> and nonattainment for State standards, and nonattainment for Federal and State standards for PM<sub>2.5</sub>. Nitrogen oxides and reactive organic gases are regulated as ozone precursors. Significance criteria have been established for criteria pollutant emissions as documented in Section 3.1. Operational emissions have been estimated for the Project using the CalEEMod Model and detailed results are included in Appendix A of this report.

Results of the CalEEMod analysis are shown in Table 8. Results indicate that the annual operational emissions from the Project will be less than the SJVAPCD emission thresholds for criteria pollutants.

**Table 8**  
**Project Operational Emissions (tons/year)**

| Summary Report                    | CO    | NO <sub>x</sub> | ROG  | SO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> e |
|-----------------------------------|-------|-----------------|------|-----------------|------------------|-------------------|-------------------|
| Project Operational Emissions     | 23.72 | 4.86            | 6.18 | 0.05            | 4.57             | 1.30              | 5992.30           |
| SJVAPCD Level of Significance     | 100   | 10              | 10   | 27              | 15               | 15                | None              |
| Does the Project Exceed Standard? | No    | No              | No   | No              | No               | No                | No                |

Source: CalEEMod

#### 3.3.2 Localized Operational Emissions

##### ✓ Carbon Monoxide

The SJVAPCD is currently in unclassified/attainment for Federal standards and unclassified for State standards for CO. An analysis of localized CO concentrations is typically warranted

to ensure that standards are maintained. Also, an analysis is required to ensure that localized concentrations don't reach potentially unhealthy levels that could affect sensitive receptors (residents, school children, hospital patients, the elderly, etc.).

Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the project will reduce the LOS on one or more streets to E or F or if the project will worsen an existing LOS F.

To analyze the Cumulative Year 2042 Plus Project "worst case" CO concentrations at study roadway segments, the analysis methodology considered the highest annual maximum CO concentration reported in 2013, using 1.0 PPM as an estimate of the background concentration for the 8-hour standard and 2.2 PPM for the 1-hour standard (source: CARB annual publications). Other modeling assumptions include a wind speed of .5 m/s, flat topography, 1,000-meter mixing height, and a 5 degree wind deviation.

#### ✓ **Toxic Air Contaminants (TAC)**

The SJVAPCD's Guidance Document, Guidance for Assessing and Mitigating Air Quality Impacts – 2015, identifies the need for projects to analyze the potential for adverse air quality impacts to sensitive receptors. Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the Project is a Type Project in that it may potentially place sensitive receptors in the vicinity of existing sources.

The first step in evaluating the potential for impacts to sensitive receptors for TAC's from the Project is to perform a screening level analysis. For Type B Projects, one type of screening tool is found in the CARB Handbook: Air Quality and Land Use Handbook: A Community Perspective. This handbook includes a table (depicted in Table 4) with recommended buffer distances associated with various types of common sources. The screening level analysis for the Project shows that TAC's are not a concern based upon the recommendations provided in Table 4. An evaluation of nearby land uses considering CARB's Pollution Mapping Tool shows that the Project will not place sensitive receptors in the vicinity of existing toxic sources. The Project is located a half mile from the State Route (SR) 198 freeway. Table 4 indicates that new sensitive land uses shouldn't be sited within 500 feet of a freeway/urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The Project is located more than 1 miles from the SR 198 freeway. As a result, a health risk assessment is not needed at this time

### ✓ **Odors**

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SJVAPCD. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

- Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and
- Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

The Project will not generate odorous emissions given the nature or characteristics of the Project. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. None of the facilities shown in Table 5 are located within two (2) miles of the Project.

### ✓ **Naturally Occurring Asbestos (NOA)**

Asbestos is a term used for several types of naturally occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Construction of the Project may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. Compliance with Rule 8021 would limit fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities associated with the Project.

The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces
2. Rinse vehicles and equipment
3. Wet loads of excavated material, and
4. Cover loads of excavated material

### ✓ Greenhouse Gas Emissions

CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Kings County Association of Governments (KCAG) region, CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005. KCAG's 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted in August 2018, projects that the Kings County region would achieve the prescribed emissions targets.

In 2009, the SJVAPCD adopted the following guidance documents applicable to projects within the San Joaquin Valley:

- ✓ Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009), and
- ✓ District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009).

This guidance and policy are the reference documents referenced in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). Consistent with the District Guidance and District Policy above, SJVAPCD (2015) acknowledges the current absence of numerical thresholds, and recommends a tiered approach to establish the significance of the GHG impacts on the environment:

- i. If a project complies with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, then the project would be determined to have a less than significant individual and cumulative impact for GHG emissions;
- ii. If a project does not comply with an approved GHG emission reduction plan or mitigation program, then it would be required to implement Best Performance



- Standards (BPS); and
- iii. If a project is not implementing BPS, then it should demonstrate that its GHG emissions would be reduced or mitigated by at least 29 percent compared to Business as Usual (BAU).

As shown in Table 9, the Project would generate 7637.11 Metric Tons of Carbon Dioxide Equivalent per year (MTCO<sub>2</sub>eq./year) using an operational year of 2005, which includes area, energy, mobile, waste, and water sources. “Business as usual” (BAU) is referenced in CARB’s AB 32 Scoping Plan as emissions projected to occur in 2020 if the average baseline emissions during the 2002-2004 period grew to 2020 levels, without control or Best Performance Standards (BPS) offsets. As a result, an estimate of the Project’s operational emissions in 2005 were compared to operational emissions in 2020 in order to determine if the Project meets the 29% emission reduction. The SJVAPCD has reviewed relevant scientific information related to GHG emissions and has determined that they are not able to determine a specific quantitative level of GHG emissions increase, above which a project would have a significant impact on the environment, and below which would have an insignificant impact. As a result, the SJVAPCD has determined that projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG. Results of the analysis show that the Project’s GHG emissions in the year 2020 is 6410.55 MTCO<sub>2</sub>eq./year. This represents an achievement of 16% GHG emission reduction on the basis of BAU, which does not meet the 29% GHG emission reduction target.

In the event that a local air district’s guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency’s discretion, a neighboring air district’s GHG threshold may be used to determine impacts. In December 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD guidance identifies a threshold of 10,000 MTCO<sub>2</sub>eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the California Public Utilities Commission, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015)<sup>2</sup>. Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as Kings County. Though the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 38% less than the threshold identified by the SCAQMD. Though the Project is under SJVAPCD jurisdiction, the SCAQMD

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2 California Public Utilities Commission (CPUC). 2015. Section 4.7, “Greenhouse Gases.” Final Environmental Impact Report for the Santa Barbara County Reliability Project. May 2015. Accessed January 18, 2018.  
[http://www.cpuc.ca.gov/environment/info/ene/sbcrp/SBCRP\\_FEIR.html](http://www.cpuc.ca.gov/environment/info/ene/sbcrp/SBCRP_FEIR.html).

GHG threshold provides some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model.

**Table 9**  
**2005/2020 Operational greenhouse Gas Emissions**

| Summary Report                        | CO <sub>2</sub> e             |
|---------------------------------------|-------------------------------|
| Operational Emissions Per Year (2005) | 7637.11 MT/yr                 |
| Operational Emissions Per Year (2020) | 6410.55 MT/yr                 |
| SJVAPCD Level of Significance         | 29% Reduction Compared to BAU |
| Does the Project Meet the Standard    | No                            |

Source: CalEEMod Emissions Model

**Table 10**  
**Project Operational Greenhouse Gas Emissions**

| Summary Report                         | CO <sub>2</sub> e |
|----------------------------------------|-------------------|
| Project Operational Emissions Per Year | 6206.03 MT/yr     |

Source: CalEEMod

### 3.3.3 Indirect Source Review

The proposed Project is subject to the SJVAPCD's ISR program since there are more than 250 residential units, which is also known as Rule 9510. Rule 9510 and the Administrative ISR Fee Rule (Rule 3180) are the result of state requirements outlined in the California Health and Safety Code, Section 40604 and the State Implementation Plan (SIP). The purpose of the SJVAPCD's ISR program is to reduce emissions of NO<sub>x</sub> and PM<sub>10</sub> from new projects. In general, new development contributes to the air-pollution problem in the Valley by increasing the number of vehicles and vehicle miles traveled.

Utilizing the ISR Fee Estimator calculator available on the SJVAPCD website, it was determined that the Project's total cost for emission reductions is \$352,404.00 without implementation of emission reduction measures. The ISR Fee Estimator worksheets are included in Appendix B. The fee noted above may be reduced dependent upon the formal ISR review process.

## 4.0 Impact Determinations and Recommended Mitigation

In accordance with CEQA, when a proposed project is consistent with a General Plan for which an EIR has been certified, the effects of that project are evaluated to determine if they will result in project-specific significant adverse impacts on the environment. The criteria used to determine the significance of an air quality or greenhouse gas impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines and the General Plan EIR. Accordingly, air quality or greenhouse gas impacts resulting from the Project are considered significant if the Project would:

### Air Quality

- a) Conflict with or obstruct implementation of the applicable air quality plan?
- b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
- c) Expose sensitive receptors to substantial pollutant concentrations?
- d) Result in other emissions such as those leading to odors adversely affecting a substantial number of people?

### Greenhouse Gas Emissions

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

## 4.1 Air Quality

### *4.1.1 Conflict with or obstruct implementation of the applicable air quality plan*

The primary way of determining consistency with the air quality plan's (AQP's) assumptions is determining consistency with the applicable General Plan to ensure that the Project's population density and land use are consistent with the growth assumptions used in the AQPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. KCAG uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then VMT, which are then provided to SJVAPCD to estimate future emissions in

the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs detail the control measures and emission reductions required for reaching attainment of the air standards.

The applicable General Plan for the project is the City of Hanford 2035 General Plan Update, which was adopted in 2018. The Project is consistent with the currently adopted General Plan for the City of Hanford and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the applicable AQPs. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

***4.1.2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard***

The Kings County area is nonattainment for Federal and State air quality standards for ozone, in attainment of Federal standards and nonattainment for State standards for PM<sub>10</sub>, and nonattainment for Federal and State standards for PM<sub>2.5</sub>. The SJVAPCD has prepared the 2016 and 2013 Ozone Plans, 2007 PM<sub>10</sub> Maintenance Plan, and 2012 PM<sub>2.5</sub> Plan to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Inconsistency with any of the plans would be considered a cumulatively adverse air quality impact. As discussed in Section 4.1.1, the Project is consistent with the currently adopted General Plan for the City of Hanford and is therefore consistent with the population growth and VMT applied in the plan. Therefore, the Project is consistent with the growth assumptions used in the 2016 and 2013 Ozone Plan, 2007 PM<sub>10</sub> Maintenance Plan, and 2012 PM<sub>2.5</sub> Plan.

Project specific emissions that exceed the thresholds of significance for criteria pollutants would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the County is in non-attainment under applicable federal or state ambient air quality standards. It should be noted that a project is not characterized as cumulatively insignificant when project emissions fall below thresholds of significance. As discussed in Section 3.1, the SJVAPCD has established thresholds of significance for determining environmental significance which are provided in Table 6.

As discussed above in Section 3.2 and 3.3, results of the analysis show that emissions generated from construction and operation of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants. Therefore, no mitigation is needed.

***4.1.3 Expose sensitive receptors to substantial pollutant concentrations***

Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors

include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the Project is a Type B project in that it may potentially place sensitive receptors in the vicinity of existing sources.

The first step in evaluating the potential for impacts to sensitive receptors for TAC's from the Project is to perform a screening level analysis. For Type B Projects, one type of screening tool is found in the CARB Handbook: Air Quality and Land Use Handbook: A Community Perspective. This handbook includes a table (depicted in Table 4) with recommended buffer distances associated with various types of common sources. The screening level analysis for the Project shows that TAC's are not a concern based upon the recommendations provided in Table 4. An evaluation of nearby land uses considering CARB's Pollution Mapping Tool shows that the Project will not place sensitive receptors in the vicinity of existing toxic sources. The Project is located a one mile from the State Route (SR) 198 freeway. Table 4 indicates that new sensitive land uses shouldn't be sited within 500 feet of a freeway/urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The Project is located more than 4000 feet from the SR 41 freeway. Therefore, no mitigation is needed.

### Short-Term Impacts

The annual emissions from the construction phase of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 8. The construction emissions are therefore considered less than significant with the implementation of the SJVAPCD applicable Regulation VIII control measures, which are provided below.

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions*

*utilizing sufficient water or chemical stabilizer/suppressant.*

7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

### Naturally Occurring Asbestos (NOA)

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the Project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces
2. Rinse vehicles and equipment
3. Wet loads of excavated material, and
4. Cover loads of excavated material

### Long-Term Impacts

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the project site and area sources such as lawn maintenance equipment. Emissions from long-term operations generally represent a project's most substantial air quality impact. Table 8 summarizes the Project's operational impacts by pollutant. Results indicate that operational emissions from the Project will exceed the SJVAPCD emissions threshold for NO<sub>x</sub> emissions by 4.43 tons/year. Compliance with Rule 9510 will reduce Project Operational NO<sub>x</sub> Emissions by 33.3% and PM<sub>10</sub> emissions by 50% according to the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). This reduction will alleviate Project impacts to the SJVAPCD's threshold for NO<sub>x</sub> emissions as noted in Table 11 below.

**Table 11**  
**Project Operational Emissions with Rule 9510 (tons/year)**

| Summary Report                    | CO    | NO <sub>x</sub> | ROG  | SO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> e |
|-----------------------------------|-------|-----------------|------|-----------------|------------------|-------------------|-------------------|
| Project Operational Emissions     | 23.72 | 4.86            | 6.18 | 0.05            | 4.57             | 1.30              | 5992.30           |
| SJVAPCD Level of Significance     | 100   | 10              | 10   | 27              | 15               | 15                | None              |
| Does the Project Exceed Standard? | No    | No              | No   | No              | No               | No                | No                |

Source: CalEEMod

#### 4.1.4 Result in other emissions such as those leading to odors adversely affecting a substantial number of people

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following

two situations:

- ✓ Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and
- ✓ Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

The proposed Project will not generate odorous emissions given the nature or characteristics of residential developments. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. None of the facilities shown in Table 5 are located within two (2) miles of the Project. Therefore, no mitigation is needed.

## 4.2 Greenhouse Gas Emissions

### 4.2.1 *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment*

In 2009, the SJVAPCD adopted the following guidance documents applicable to projects within the San Joaquin Valley:

- ✓ Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009), and
- ✓ District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009).

As shown in Table 9, the Project would generate 7637.11 Metric Tons of Carbon Dioxide Equivalent per year (MTCO<sub>2</sub>eq./year) using an operational year of 2005, which includes area, energy, mobile, waste, and water sources. "Business as usual" (BAU) is referenced in CARB's AB 32 Scoping Plan as emissions projected to occur in 2020 if the average baseline emissions during the 2002-2004 period grew to 2020 levels, without control or Best Performance Standards (BPS) offsets. As a result, an estimate of the Project's operational emissions in 2005 were compared to operational emissions in 2020 in order to determine if the Project meets the 29% emission reduction. The SJVAPCD has reviewed relevant scientific information related to GHG emissions and has determined that they are not able to determine a specific quantitative level of GHG emissions increase, above which a project would have a significant impact on the environment, and below which would have an insignificant impact. As a result, the SJVAPCD has determined that projects achieving at least a 29% GHG emission reduction



compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG. Results of the analysis show that the Project's GHG emissions in the year 2020 is 6410.55 MTCO<sub>2</sub>eq./year. This represents an achievement of 16% GHG emission reduction on the basis of BAU, which does not meet the 29% GHG emission reduction target.

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG threshold may be used to determine impacts. In December 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted the staff proposal for an interim GHG significance threshold for projects where the SCAQMD is lead agency. The SCAQMD guidance identifies a threshold of 10,000 MTCO<sub>2</sub>eq./year for GHG for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the California Public Utilities Commission, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015)<sup>3</sup>. Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as Kings County. Though the Project is under SJVAPCD jurisdiction, the SCAQMD GHG threshold provides some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 38% less than the threshold identified by the SCAQMD.

CARB's California GHG Emissions Inventory provides estimates of anthropogenic GHG emissions within California, as well as emissions associated with imported electricity; natural sources are not included in the inventory. California's GHG emissions for 2018 totaled approximately 418.2 million MTCO<sub>2</sub>eq. The proposed Project's GHG emissions represents less than 0.001% of the total GHG emissions for the state of California when compared to year 2018 emissions data.

Based on the assessment above, the Project will not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, any impacts would be less than significant.

#### ***4.2.2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases***

California passed the California Global Warming Solutions Act of 2006. AB 32 requires that

---

3 California Public Utilities Commission (CPUC). 2015. Section 4.7, "Greenhouse Gases." Final Environmental Impact Report for the Santa Barbara County Reliability Project. May 2015. Accessed January 18, 2018.  
[http://www.cpuc.ca.gov/environment/info/ene/sbcrp/SBCRP\\_FEIR.html](http://www.cpuc.ca.gov/environment/info/ene/sbcrp/SBCRP_FEIR.html).



statewide GHG emissions be reduced to 1990 levels by 2020. Under AB 32, CARB must adopt regulations by January 1, 2011 to achieve reductions in GHGs to meet the 1990 emission cap by 2020. On December 11, 2008, CARB adopted its initial Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan.

SB 375 requires MPOs to adopt a SCS or APS that will prescribe land use allocation in that MPO's regional transportation plan. CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the KCAG region, CARB set targets at five (5) percent per capita decrease in 2020 and a ten (10) percent per capita decrease in 2035 from a base year of 2005. KCAG's 2018 RTP/SCS, which was adopted in August 2018, projects that the Kings County region would achieve the prescribed emissions targets.

Executive Order B-30-15 establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires MPO's to implement measures that will achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designate locations for land uses to regulate growth. KCAG uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then VMT, which are then provided to SJVAPCD to estimate future emissions in the AQPs. The applicable General Plan for the project is City of Hanford 2035 General Plan Update, which was adopted in 2018.

The Project is consistent with the currently adopted General Plan for the City of Hanford and the adopted KCAG 2018 RTP/SCS and is therefore consistent with the population growth and VMT applied in those plan documents. Therefore, the Project is consistent with the growth assumptions used in the applicable AQP. It should also be noted that yearly GHG emissions generated by the Project (Table 9) are approximately 38% less than the threshold identified by the SCAQMD (see the discussion for Impact 4.2.1 above).

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit. Below is a list of applicable strategies in the Scoping Plan and the Project's consistency with those strategies.

- ✓ California Light-Duty Vehicle GHG Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs for long-term climate change goals.

- The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to light-duty vehicles that would access the Project. The Project would not conflict or obstruct this reduction measure.
- ✓ Energy Efficiency – Pursuit of comparable investment in energy efficiency from all retail providers of electricity in California. Maximize energy efficiency building and appliance standards.
  - The Project is consistent with this reduction measure. Though this measure applies to the State to increase its energy standards, the Project would comply with this measure through existing regulation. The Project would not conflict or obstruct this reduction measure.
- ✓ Low Carbon Fuel – Development and adoption of the low carbon fuel standard.
  - The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to the fuel used by vehicles that would access the Project. The Project would not conflict or obstruct this reduction measure.

Based on the assessment above, the Project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, any impacts would be less than significant.

# BIOLOGICAL RESOURCE EVALUATION

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## **D.R. HORTON, AMERICA'S BUILDER LUNARIA RESIDENTIAL DEVELOPMENT PROJECT**



**APRIL 2022**

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## BIOLOGICAL RESOURCE EVALUATION

# LUNARIA RESIDENTIAL PROJECT

### **Prepared for:**

D.R. Horton, America's Builder  
419 Murray Avenue  
Visalia, CA 93291

Contact Person: Mel Mercado, Forward Planning and Land Development Manager

### **Consultant:**



5080 California Avenue, Suite 220  
Bakersfield, CA 93309  
Contact: Jaymie Brauer  
Phone: (661) 616-2600

April 2022

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# TABLE OF CONTENTS

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| <i>Table of Contents .....</i>                                   | <i>1</i>  |
| <i>Executive Summary.....</i>                                    | <i>1</i>  |
| <i>SECTION 1 - Introduction.....</i>                             | <i>2</i>  |
| 1.1 - Project Location.....                                      | 2         |
| 1.2 - Project Description.....                                   | 2         |
| 1.3 - Purpose, Goals, and Objectives for this Report.....        | 2         |
| <i>SECTION 2 - Methods.....</i>                                  | <i>5</i>  |
| 2.1 - Definition of Biological Study Area .....                  | 5         |
| 2.2 - Literature Review and Database Analysis.....               | 5         |
| 2.3 - Reconnaissance-Level Field Surveys.....                    | 7         |
| <i>SECTION 3 - Environmental Setting.....</i>                    | <i>8</i>  |
| 3.1 - Topography .....                                           | 8         |
| 3.2 - Climate.....                                               | 8         |
| 3.3 - Land Use .....                                             | 8         |
| 3.4 - Soils .....                                                | 8         |
| 3.5 - Hydrology.....                                             | 11        |
| 3.6 - General Biological Conditions .....                        | 14        |
| <i>SECTION 4 - Findings.....</i>                                 | <i>15</i> |
| 4.1 - Sensitive Natural Communities .....                        | 15        |
| 4.1.1 - Results of Literature Review and Database Searches.....  | 15        |
| 4.1.2 - Presence of Sensitive Natural Communities.....           | 15        |
| 4.2 - Special-Status Plants.....                                 | 15        |
| 4.2.1 - Results of Literature Review and Database Searches.....  | 15        |
| 4.2.2 - Presence of Special-Status Plants .....                  | 16        |
| 4.3 - Special-Status Wildlife .....                              | 16        |
| 4.3.1 - Results of Literature Review and Database Searches.....  | 16        |
| 4.3.2 - Presence of Special-Status Wildlife .....                | 18        |
| 4.4 - Nesting Migratory Birds and Raptors .....                  | 19        |
| 4.5 - Critical Habitat, Movement Corridors, and Linkages .....   | 20        |
| 4.5.1 - Presence of Critical Habitat.....                        | 20        |
| 4.5.2 - Presence of Movement Corridors and Linkages .....        | 20        |
| 4.6 - Wetlands and Other Waters.....                             | 20        |
| <i>SECTION 5 - Potential Project Impacts.....</i>                | <i>22</i> |
| 5.1 - Potential Impacts to Sensitive Vegetation Communities..... | 22        |

|                                                                                    |           |
|------------------------------------------------------------------------------------|-----------|
| 5.2 - Potential Impacts to Special-Status Plant Species.....                       | 22        |
| 5.3 - Potential Impacts to Special-Status Wildlife Species .....                   | 22        |
| 5.4 - Potential Impacts to Nesting Birds and Raptors.....                          | 22        |
| 5.5 - Potential Impacts to Critical Habitat, Movement Corridors and Linkages ..... | 23        |
| 5.5.1 - Potential Impacts to Critical Habitat .....                                | 23        |
| 5.5.2 - Potential Impacts to Movement Corridors and Linkages .....                 | 23        |
| 5.6 - Potential Impacts to Wetlands and Waters .....                               | 23        |
| <b>SECTION 6 - Recommendations .....</b>                                           | <b>24</b> |
| <b>SECTION 7 - Summary and Conclusions .....</b>                                   | <b>24</b> |
| <b>SECTION 8 - References .....</b>                                                | <b>26</b> |

## **Appendices**

|            |                                         |
|------------|-----------------------------------------|
| Appendix A | CNDDDB, CNPS, and iPac Database Results |
| Appendix B | Representative Photographs              |
| Appendix C | Plants and Animals Observed On-Site     |

## **List of Figures**

|                                                                 |    |
|-----------------------------------------------------------------|----|
| Figure 1-1 Regional Map .....                                   | 3  |
| Figure 1-2 Project Location Map.....                            | 4  |
| Figure 2-1 Biological Study Area.....                           | 6  |
| Figure 3-1 Soils Mapped within the BSA.....                     | 10 |
| Figure 3-2 NWI and NHD Records of Aquatic Resources .....       | 12 |
| Figure 3-3 FEMA Flood Zone Map .....                            | 13 |
| Figure 4-1 Mapped Critical Habitat in the Project Vicinity..... | 21 |

## **List of Tables**

|                                                                                                                        |    |
|------------------------------------------------------------------------------------------------------------------------|----|
| Table 3-1 Field Survey Personnel and Timing.....                                                                       | 8  |
| Table 3-2 Soil Acreages On-Site and within the BSA.....                                                                | 9  |
| Table 4-1 Special-Status Plant Species Occurring in the Region of the,.....                                            | 15 |
| Table 4-2 Special-Status Wildlife Species Occurring in the Region of the Lunaria Residential Development Project ..... | 17 |

## EXECUTIVE SUMMARY

This Biological Resource Evaluation (BRE) report provides the results of a biological survey conducted by QK for the Lunaria Residential Development Project (Project). In order to comply with the California Environmental Quality Act (CEQA) and requirements for approval of a Vesting Tentative Subdivision Map by the City of Hanford (City), a biological evaluation was conducted to identify the potential for sensitive biological resources to occur on or near the Project site.

The Project site is adjacent to 10 ½ Avenue to the west and between Hanford Armona Road and Houston Avenue in the City of Hanford, Kings County, California. The Project is on Assessor Parcel Numbers (APN) 011-440-015 and 011-440-014. D.R. Horton (the Applicant) proposes to construct a tract with the approval of Tentative Tract Map 938. The development would include single-story homes of three to five bedrooms, with a minimum lot size of 5,000 square feet, and the associated road and utility improvements. The 457-lot single-family subdivision includes an approximately 30,000-square-foot stormwater retention basin and a 5.8-acre recreational park. The Project site has been used for agricultural purposes for many years, and at the time of the survey was actively being disked. The Project site is currently surrounded mostly by urban development.

A review of available literature and agency databases was conducted to obtain information of the occurrences of natural communities and special-status plant and wildlife species known to occur in the vicinity of the Project site. QK conducted a biological reconnaissance survey on March 18, 2022, to determine the locations and extent of land use, natural vegetation communities, determine the potential for occurrences of special-status plant and wildlife species, and verify the presence of wetlands and State and or federal jurisdictional waters. No special-status species plant or diagnostic sign of special-status wildlife species were observed, and no wetlands or other sensitive biological resources were observed on or near the Project site.

Based on the literature and database search and the results of the survey, there is a potential for two special-status wildlife species to occur on the Project site: San Joaquin kit fox (*Vulpes macrotis mutica*), and Swainson's hawk (*Buteo swainsoni*). Because of the historical disturbance and required environmental requirements and conditions for habitation of these species, direct impacts to these species are not expected to occur. San Joaquin kit foxes may pass through as transients, and Swainson's hawk could nest in the vicinity of the Project site. There is potential for nesting migratory birds and other raptors species to occur on or near the Project site and surrounding areas. With the implementation of Best Management Practices and recommended avoidance measures, the Project will likely have limited impacts to special-status wildlife species and migratory birds and raptors. There is expected to be no impact to special-status plant species, sensitive natural communities, wetlands or water features, or any other sensitive biological resources.

## SECTION 1 - INTRODUCTION

D.R. Horton, America's Builder proposes to construct a new residential development in the City of Hanford (City), Kings County, California. The Lunaria Residential Development Project (Project) will provide additional housing within the City. To comply with the California Environmental Quality Act (CEQA), a biological evaluation was conducted to identify the potential for sensitive biological resources to occur on or near the Project site. This Biological Resource Evaluation (BRE) provides the basic biological information requested by D.R. Horton.

### **1.1 - Project Location**

The Project is within the boundaries of the City of Hanford, Kings County, California. It covers approximately 95 acres and is located on the east side of 10 ½ Avenue, south of Hanford Armona Road and north of Houston Avenue (Figures 1-1 and 1-2). It is approximately 0.95 mile south of Highway 198. The Project site is situated on two Assessor Parcel Numbers (APNs), 011-440-015 and 011-440-014. It is within the *Hanford* United States Geological Survey (USGS) 7.5-minute quadrangle in Section 1, Township 19 South, Range 21 East, Mount Diablo Base and Meridian.

### **1.2 - Project Description**

D.R. Horton proposes to the construction of 457 single-family residences along with paved roads, a drainage retention basin, and a 5.8-acre recreational park. Improvements would also occur on 10 ½ Avenue that would include the construction of a sidewalk, curb, and gutter.

### **1.3 - Purpose, Goals, and Objectives for this Report**

The Biological Resource Evaluation (BRE) report includes the results of a biological reconnaissance survey QK conducted at the Lunaria Property (Project) site. This report is consistent with the requirements for an analysis of impacts to biological resources needed of an Initial Study/ Mitigated Negative Declaration following guidelines established by the California Environmental Quality Act.

The primary focus of this report is to provide information about the presence of sensitive biological resources on the Project and develop measures to avoid and minimize impacts of the Project on those resources. To accomplish that goal, the BRE provides information on the condition and sensitivity of the sensitive biological resources present and potentially present on and adjacent to the Project site and evaluates Project impacts to those resources. This BRE focuses on providing information and sensitive natural communities, special-status species, wildlife movement corridors, and wetlands and waters by conducting a desktop analysis of site conditions and verifying those findings with an on-site biological survey.









**Figure 1-2**  
**Project Location Map**  
**Lunaria Residential Development Project, Kings County, California**

## SECTION 2 - METHODS

### 2.1 - Definition of Biological Study Area

The Biological Study Area (BSA) is a 250-foot buffer surrounding the Project disturbance footprint (Figure 2-1).

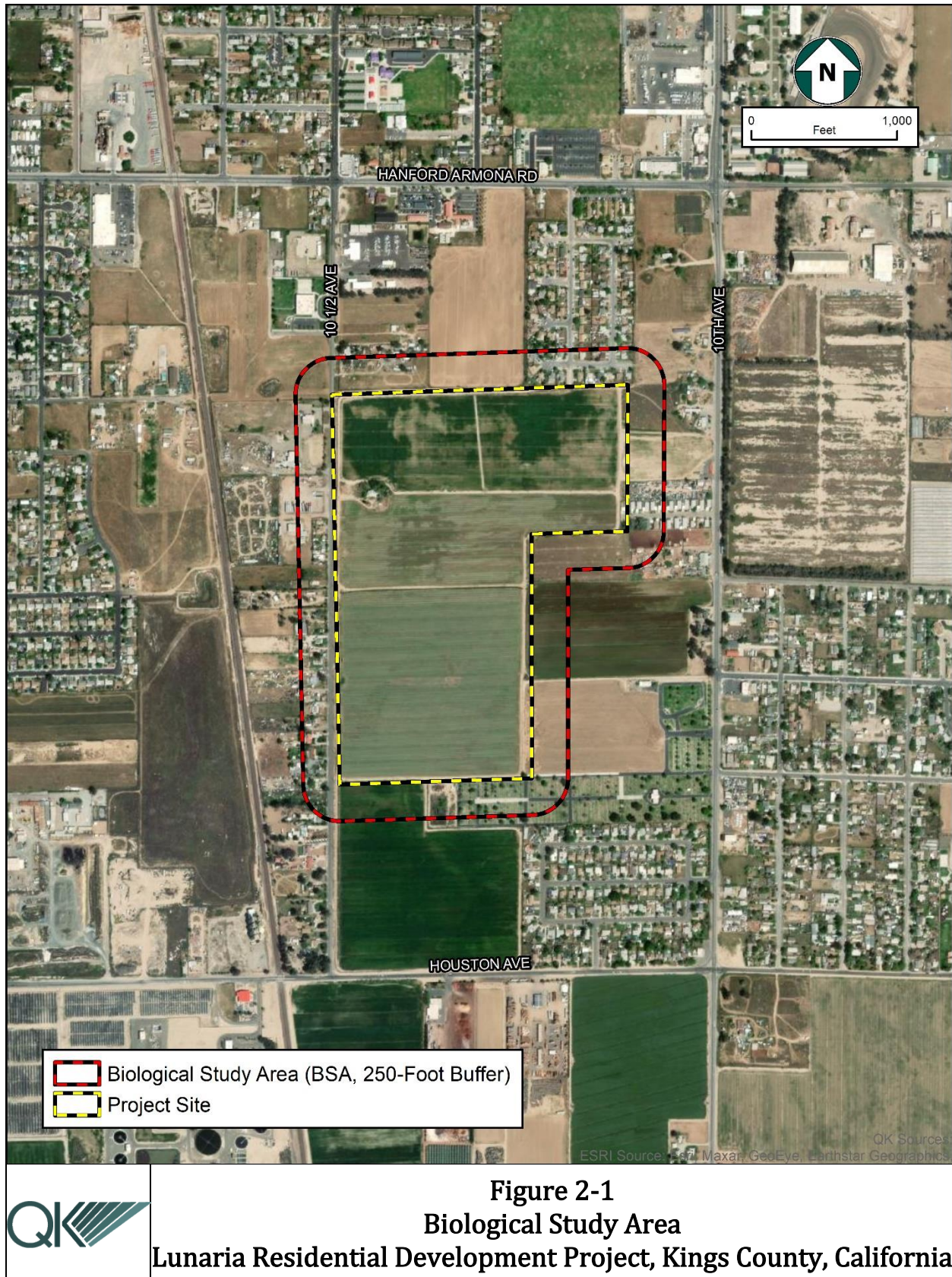
### 2.2 - Literature Review and Database Analysis

The following sources were reviewed for information on special-status biological resources in the Project vicinity:

- CDFW's California Natural Diversity Database (CDFW 2022a)
- CDFW's Biogeographic Information and Observation System (CDFW 2022b)
- CDFW's Special Animals List (CDFW 2022c)
- CDFW's California Wildlife Habitat Relationships (CWHR) System (Mayer and Laudenslayer 1988)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2022)
- USFWS Information for Planning and Consultation system (USFWS 2022a)
- USFWS Critical Habitat Mapper (USFWS 2022b)
- USFWS National Wetlands Inventory (USFWS 2022c)
- USGS National Hydrography Dataset (USGS 2022)
- Federal Emergency Management Agency (FEMA) flood zone maps (FEMA 2022)
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA, NRCS 2022)
- Current and historical aerial imagery (Google LLC 2022)

QK conducted a review of the literature and agency databases to obtain information on the occurrences of natural communities and special-status species known from the vicinity of the Project site. The California Natural Diversity Database (CDFW 2022a), California Native Plant Society (CNPS) Database (CNPS 2022), and U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species List (USFWS 2022a) were reviewed in March 2022 to assess whether occurrences of sensitive natural communities, federally-listed species, State-listed species, other species of special concern, or USFWS Critical Habitat Units that have been documented within the *Remnoy*, *Guernsey*, *Waukena*, *Burris Park*, *Hanford*, *Lemoore*, *Riverdale*, *Laton*, and *Stratford* U.S. Geological Survey (USGS) 7.5-minute quadrangles that encompass the Project site. To satisfy other standard search criteria, CNDDB records within a 10-mile radius of the project site were queried separately from the broader database search.





The CNDDDB provides element-specific spatial information on individual documented occurrences of special-status species and sensitive natural vegetation communities. The CNPS database provides similar information, but at a much lower spatial resolution, for additional sensitive plant species tracked by the CNPS. The USFWS query generates a list of federally protected species known to potentially occur within individual USGS quadrangles. Wildlife species designated as “Fully Protected” by California Fish and Game Code Sections 5050 (Fully Protected reptiles and amphibians), 3511 (Fully Protected birds), and 4700 (Fully Protected mammals) are also included on the final list. Both database search results can be found in Appendix A.

A review of the National Wetlands Inventory (NWI, USFWS 2022c) was completed to identify whether wetlands had previously been documented on or adjacent to the Project site. The NWI, which is operated by the USFWS, is a collection of wetland and riparian maps that depicts graphic representations of the type, size, and location of wetland, deep water, and riparian habitats in the United States. In addition to the NWI, regional hydrologic information was obtained from the USGS to evaluate the potential occurrence of blueline streams within the Project area.

Soils data were obtained from the Natural Resource Conservation District, United States Department of Agriculture (USDA, NRCS 2022a), climate information was obtained from Weather Underground, and land use information was obtained from available aerial imagery. Information about flood zones were obtained from the Federal Emergency Management Agency, Department of Homeland Security (FEMA 2022).

The results of the database inquiries were subsequently reviewed to extract pertinent information on site conditions and evaluate the potential for sensitive biological resources to occur within or near the proposed Project site. Only those resources with the potential to be present and affected by the project were included and considered in this document. The potential presence of natural communities and special-status species was based on distributional ranges overlapping the Project site and the presence of habitat and/or primary constituent habitat elements.

### **2.3 - Reconnaissance-Level Field Surveys**

A biological reconnaissance survey was conducted by QK Environmental Scientists Shannon Gleason and Karissa Denney on March 18, 2022. The reconnaissance survey was conducted within the Project site and included a 250-foot buffer. Together, these areas define the Biological Survey Area (BSA; Figure 2-1). Information gathered during the survey included locations and extent of land use and natural vegetation communities, observations and locations of diagnostic signs of special-status species, the potential for presence of special-status plant and wildlife species based upon existing conditions, and locations and extent of wetlands and waters. The reconnaissance surveys consisted of a pedestrian and windshield survey. A list of plants, wildlife, and wildlife sign (e.g., scat, burrows, feather, tracks, etc.) encountered was generated. Representative photographs were taken at key areas to document conditions at the Project site (Appendix B).

## SECTION 3 - ENVIRONMENTAL SETTING

This section identifies the regional and local environmental setting of the Project and describes existing baseline conditions. The environmental setting of the BSA was obtained from various sources of literature, databases, and aerial photographs. Site conditions were verified and updated during the site reconnaissance survey conducted by QK Environmental Scientists (Table 4-1).

**Table 3-1**  
**Field Survey Personnel and Timing**

| Date       | Personnel                          | Time        | Weather Conditions | Temperature |
|------------|------------------------------------|-------------|--------------------|-------------|
| 03/18/2022 | Karissa Denney,<br>Shannon Gleason | 1045 - 1140 | Clear              | 64-67F      |

### 3.1 - Topography

The BSA is on the eastern floor of the Central Valley in the northeastern portion of Kings County. The topography of the BSA is relatively flat with an elevation of about 233 feet above mean sea level.

### 3.2 - Climate

The BSA is within an area that has a Mediterranean climate of hot summers and mild, wet winters. Average high temperatures range from 54.7°F in January to 97.8°F in July, with daily temperatures often exceeding 100°F several days in the summer (WRCC 2022). Average low temperatures range from 34.6°F in December to 62.5°F in July. Precipitation occurs primarily as rain, most of which falls from November to April, with an average of 8.38 inches of rainfall per year. Precipitation may also occur as a dense fog during the winter known as Tule fog. Rain rarely falls during the summer months.

### 3.3 - Land Use

The Project site is predominantly cropland with one occupied residential property located on site. The BSA is comprised of residential properties with some grazing properties. Historical imagery shows that the Project site has been used for agricultural practices since at least 1994 (Google LLC 2022, Netronline 2022).

### 3.4 - Soils

The BSA and Project site is underlain by four soil types, Nord complex, Nord fine sandy loam, Kimberlina fine sandy loam, saline-alkali, and Wasco sandy loam (Table 3-2, Figure 3-3, NRCS 2022). A complex consists of two or more similar soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on soil maps. These soil series are described by the NRCS and are listed below.

**Table 3-2**  
Soil Acreages On-Site and within the BSA

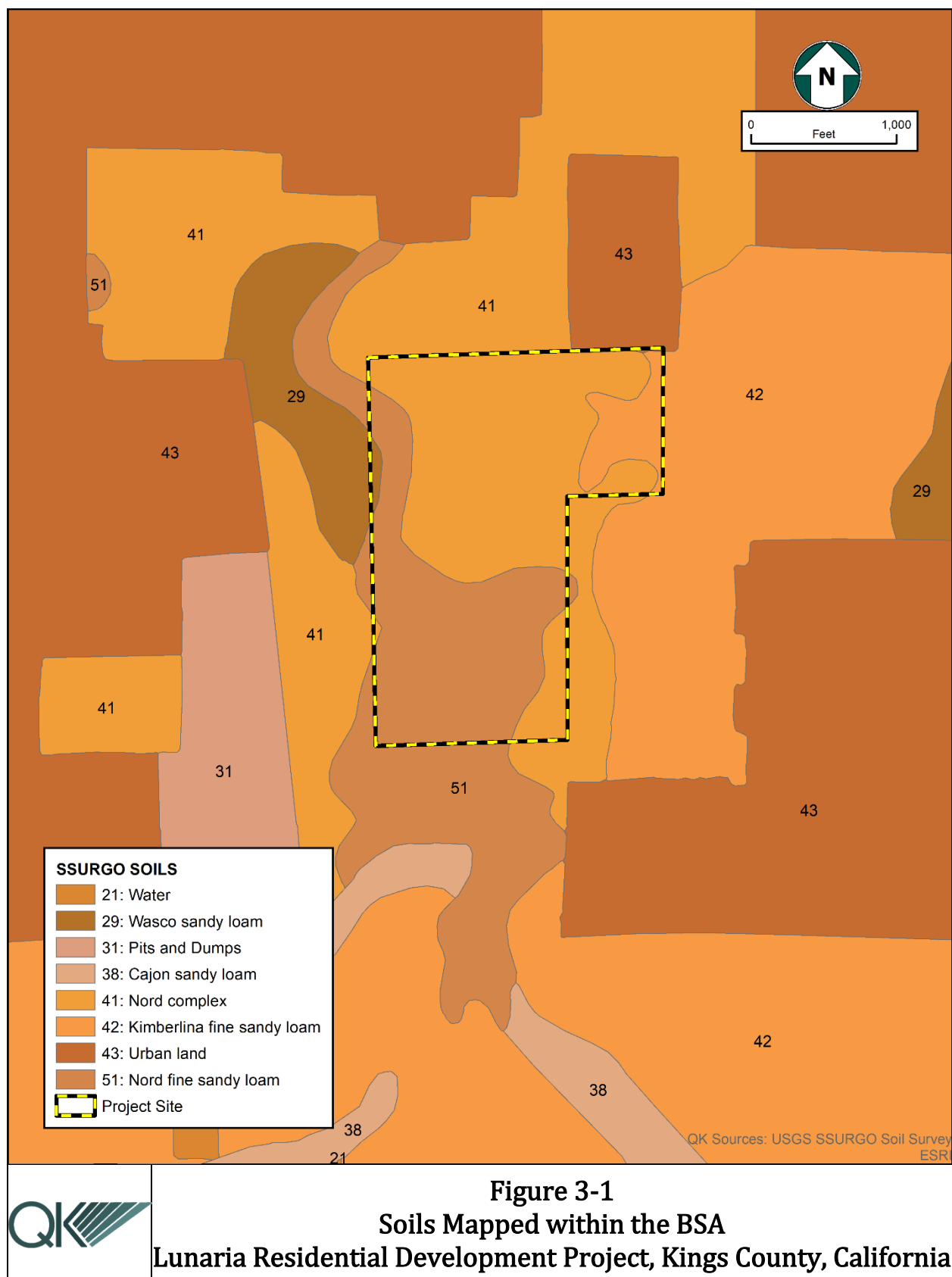
| <i>Soil Type</i>                                 | <i>Acreages</i> |                |
|--------------------------------------------------|-----------------|----------------|
|                                                  | <i>BSA</i>      | <i>Project</i> |
| <i>Nord complex</i>                              | <i>78.49</i>    | <i>51.63</i>   |
| <i>Nord fine sandy loam</i>                      | <i>48.70</i>    | <i>37.58</i>   |
| <i>Kimberlina fine sandy loam, saline-alkali</i> | <i>16.98</i>    | <i>6.93</i>    |
| <i>Wasco sandy loam</i>                          | <i>6.13</i>     | <i>0.73</i>    |

The Nord complex soil series is characterized by very deep and well drained soils (NRCS 2022a). This soil series has a negligible to low rate of runoff and moderate permeability; however, in saline-sodic phases the permeability is moderate. They are formed of mixed alluvium from granitic and sedimentary rock. Nord can be found in alluvial fans and flood plains areas. Slopes range between 0 to 2 percent. This soil series can be used for irrigated crops including wheat (*Triticum* sp.), sugar beets (*Beta vulgaris*), corn (*Zea mays*), cotton (*Gossypium* sp.), alfalfa, walnuts (*Juglans* sp.), peaches and other fruit or nut trees. Natural vegetation that can grow on this soil type includes annual grasses and forbs and valley oak (*Quercus lobata*). Nord soil types that are found in Kings County include Nord complex and Nord fine sandy loam.

The Kimberlina series consists of very deep, well-drained soils on flood plains and recent alluvial fans (NRCS 2022a). These soils are formed in mixed alluvium derived primarily from igneous and/or sedimentary rock sources. Slopes range from 0 to 9 percent at elevations from 125 to 2,250 feet. The climate is arid with hot, dry summers and cool winters. Mean precipitation is 4 to 8 inches annually and the mean annual air temperature ranges from 59 to 62 °F. Kimberlina soils are used for irrigated field, forage, and row crops, and for livestock grazing. When undisturbed these soils support annual grasses, forbs, and saltbush (*Atriplex* sp.).

The Wasco series consists of very deep, well-drained soils on recent alluvial fans and flood plains on slopes between 0 and 5 percent (NRCS 2022a). Wasco sandy loam soils are formed in mixed alluvium derived mainly from igneous and/or sedimentary rock sources. These soils can be found between 225 and 1,000 feet in the southern San Joaquin Valley, and as high as 3,700 feet in the Mojave Desert; the series is of large extent. The climate is arid to semiarid, with hot, dry summers and cool, somewhat moist winters. Mean annual precipitation is 4 to 7 inches and mean annual temperature is between 59 and 62 °F in the Mojave Desert and 62 and 65 °F in the San Joaquin Valley. Wasco soils are used primarily for growing field, forage, and row crops; some areas are used for livestock grazing, wildlife habitat, recreation, and homesites. Natural vegetation is saltbush (*Atriplex* sp.) and annual grasses and forbs. Wasco series soils are not hydric (NRCS 2022a).





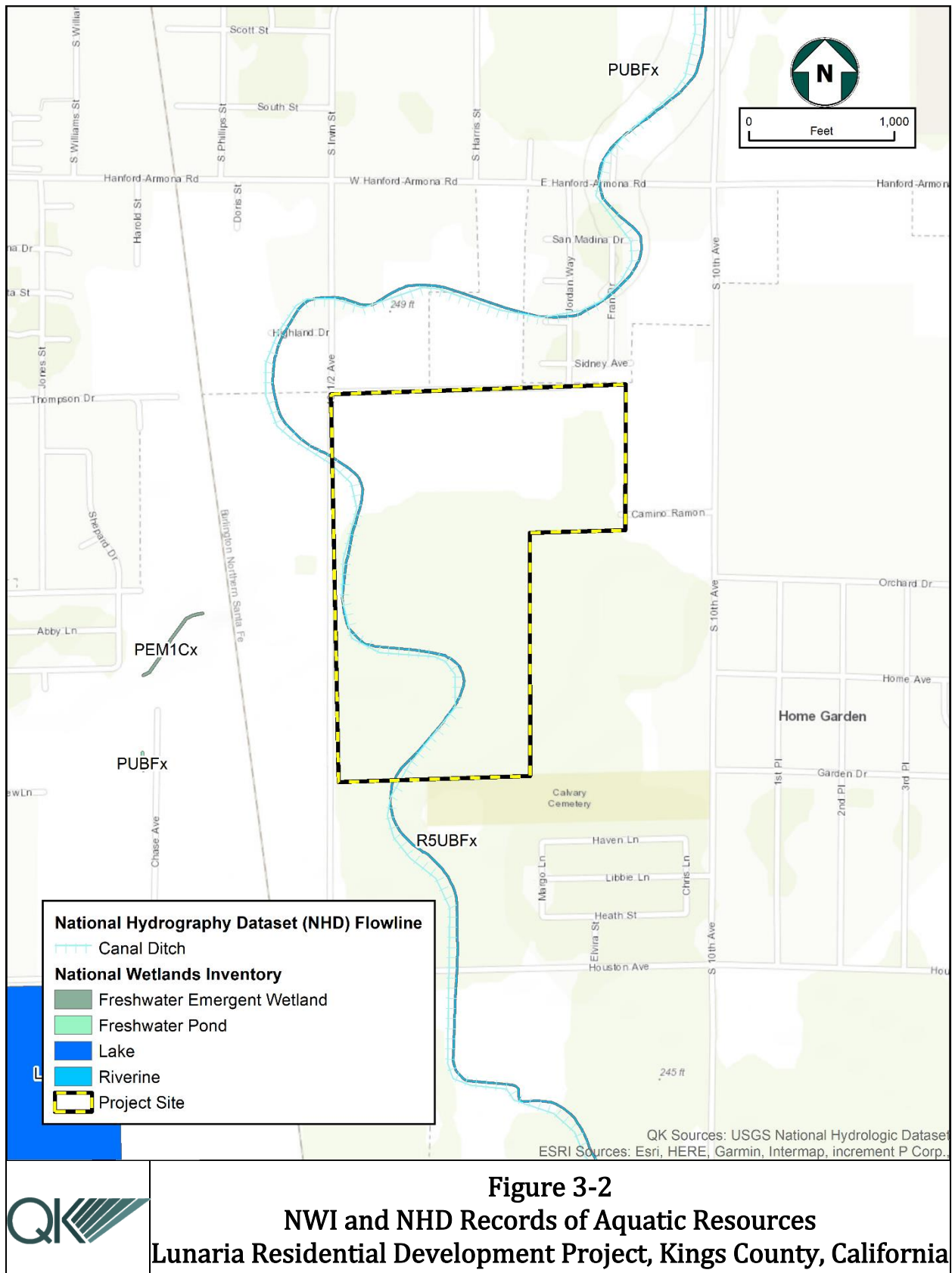


### **3.5 - Hydrology**

The Project site is in the South Valley Floor Hydrologic Unit, within the Tulare Lake Hydrologic Region (CDWR 2022). The Tulare Lake Hydrologic Region encompasses approximately 10.5 million acres and includes the drainage area south of the San Joaquin River within the San Joaquin Valley. The Kings, Kaweah, Tule, and Kern rivers, which drain the west face of the Sierra Nevada Mountains, provide the bulk of the surface water supply native to the basin. Imported surface waters enter the basin through the San Luis Canal/California Aqueduct System, the Friant-Kern Canal, and the Delta-Mendota Canal.

The NHD and NWI identify one water feature, either as a riverine or canal ditch, within the BSA (Figure 3-2). This feature is classified by the NHD as a canal ditch and the NWI identifies it as Cowardin code R5UBFx; a perennial-flow, semi-permanently flooded streambed with an unconsolidated bottom that is anthropogenic in origin (USFWS 2022c, USGS 2022). The canal is shown on the NHD and NWI as northwest to south traversing and crossing through the western half of the Project site. This feature was not present during the survey.

According to FEMA, the BSA is within an Area of Minimal Flood Hazard (Figure 3-3).





### 3.6 - General Biological Conditions

The BSA is situated within Kings County, California, just south of the City of Hanford, and is surrounded by agricultural and residential properties. The Project site is bordered by residential and industrial properties, and open grazing pastures to the west, north, and east, and active agriculture and the Calvary Cemetery to the south.

No natural plant communities occur within the BSA. The majority of the Project site was actively used for agricultural purposes. The Project site was actively being disked at the time of the survey. Patches of ruderal vegetation was observed along the edges of the Project site that included: fiddleneck (*Amsinckia menziesii*), ripgut brome (*Bromus diandrus*), and wild oat (*Avena fatua*). One private residence is located on the Project site and supports a variety of ornamental plants.

No nests on the Project site were observed during the survey. White-crowned sparrows (*Zonotrichia leucophrys*) were observed foraging near the Project site. The ornamental trees located on nearby residential properties that may support nesting birds or raptors did not contain nests during the survey though the survey coincided within the peak nesting season.

Small mammal burrows were observed along the western boundary of the Project site. Based on their size, configuration, and scat remains, these burrows were determined to be occupied by California ground squirrels (*Otospermophilus beecheyi*).

One overflow irrigation trench was observed along the Project site boundary that is not connected to any jurisdictional water feature or mapped on the NWI or NHD datasets. This ditch is contained to the active agricultural fields within the Project site. Most of the overflow irrigation ditch was dry; however, some stagnant water was present in the northern section of the BSA outside of the Project site boundary.

A complete list of plant and wildlife species observed during the biological reconnaissance survey is included in Appendix C.

## SECTION 4 - FINDINGS

### 4.1 - Sensitive Natural Communities

#### 4.1.1 - RESULTS OF LITERATURE REVIEW AND DATABASE SEARCHES

Literature results from the 9-quadrangle queries for the Project site revealed two sensitive natural vegetation communities: Valley Sacaton Grassland and Valley Sink Scrub.

#### 4.1.2 - PRESENCE OF SENSITIVE NATURAL COMMUNITIES

Valley Sacaton Grassland and Valley Sink Scrub communities were not observed within the BSA during the survey. In addition, the BSA does not provide habitat that would support these communities.

### 4.2 - Special-Status Plants

#### 4.2.1 - RESULTS OF LITERATURE REVIEW AND DATABASE SEARCHES

There were 10 special-status plant species identified in the CNDDDB, CNPS, and USFWS databases that occur in the Project region (Table 4-1). There are 6 special-status plant species with historical occurrence records within 10-miles of the BSA.

**Table 4-1**  
**Special-Status Plant Species Occurring in the Region of the,**  
**Lunaria Residential Development Project**  
 (Source: CNDDDB 2022, CNPS 2022, and USFWS 2022)

|      | <b>Scientific Name</b>                                                                                                                                                | <b>Common Name</b>      | <b>Status</b> |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------|
|      | <i>Atriplex cordulata</i> var. <i>cordulata</i>                                                                                                                       | heartscale              | 1B.2          |
|      | <i>Atriplex cordulata</i> var. <i>erecticaulis</i>                                                                                                                    | Earlimart orache        | 1B.2          |
|      | <i>Atriplex depressa</i>                                                                                                                                              | brittlescale            | 1B.2          |
|      | <i>Atriplex minuscula</i>                                                                                                                                             | lesser saltscale        | 1B.1          |
|      | <i>Atriplex subtilis</i>                                                                                                                                              | subtle orache           | 1B.2          |
|      | <i>Delphinium recurvatum</i>                                                                                                                                          | recurved larkspur       | 1B.2          |
|      | <i>Lasthenia chrysantha</i>                                                                                                                                           | alkali-sink goldfields  | 1B.1          |
|      | <i>Lepidium jaredii</i> ssp. <i>album</i>                                                                                                                             | Panoche pepper-grass    | 1B.2          |
|      | <i>Nama stenocarpa</i>                                                                                                                                                | mud nama                | 2B.2          |
|      | <i>Puccinellia simplex</i>                                                                                                                                            | California alkali grass | 1B.2          |
| 1A   | California Native Plant Society List 1A Species- Plants Presumed Extinct in California                                                                                |                         |               |
| 1B.1 | California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Seriously Endangered in California |                         |               |
| 1B.2 | California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Fairly Endangered in California.   |                         |               |
| 1B.3 | California Native Plant Society List 1B Species-Plants Categorized as Rare, Threatened, or Endangered in California and Elsewhere; Not Very Endangered in California  |                         |               |

FE Federal Endangered Species  
FT Federal Threatened Species

#### **4.2.2 - PRESENCE OF SPECIAL-STATUS PLANTS**

No special-status plant species were observed within the BSA. The field survey coincided with the optimal blooming period of some, but not all of the special-status plant species identified in the database queries. However, there is no habitat present on the Project site or within the BSA that would support any special-status plant species. The Project site is degraded from historical land use, mainly for agricultural operations and residential development, and the adjacent lands have been equally disturbed for agricultural and residential uses. A complete list of plant species observed during the biological reconnaissance survey is included in Appendix C.

### **4.3 - Special-Status Wildlife**

#### **4.3.1 - RESULTS OF LITERATURE REVIEW AND DATABASE SEARCHES**

There were 24 special-status wildlife species identified in the CNDDB, and USFWS databases that occur in the Project region (Table 4-2). There are 14 special-status wildlife species with historical occurrence records within 10-miles of the BSA.

Table 4-2  
Special-Status Wildlife Species Occurring in the Region of the  
Lunaria Residential Development Project  
(Source: CNDDB 2022, and USFWS 2022)

| Scientific Name                             | Common Name                                          | Status     |
|---------------------------------------------|------------------------------------------------------|------------|
| <b>Invertebrates</b>                        |                                                      |            |
| <i>Cicindela tranquebarica joaquinensis</i> | San Joaquin tiger beetle                             | -, -       |
| <i>Desmocerus californicus dimorphus</i>    | valley elderberry longhorn beetle                    | FT, -      |
| <i>Danaus plexippus</i>                     | monarch butterfly                                    | FC         |
| <b>Crustaceans</b>                          |                                                      |            |
| <i>Branchinecta lynchi</i>                  | vernal pool fairy shrimp                             | FT, -      |
| <i>Gonidea angulata</i>                     | western ridged mussel                                | -, -       |
| <i>Lepidurus packardii</i>                  | vernal pool tadpole shrimp                           | FE, -      |
| <i>Linderiella occidentalis</i>             | California linderiella                               | -, -       |
| <b>Fish</b>                                 |                                                      |            |
| <i>Hypomesus transpacificus</i>             | Delta smelt                                          | FT, -      |
| <b>Amphibians</b>                           |                                                      |            |
| <i>Ambystoma californiense</i> pop 1        | California tiger salamander – central California DPS | FT, CT     |
| <i>Spea hammondi</i>                        | western spadefoot                                    | -, SSC     |
| <i>Rana draytonii</i>                       | California red-legged frog                           | FT, -      |
| <b>Reptiles</b>                             |                                                      |            |
| <i>Arizona elegans occidentalis</i>         | California glossy snake                              | -, SSC     |
| <i>Emys marmorata</i>                       | western pond turtle                                  | -, SSC     |
| <i>Gambelia sila</i>                        | blunt-nosed leopard lizard                           | FE, CE, FP |
| <i>Thamnophis gigas</i>                     | giant garter snake                                   | FT, -      |
| <b>Birds</b>                                |                                                      |            |
| <i>Agelaius tricolor</i>                    | tricolored blackbird                                 | ST, SSC    |
| <i>Athene cunicularia</i>                   | burrowing owl                                        | -, SSC     |
| <i>Buteo swainsoni</i>                      | Swainson's hawk                                      | -, CT      |
| <i>Charadrius nivosus nivosus</i>           | western snowy plover                                 | FT, SSC    |
| <i>Xanthocephalus xanthocephalus</i>        | yellow-headed blackbird                              | SSC        |
| <b>Mammals</b>                              |                                                      |            |
| <i>Dipodomys nitratooides exilis</i>        | Fresno kangaroo rat                                  | FE, -      |
| <i>Dipodomys nitratooides nitratooides</i>  | Tipton kangaroo rat                                  | FE, CE     |
| <i>Lasiurus cinereus</i>                    | hoary bat                                            | -,         |
| <i>Vulpes macrotis mutica</i>               | San Joaquin kit fox                                  | FE, CT     |

Sources:



- California Department of Fish and Wildlife. 2022. California Natural Diversity Data Base, California Department of Fish and Wildlife Sacramento, CA. Quads: Academy, Clovis, Friant, Lanes Bridge, Malaga, Round Mountain, Sanger, Fresno North, and Fresno South.
- California Native Plant Society (CNPS). 2022. Inventory of Rare and Endangered Plants (online edition, v6-05b 4-11-05). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Quads: Academy, Clovis, Friant, Lanes Bridge, Malaga, Round Mountain, Sanger, Fresno North, and Fresno South.
- United States Fish and Wildlife Service. 2022. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Merced U.S.G.S 7 ½ Minute Quad. USFWS. Sacramento, CA.

## Abbreviations:

|      |                                                                       |
|------|-----------------------------------------------------------------------|
| FC   | Federal Candidate                                                     |
| FE   | Federal Endangered Species                                            |
| FT   | Federal Threatened Species                                            |
| FP   | Fully Protected Animal, CDFW                                          |
| MBTA | Species Protected Under the Auspices of the Migratory Bird Treaty Act |
| CE   | California Endangered Species                                         |
| CT   | California Threatened Species                                         |
| SSC  | California Department of Fish and Game Species of Special Concern     |

#### 4.3.2 - PRESENCE OF SPECIAL-STATUS WILDLIFE

No special-status wildlife species or their sign were observed within the BSA. The Project site is highly disturbed and contains no habitat capable of supporting most of the special-status wildlife species listed in Table 4-2. A complete list of wildlife species observed during the biological reconnaissance survey is included in Appendix C.

There is no roosting habitat for monarch butterfly (*Danaus plexippus*) present within the BSA, although it may travel through the BSA as a transient. Additionally, no milkweed (*Asclepias* sp.) was observed within the BSA, which is a required food source for larval monarch butterflies. There are no elderberry shrubs within the BSA to support the valley elderberry longhorn beetle (*Desmocerus californicus*). The remaining insect species, San Joaquin tiger beetle (*Cicindela tranquebarica joaquinensis*), has no formal protection under the CESA or the ESA.

There are no pooled water features within the BSA capable of supporting crustaceans such as vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), or California linderiella (*Linderiella occidentalis*).

There are no creeks, streams, or wetland features within the BSA capable of supporting several species including: western ridged mussel (*Gonidea angulate*), California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondi*), California red-legged frog (*Rana draytonii*). In addition, the BSA lacks the necessary hydrology and vegetation necessary to support western pond turtle (*Emys marmorata*), or giant garter snake (*Thamophis gigas*). There are no water features present capable of supporting fish species such as the delta smelt (*Hypomesus transpacificus*).

There are no grasslands or native shrub habitats within the BSA that would support California glossy snake (*Arizona elegans occidentalis*) or blunt-nosed leopard lizard (*Gambelia sila*). Except for a few active California ground squirrel (*Otospermophilus beecheyi*) burrows located on the western boundary of the Project site there were no small



mammal burrows observed to provide shelter for California glossy snake or blunt-nosed leopard lizard.

No wetland or riparian habitat exists on-site that would support nesting or foraging tricolored blackbird (*Agelaius tricolor*), or yellow-headed blackbird (*Xanthocephalus xanthocephalus*). The BSA lacks grassland habitat that would support nesting and foraging western snowy plover (*Charadrius nivosus nivosus*). Burrowing owl (*Athene cunicularia*) also inhabits grassland and open bare ground and utilizes existing small mammal burrows, typically created by California ground squirrel, for breeding and shelter. While a few California ground squirrel burrows were observed there was no sign (e.g., whitewash, tracks, prey remains) to indicate burrowing owl may be occupying these burrows. In addition, burrowing owl are not typically associated with active agricultural fields because they prefer isolation from people and loud noises.

There are no rocky outcroppings, mines or caves, cliff faces, tree hollows, or bridges within the BSA that would support the hoary bat (*Lasiurus cinereus*). Due to the historic disturbance and absence of small mammal burrows, the BSA does not support the Fresno kangaroo rat (*Dipodomys nitratooides exilis*) or Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*).

The San Joaquin kit fox is unlikely to habituate within the BSA. The nearest San Joaquin kit fox CNDDDB occurrence (EONDX 66435) is approximately 1.0-mile southwest of the BSA, where one adult was observed in a walnut (*Juglans* sp.) orchard in 2000. The BSA consists of active agricultural fields and common ornamental grasses, shrubs, and trees located on occupied residential properties. No San Joaquin kit fox or diagnostic signs of the species (e.g., tracks, dens, scat, prey remains) were found during the field survey, and there is a very limited prey base. Surrounding land use and habitat conditions make it unlikely that the San Joaquin kit fox would be present, other than as a transient forager.

The Swainson's hawk (*Buteo swainsoni*) has the potential to nest outside of the Project site in the vicinity of ornamental trees and powerline structures. No nests suitable for Nesting Swainson's hawks were observed within the BSA. The nearest CNDDDB occurrence (EONDX 91345) for nesting Swainson's hawk is approximately 3.0-miles northeast of the BSA, where nesting observations have been recorded since 2012. There is suitable nesting habitat within the vicinity on residential properties to the west and east. The site currently does provide foraging habitat during low growing agricultural crops.

#### **4.4 - Nesting Migratory Birds and Raptors**

No active or inactive migratory bird or raptor nests were observed during the survey, which was conducted during the breeding season (February 1 through September 15). There are a variety of man-made structures, transmission towers, and trees within the BSA and in the vicinity of the Project which could support a variety of nesting bird species, including larger species such as raptors and common raven (*Corvus corax*). Due to the active agricultural production and seasonal disking of the site, it is unlikely that ground nesting species would nest on the Project.

## **4.5 - Critical Habitat, Movement Corridors, and Linkages**

### **4.5.1 - PRESENCE OF CRITICAL HABITAT**

No designated critical habitat occurs within the BSA. The nearest USFWS designated critical habitat is for vernal pool fairy shrimp, California tiger salamander, and vernal pool tadpole shrimp located approximately 8.5-miles northeast of the BSA (Figure 4-1).

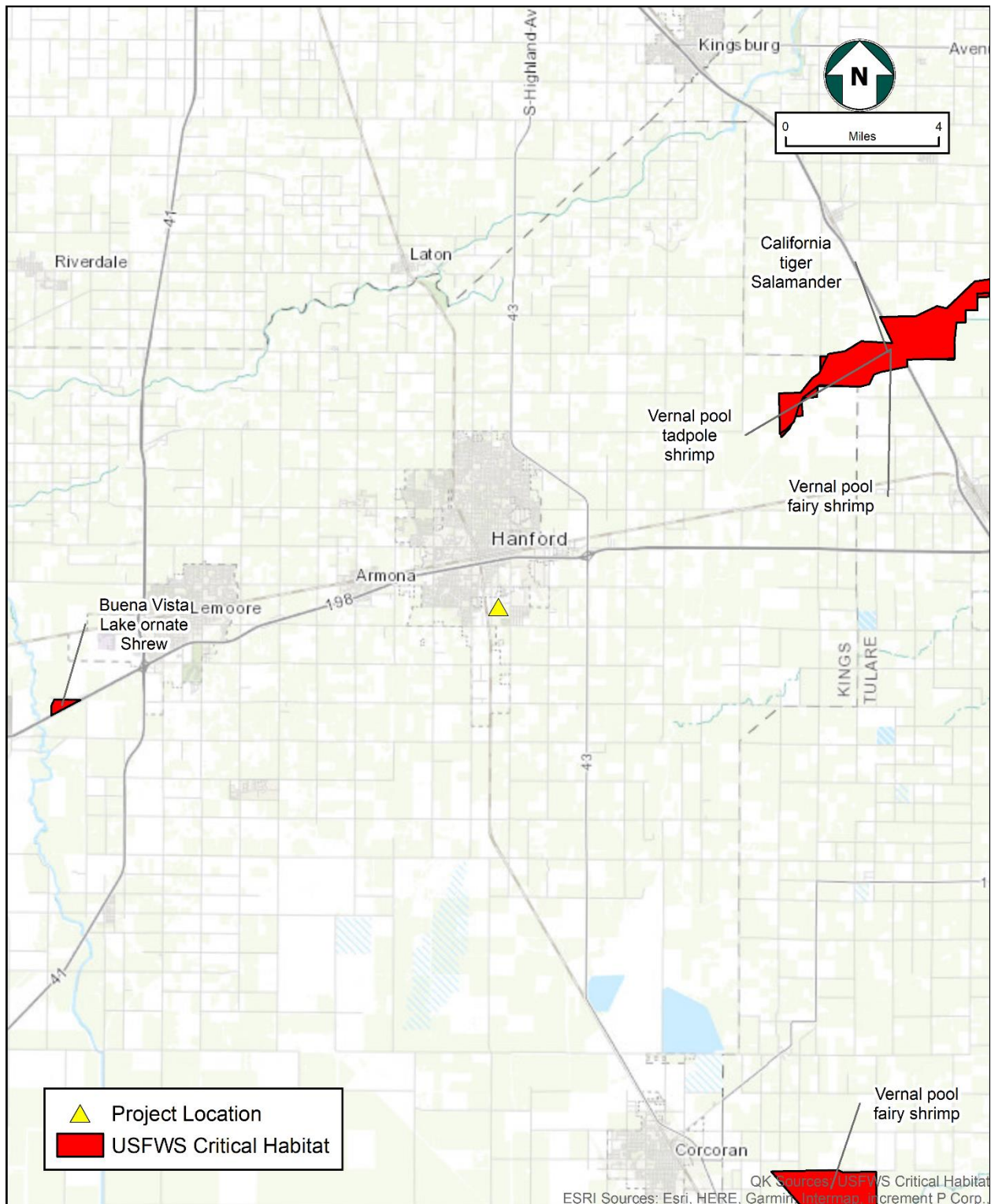
### **4.5.2 - PRESENCE OF MOVEMENT CORRIDORS AND LINKAGES**

There are no known wildlife movement corridors or habitat linkages that intersect the BSA. The Project is situated within an area developed for urban and agricultural use and does not provide a linkage between suitable natural habitats for most wildlife species. Due to the disturbed condition of the Project, there is no substantial movement of wildlife onto or off of the BSA.

## **4.6 - Wetlands and Other Waters**

No wetland features are known to exist at the Project site (Figure 3-4). The NHD and NWI identified one water feature that intersected the BSA, crossing the northwest corner and traversing through the western half of the Project site and exiting at the southern boundary. The NHD classified the feature as a canal ditch and NWI classified the feature as a riverine, R5UBFx. This water feature was not present during the site survey and is not visible on historical aerial imagery.

One water feature was observed during the survey that was not identified by NHD or NWI. An irrigation overflow trench located on the northern and western boundaries was predominately dry with some stagnant water located outside of the Project site in the northern portion of the BSA. The irrigation trench does not appear to connect to any outside source and appears to be contained to the existing Project site.



**Figure 4-1**  
**Mapped Critical Habitat in the Project Vicinity**  
**Lunaria Residential Development Project, Kings County, California**

## **SECTION 5 - POTENTIAL PROJECT IMPACTS**

The purpose of this section is to present an evaluation of the potential for Project-related impacts to sensitive biological resources to occur resulting from Project construction activities. Although the potential for impacts of the Project is anticipated to be minor because the Project will be constructed on active agricultural fields, there are some risks of Project impacts. These are discussed below.

### **5.1 - Potential Impacts to Sensitive Vegetation Communities**

No sensitive vegetation communities occur within the BSA. The Project would not impact sensitive natural communities

### **5.2 - Potential Impacts to Special-Status Plant Species**

No special-status plant species occur within the BSA and there is no suitable habitat for any special-status plant species or near the BSA. The Project would not impact any special-status plant species.

### **5.3 - Potential Impacts to Special-Status Wildlife Species**

Only two special-status wildlife species, San Joaquin kit fox and Swainson's hawk, have the potential to occur within the BSA from time to time. The available habitat for is very limited on fulfilling the necessary foraging requirements for San Joaquin kit fox and Swainson's hawk. No San Joaquin kit fox dens were observed on or near the Project site and habitation for foxes is very limited. Several trees outside of the Project site but within the BSA could support nests; however, the shortage of prey, and lack of local foraging habitat makes the presence of the Swainson's hawk very unlikely.

Any special-status species that use the Project as a movement corridor could be indirectly impacted because of Project activities, though little wildlife was observed in or near BSA during the reconnaissance survey conducted for the Project.

### **5.4 - Potential Impacts to Nesting Birds and Raptors**

No active or inactive bird nests were observed during the site survey. There is potential for birds to nest outside of the Project site but within the BSA in existing structures and trees, and in trees and utility poles in the surrounding urban areas. If there are active nests present during Project activities, nests could be destroyed, and Project activities could interfere with normal breeding behaviors, which could discourage breeding or lead to nest abandonment or failure.

**5.5 - Potential Impacts to Critical Habitat, Movement Corridors and Linkages****5.5.1 - POTENTIAL IMPACTS TO CRITICAL HABITAT**

The Project would not impact any designated critical habitat.

**5.5.2 - POTENTIAL IMPACTS TO MOVEMENT CORRIDORS AND LINKAGES**

Project activities would not impact any movement corridors or habitat linkages.

**5.6 - Potential Impacts to Wetlands and Waters**

No wetland features exist on or near the BSA, and there would be no impacts to wetland resources. One ditch canal or riverine was identified via the NHD and NWI. This feature was not present during the reconnaissance survey and is not visible on historical aerial imagery. An irrigation ditch was identified during the survey on the northern and western boundary; however, it was not identified by NHD or NWI. This feature will not be impacted by the construction of this project. There would be no impacts to any wetlands or water features.

## SECTION 6 - RECOMMENDATIONS

The Project is anticipated to have no impacts to sensitive natural communities, special-status plants, wetlands and water features, Critical Habitat, or migratory corridors. There is potential for Project activities to result in impacts to some of the special-status wildlife species listed in Sections 4 and 5. While the potential for impacts to San Joaquin kit fox and Swainson's hawk is low, to avoid these species and other wildlife species, we recommend that the following measures be implemented as Best Management Practices (BMPs) during Project activities:

- A pre-construction survey of the Project and a 500-foot buffer surrounding the Project footprint should be conducted for San Joaquin kit fox. The survey should occur no less than 14 days prior to the start of construction activities and no more than 30 days prior to the start of construction activities. If construction is delayed beyond 30 days from the time of the survey, then another survey would need to be conducted. The survey should be conducted by a biologist with adequate training and prior experience conducting surveys for special-status wildlife species.
- A worker environmental Awareness Training Program should be prepared and presented to all workers that will be on-site during construction activities.
- Project-related vehicles should observe a 20 mph speed limit in all Project areas, except on county roads and state and federal highways; this is particularly important at night when kit foxes, and other animals are most active. To the extent possible, nighttime construction should be minimized. Off-road traffic outside of designated project areas should be prohibited.
- To prevent inadvertent entrapment of kit foxes, and other animals during work being conducted, the contractor should cover all excavated, steep-walled holes or trenches more than 2 feet deep at the close of each working day with plywood or similar materials or provide one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, the contractor should thoroughly inspect them for trapped animals.
- Kit foxes and other wildlife species are attracted to den-like structures such as pipes and may enter stored pipes, becoming trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the designated biologist has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved once to remove it from the path of construction activity until the fox has escaped.
- All trash and food items should be discarded into closed containers and properly disposed of at the end of each workday.
- To prevent harassment or mortality of listed species, no pets should be permitted on the Project site.

To protect nesting migratory birds and raptors, it is recommended that:

- If Project activities are scheduled during the breeding bird season, from February 1 through September 15, then a preconstruction survey for nesting birds should be conducted within the Project site and within a 250-foot radius surrounding the Project site for active nesting sites. A 0.5-mile radius surrounding the Project site should be used to survey for nesting Swainson's hawks. Construction activities should not be conducted within 250 feet of an active bird nest, within 500 feet of an active raptor nest and within 0.5 mile of an active Swainson's hawk nest. These avoidance distances may be reduced if the qualified biologist determines that activities are not affecting the breeding success of the nesting birds.

## SECTION 7 - SUMMARY AND CONCLUSIONS

Land within the Project site is highly disturbed and contains no habitat that would support special-status plant species or sensitive natural communities. There are no designated Critical Habitats, movement corridors, wetlands, or water features that would be impacted by the Project.

Based on the literature and database searches and results of the site survey, there is potential for two special-status species to occur on the site: the San Joaquin kit fox, and Swainson's hawk. Because of the disturbed nature of the Project and its situation within an area developed for agriculture and urban use, impacts to the San Joaquin kit fox are not expected. San Joaquin kit foxes would likely be only transient visitors to the Project site. If Swainson's hawks were to nest in the vicinity of the Project, impacts to the species could occur. The Project and surrounding areas provide suitable nesting habitat for other nesting migratory birds as well and impacts to these species may also occur. Implementation of the recommended BMPs and avoidance measures outlined in Section 6 would minimize any Project impacts to these species.

This Biological Resource Evaluation report has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The findings and opinions conveyed in this report are based on findings derived from specified historical and literary sources and a biological survey of the Project site and surrounding area. The biological investigation was limited by the scope of work performed. The biological survey may not have been performed during blooming periods or periods of seasonal or daily wildlife activity that would provide positive identification if resources were present, and therefore the findings of this report might not be definitive. The biological survey was also limited by the environmental conditions present at the time of the survey. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and would not be discovered in the future within the site. Mobile animal species could occupy the site on a transient basis or re-establish populations in the future. No other guarantees or warranties, expressed or implied, are provided.

## SECTION 8 - REFERENCES

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**APPENDIX A**

**SPECIAL-STATUS SPECIES DATABASE SEARCH RESULTS**

**FOR THE LUNARIA RESIDENTIAL DEVELOPMENT PROJECT**



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Query Criteria: Quad< IS </span>(Hanford (3611936)<span style="color:Red"> OR </span>Lemoore (3611937)<span style="color:Red"> OR </span>Riverdale (3611947)<span style="color:Red"> OR </span>Remnoy (3611935)<span style="color:Red"> OR </span>Stratford (3611927)<span style="color:Red"> OR </span>Burris Park (3611945)<span style="color:Red"> OR </span>Waukena (3611925)<span style="color:Red"> OR </span>Guernsey (3611926)<span style="color:Red"> OR </span>Laton (3611946)

| Species                                                                                       | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|-----------------------------------------------------------------------------------------------|--------------|----------------|--------------|-------------|------------|--------------------------------|
| <i>Agelaius tricolor</i><br>tricolored blackbird                                              | ABPBXB0020   | None           | Threatened   | G1G2        | S1S2       | SSC                            |
| <i>Ambystoma californiense</i> pop. 1<br>California tiger salamander - central California DPS | AAAAA01181   | Threatened     | Threatened   | G2G3        | S3         | WL                             |
| <i>Arizona elegans occidentalis</i><br>California glossy snake                                | ARADB01017   | None           | None         | G5T2        | S2         | SSC                            |
| <i>Athene cunicularia</i><br>burrowing owl                                                    | ABNSB10010   | None           | None         | G4          | S3         | SSC                            |
| <i>Atriplex cordulata</i> var. <i>erecticaulis</i><br>Earlimart orache                        | PDCHE042V0   | None           | None         | G3T1        | S1         | 1B.2                           |
| <i>Atriplex depressa</i><br>brittlescale                                                      | PDCHE042L0   | None           | None         | G2          | S2         | 1B.2                           |
| <i>Atriplex minuscula</i><br>lesser saltscale                                                 | PDCHE042M0   | None           | None         | G2          | S2         | 1B.1                           |
| <i>Atriplex subtilis</i><br>subtle orache                                                     | PDCHE042T0   | None           | None         | G1          | S1         | 1B.2                           |
| <i>Branchinecta lynchi</i><br>vernal pool fairy shrimp                                        | ICBRA03030   | Threatened     | None         | G3          | S3         |                                |
| <i>Buteo swainsoni</i><br>Swainson's hawk                                                     | ABNKC19070   | None           | Threatened   | G5          | S3         |                                |
| <i>Charadrius nivosus nivosus</i><br>western snowy plover                                     | ABNNB03031   | Threatened     | None         | G3T3        | S2         | SSC                            |
| <i>Cicindela tranquebarica joaquinensis</i><br>San Joaquin tiger beetle                       | IICOL0220E   | None           | None         | G5T1        | S1         |                                |
| <i>Delphinium recurvatum</i><br>recurved larkspur                                             | PDRAN0B1J0   | None           | None         | G2?         | S2?        | 1B.2                           |
| <i>Desmocerus californicus dimorphus</i><br>valley elderberry longhorn beetle                 | IICOL48011   | Threatened     | None         | G3T2        | S3         |                                |
| <i>Dipodomys nitratoideus nitratoideus</i><br>Tipton kangaroo rat                             | AMAFD03152   | Endangered     | Endangered   | G3T1T2      | S1S2       |                                |
| <i>Emys marmorata</i><br>western pond turtle                                                  | ARAAD02030   | None           | None         | G3G4        | S3         | SSC                            |
| <i>Gambelia sila</i><br>blunt-nosed leopard lizard                                            | ARACF07010   | Endangered     | Endangered   | G1          | S1         | FP                             |
| <i>Gonidea angulata</i><br>western ridged mussel                                              | IMBIV19010   | None           | None         | G3          | S1S2       |                                |
| <i>Lasiurus cinereus</i><br>hoary bat                                                         | AMACC05030   | None           | None         | G3G4        | S4         |                                |



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



| Species                                                                | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|------------------------------------------------------------------------|--------------|----------------|--------------|-------------|------------|--------------------------------|
| <b><i>Lasthenia chrysantha</i></b><br>alkali-sink goldfields           | PDAST5L030   | None           | None         | G2          | S2         | 1B.1                           |
| <b><i>Lepidium jaredii ssp. album</i></b><br>Panoche pepper-grass      | PDBRA1M0G2   | None           | None         | G2G3T2T3    | S2S3       | 1B.2                           |
| <b><i>Lepidurus packardii</i></b><br>vernal pool tadpole shrimp        | ICBRA10010   | Endangered     | None         | G4          | S3S4       |                                |
| <b><i>Linderiella occidentalis</i></b><br>California linderiella       | ICBRA06010   | None           | None         | G2G3        | S2S3       |                                |
| <b><i>Nama stenocarpa</i></b><br>mud nama                              | PDHYD0A0H0   | None           | None         | G4G5        | S1S2       | 2B.2                           |
| <b><i>Puccinellia simplex</i></b><br>California alkali grass           | PMPOA53110   | None           | None         | G3          | S2         | 1B.2                           |
| <b><i>Spea hammondi</i></b><br>western spadefoot                       | AAABF02020   | None           | None         | G2G3        | S3         | SSC                            |
| <b>Valley Sacaton Grassland</b><br>Valley Sacaton Grassland            | CTT42120CA   | None           | None         | G1          | S1.1       |                                |
| <b>Valley Sink Scrub</b><br>Valley Sink Scrub                          | CTT36210CA   | None           | None         | G1          | S1.1       |                                |
| <b><i>Vulpes macrotis mutica</i></b><br>San Joaquin kit fox            | AMAJA03041   | Endangered     | Threatened   | G4T2        | S2         |                                |
| <b><i>Xanthocephalus xanthocephalus</i></b><br>yellow-headed blackbird | ABPBXB3010   | None           | None         | G5          | S3         | SSC                            |

Record Count: 30



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To:  
Project Code: 2022-0021728  
Project Name: Lunaria

March 18, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

#### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2))

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Sacramento Fish And Wildlife Office**

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600



## Project Summary

Project Code: 2022-0021728

Event Code: None

Project Name: Lunaria

Project Type: Residential Construction

Project Description: Tentative track map for residential housing

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.30591325,-119.64361626829984,14z>



Counties: Kings County, California

## Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

| NAME                                                                                                                                                                                                                                                                                      | STATUS     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Fresno Kangaroo Rat <i>Dipodomys nitratoideis exilis</i><br>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/5150">https://ecos.fws.gov/ecp/species/5150</a> | Endangered |
| San Joaquin Kit Fox <i>Vulpes macrotis mutica</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2873">https://ecos.fws.gov/ecp/species/2873</a>                                                              | Endangered |
| Tipton Kangaroo Rat <i>Dipodomys nitratoideis nitratoideis</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/7247">https://ecos.fws.gov/ecp/species/7247</a>                                                 | Endangered |

## Reptiles

| NAME                                                                                                                                                                                                                      | STATUS     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Blunt-nosed Leopard Lizard <i>Gambelia silus</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/625">https://ecos.fws.gov/ecp/species/625</a> | Endangered |
| Giant Garter Snake <i>Thamnophis gigas</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/4482">https://ecos.fws.gov/ecp/species/4482</a>     | Threatened |

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## Amphibians

| NAME                                                                                                                                                                                                                                                                              | STATUS     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| California Red-legged Frog <i>Rana draytonii</i><br>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2891">https://ecos.fws.gov/ecp/species/2891</a> | Threatened |

## Fishes

| NAME                                                                                                                                                                                                                                                                       | STATUS     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Delta Smelt <i>Hypomesus transpacificus</i><br>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/321">https://ecos.fws.gov/ecp/species/321</a> | Threatened |

## Insects

| NAME                                                                                                                                                                                                                 | STATUS    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Monarch Butterfly <i>Danaus plexippus</i><br>No critical habitat has been designated for this species.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a> | Candidate |

## Crustaceans

| NAME                                                                                                                                                                                                                                                                                   | STATUS     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i><br>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>     | Threatened |
| Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i><br>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: <a href="https://ecos.fws.gov/ecp/species/2246">https://ecos.fws.gov/ecp/species/2246</a> | Endangered |

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

### **IPaC User Contact Information**

Agency: QK, Inc.  
Name: Karissa Denney  
Address: 5080 California Avenue  
Address Line 2: Suite 220  
City: Bakersfield  
State: CA  
Zip: 93309  
Email: karissa.denney@qkinc.com  
Phone: 6616162600

Search Results

12 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3611935:3611926:3611925:3611945:3611936:3611937:3611947:3611946:3611927]

| ▲ SCIENTIFIC NAME                                  | COMMON NAME             | FAMILY         | LIFEFORM                              | BLOOMING PERIOD   | FED LIST | STATE LIST | GLOBAL RANK | STATE RANK | CA RARE PLANT RANK | PHOTO                                                                                                                                   |
|----------------------------------------------------|-------------------------|----------------|---------------------------------------|-------------------|----------|------------|-------------|------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <i>Atriplex cordulata</i> var. <i>cordulata</i>    | heartscale              | Chenopodiaceae | annual herb                           | Apr-Oct           | None     | None       | G3T2        | S2         | 1B.2               | <br>© 1994 Robert E. Preston, Ph.D.                  |
| <i>Atriplex cordulata</i> var. <i>erecticaulis</i> | Earlmarc orache         | Chenopodiaceae | annual herb                           | Aug-Sep(Nov)      | None     | None       | G3T1        | S1         | 1B.2               | <br>© 2009 Robert E. Preston, Ph.D.                  |
| <i>Atriplex desoressa</i>                          | brittscale              | Chenopodiaceae | annual herb                           | Apr-Oct           | None     | None       | G2          | S2         | 1B.2               | <br>© 2009 Zoya Akulova                              |
| <i>Atriplex minuscula</i>                          | lesser saltscale        | Chenopodiaceae | annual herb                           | May-Oct           | None     | None       | G2          | S2         | 1B.1               | <br>© 2000 Robert E. Preston, Ph.D.                  |
| <i>Atriplex subtilis</i>                           | subtle orache           | Chenopodiaceae | annual herb                           | (Apr)Jun-Sep(Oct) | None     | None       | G1          | S1         | 1B.2               | <br>© 2000 Robert E. Preston, Ph.D.                 |
| <i>Delphinium recurvatum</i>                       | recurved larkspur       | Ranunculaceae  | perennial herb                        | Mar-Jun           | None     | None       | G27         | S27        | 1B.2               | No Photo Available                                                                                                                      |
| <i>Lasthenia chrysantha</i>                        | alkali-sink goldfields  | Asteraceae     | annual herb                           | Feb-Apr           | None     | None       | G2          | S2         | 1B.1               | <br>© 2009 California State University, Stanislaus |
| <i>Lasthenia ferrisiae</i>                         | Ferris' goldfields      | Asteraceae     | annual herb                           | Feb-May           | None     | None       | G3          | S3         | 4.2                | <br>© 2009 Zoya Akulova                            |
| <i>Lepidium jaredii</i> ssp. <i>album</i>          | Panoche pepper-grass    | Brassicaceae   | annual herb                           | Feb-Jun           | None     | None       | G2G3T2T3    | S2S3       | 1B.2               | <br>© 2015 Debra L. Cook                           |
| <i>Nama stenocharpa</i>                            | mud nama                | Namaceae       | annual/perennial herb                 | Jan-Jul           | None     | None       | G4G5        | S1S2       | 2B.2               | No Photo Available                                                                                                                      |
| <i>Puccinellia simplex</i>                         | California alkali grass | Poaceae        | annual herb                           | Mar-May           | None     | None       | G3          | S2         | 1B.2               | No Photo Available                                                                                                                      |
| <i>Sagittaria sanfordii</i>                        | Sanford's arrowhead     | Alismataceae   | perennial rhizomatous herb (emergent) | May-Oct(Nov)      | None     | None       | G3          | S3         | 1B.2               | <br>©2013 Debra L. Cook                            |

Showing 1 to 12 of 12 entries

**Suggested Citation:**

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website <https://www.rareplants.cnps.org> [accessed 6 April 2022].

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**CONTACT US**

Send questions and comments to  
[rareplants@cnps.org](mailto:rareplants@cnps.org).



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**CONTRIBUTORS**

[The Calflora Database](#)  
[The California Lichen Society](#)  
[California Natural Diversity Database](#)  
[The Jepson Flora Project](#)  
[The Consortium of California Herbaria](#)  
[CalPhotos](#)

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**APPENDIX B**

**REPRESENTATIVE PHOTOGRAPHS OF THE**

**LUNARIA RESIDENTIAL DEVELOPMENT PROJECT**



**Photograph 1:** Southwest corner of the Project site, facing north.  
 GPS Coordinates: 36.302287°N, -119.645731°W.  
 Photograph taken by Karissa Denney on March 18, 2022.



**Photograph 2:** Southern boundary of the Project site, facing north.  
 GPS Coordinates: 36.302279°N, -119.643724°W.  
 Photograph taken by Karissa Denney on March 18, 2022.





**Photograph 3:** Northwest corner of the Project site with the irrigation ditch, facing east.  
GPS Coordinates: 36.309347°N, -119.645745°W.  
Photograph taken by Karissa Denney on March 18, 2022.



**Photograph 4:** Northwest corner of the Project site with the irrigation ditch, facing south.  
GPS Coordinates: 36.309347°N, -119.645745°W.  
Photograph taken by Karissa Denney on March 18, 2022.



**Photograph 5:** Northeast corner of the Project site with a tractor disking the field, facing south.  
GPS Coordinates: 36.309501°N, -119.639220°W.  
Photograph taken by Karissa Denney on March 18, 2022.



**Photograph 6:** Center of the Project site, facing north.  
GPS Coordinates: 36.305801°N, -119.643459°W.  
Photograph taken by Karissa Denney on March 18, 2022.





**Photograph 7:** Center of the Project site, facing south.  
GPS Coordinates: 36.305801°N, -119.643459°W.  
Photograph taken by Karissa Denney on March 18, 2022.



**Photograph 8:** Representative California ground squirrel along the irrigation ditch on the western boundary of the BSA, facing west.  
GPS Coordinates: 36.305875°N, -119.645784°W.  
Photograph taken by Karissa Denney on March 18, 2022.

**APPENDIX C**

**PLANT AND WILDLIFE SPECIES OBSERVED**

**ON THE LUNARIA RESIDENTIAL DEVELOPMENT PROJECT**

Table C - 1  
Plant and Wildlife Species Observed on the Project Site  
Lunaria Residential Development Project

| Scientific Name                 | Common Name                 | Status |
|---------------------------------|-----------------------------|--------|
| <b>Plants</b>                   |                             |        |
| <i>Amsinckia menziesii</i>      | fiddleneck                  | None   |
| <i>Avena fatua</i>              | wild oat                    | None   |
| <i>Bromus diandrus</i>          | ripgut brome                | None   |
| <i>Capsella bursa-pastoris</i>  | Shepard's purse             | None   |
| <i>Digitaria</i> sp.            | crabgrass                   | None   |
| <i>Erodium cicutarium</i>       | red-stemmed filaree         | None   |
| <i>Eucalyptus</i> sp.           | eucalyptus                  | None   |
| <i>Heterotheca grandiflora</i>  | telegraph weed              | None   |
| <i>Hordeum murinum</i>          | foxtail barley              | None   |
| <i>Malva parviflora</i>         | cheeseweed                  | None   |
| <i>Matricaria discoidea</i>     | pineapple weed              | None   |
| <i>Matricaria recutita</i>      | German chamomile            | None   |
| <i>Medicago sativa</i>          | alfalfa                     | None   |
| <i>Raphanus raphanistrum</i>    | wild radish                 | None   |
| <i>Salsola tragus</i>           | Russian thistle             | None   |
| <i>Senecio vulgaris</i>         | common groundsel            | None   |
| <i>Sisymbrium irio</i>          | London rocket               | None   |
| <i>Sisymbrium sophia</i>        | tansy mustard               | None   |
| <i>Triticum</i> sp.             | wheat                       | None   |
| <b>Reptiles</b>                 |                             |        |
| <i>Uta stansburiana</i>         | side-blotched lizard        | None   |
| <b>Birds</b>                    |                             |        |
| <i>Aphelocoma californica</i>   | California scrub jay        | None   |
| <i>Carpodacus mexicanus</i>     | house finch                 | None   |
| <i>Corvus brachyrhynchos</i>    | American crow               | None   |
| <i>Gallus gallus domesticus</i> | rooster                     | None   |
| <i>Mimus polyglottos</i>        | Northern mockingbird        | None   |
| <i>Sayornis nigricans</i>       | black phoebe                | None   |
| <i>Zenaida macroura</i>         | mourning dove               | None   |
| <i>Zonotrichia leucophrys</i>   | white-crowned sparrow       | None   |
| <b>Mammals</b>                  |                             |        |
| <i>Bos</i> sp.                  | cattle                      | None   |
| <i>Otospermophilus beecheyi</i> | California ground squirrel* | None   |
| <i>Geomyidae</i>                | gopher*                     | None   |
| <i>Canis lupus familiaris</i>   | domestic dog                | None   |
| <i>Equus ferus caballus</i>     | horse                       | None   |

\* Indicates that only sign (e.g., tracks, scat, burrows, dens, vocalizations) of the species was observed.



## TECHNICAL MEMORANDUM

**Date:** June 20, 2022

**Project:** Cultural resources records search- Lunaria Residential Development Project, City of Hanford, Kings County, CA

**To:** Jaymie Brauer, Principal Planner

**From:** Robert Parr, MS, RPA, Senior Archaeologist

**Subject:** Cultural Resources Records Search Results (RS#22-164)

### Background

A cultural resources records search (#22-164) was conducted at the Southern San Joaquin Valley Information Center (IC), CSU Bakersfield for the above referenced Project in the City of Hanford, Kings County to determine whether the proposed project would impact cultural resources.

### Project Location

The Project is located in Kings County, California (Attachment A: Figures 1-4). The Project site is within the northwest  $\frac{1}{4}$  of the southeast  $\frac{1}{4}$  of Section 1, T.19S, R.21E. (Figures 1-4).

### Project Description

The Project intends to create residential lots and the appurtenant infrastructure consistent with the General Plan designation of Residential Low Density. The applicant (D.R. Horton) proposes constructing a tract, a 457-lot single-family subdivision with an approximate 4.4-acre square foot storm basin, and a 5.82-acre park (Tract 938). The development would include single-story homes of three to five bedrooms, with a minimum lot size of 5,000 square feet, and the associated road and utility improvements. The Project will also include landscaping.

### Results

The records search covered an area within one-half mile of the Project and included a review of the *National Register of Historic Places*, *California Points of Historical Interest*, *California Registry of Historic Resources*, *California Historical Landmarks*, *California State Historic Resources Inventory*, and a review of cultural resource reports on file.

The records search indicated that, although it was included in a brief cultural resource assessment of the general area (Davis 1977), the subject property had never been surveyed for cultural resources. Four cultural resource studies have been conducted within a half mile of the project (Varner 1975, 2005; Mason and Shepard 2000; Nelson 2000).



## TECHNICAL MEMORANDUM

One historic cultural resource, the People's Ditch (P-16-000246), passes through the property. This is an active irrigation ditch that originally was constructed in the 1870s. However, aerial photography indicates this feature is no longer present on the site, and there would be no impact. Since the property has never been surveyed for cultural resources, it is not known if any others exist on it.

One cultural resource, the historic route of the AT&SF Railroad (P-16-000120) is located within one half mile of the project. This historic resource will not be impacted by the project.

A Sacred Lands File request was also submitted to the Native American Heritage Commission. A response dated June 20, 2022 indicates negative results (see Attachment C).

### Conclusions

Based on the results of cultural records search findings and the lack of historical or archaeological resources previously identified within a half mile radius of the proposed Project, the potential to encounter subsurface cultural resources is minimal. Additionally, the Project construction would be conducted within the partially developed and previously disturbed parcel. The potential to uncover subsurface historical or archaeological deposits would be considered unlikely.

However, there is still a possibility that historical or archaeological materials may be exposed during construction. Grading and trenching, as well as other ground-disturbing actions have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the project area, including historical or archaeological resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact. To reduce the potential impacts of the Project on cultural resources, the following measures are recommended to be included as Conditions of Approval. With implementation of CUL-1 and CUL-2, the Project would have a less than significant impact related to cultural resources.

CUL-1: If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from Project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource.



## TECHNICAL MEMORANDUM

CUL-2: If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.

A handwritten signature in black ink, appearing to read 'Robert E. Parr', with a stylized flourish at the end.

Robert E. Parr, MS, RPA  
Senior Archaeologist

Attachment A- Figures

Attachment B- Sacred Lands File Response by the Native American Heritage Commission





## TECHNICAL MEMORANDUM

### References

*(all reports on file at the Southern San Joaquin Valley Information Center, California State University, Bakersfield)*

Bonner, Wayne H., Marnie Aislin-Kay, and Alynne Loupe

2005 Cultural Resources Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate ES-0006-01 (Sprint Barstow Road), 260 Virginia Way, Barstow, San Bernardino County, California. (SB-04893)

Bonner, Wayne H., and Sarah A. Williams

2012 Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate IE04396A (Barstow Fire Department), 861 Barstow Road, Barstow, San Bernardino County, California. (SB-07158)

Dice, Michael

2000 Records Search for Sprint PCS Facility SB40XC715B (Barstow Museum), City of Barstow, San Bernardino County, CA. (SB-04210)

Hearn, Joseph E., and Ruth D. Simpson

1976 Archaeological – Historical Resources Assessment of Area Selected for Proposed Barstow Fire District Headquarters Facility. (SB-00425)



## TECHNICAL MEMORANDUM

Attachment A-  
Figures

# Lunaria Residential Development Project





HANFORD ARMONA RD

10 1/2 AVE

10TH AVE

HOUSTON AVE

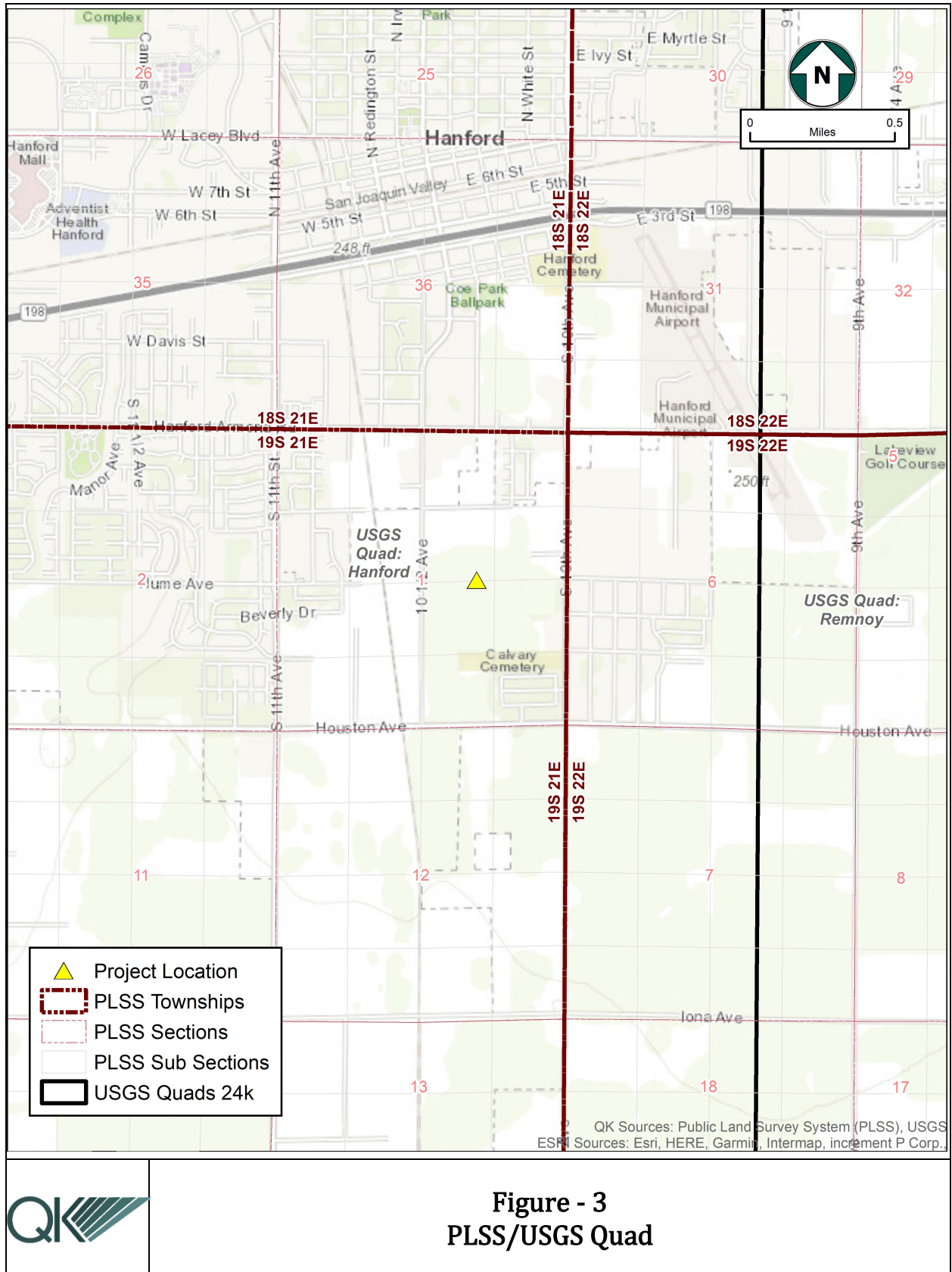
Project Site

0 1,000 Feet

ESRI Source: Maxar, GeoEye, Earthstar Geographics



# Lunaria Residential Development Project



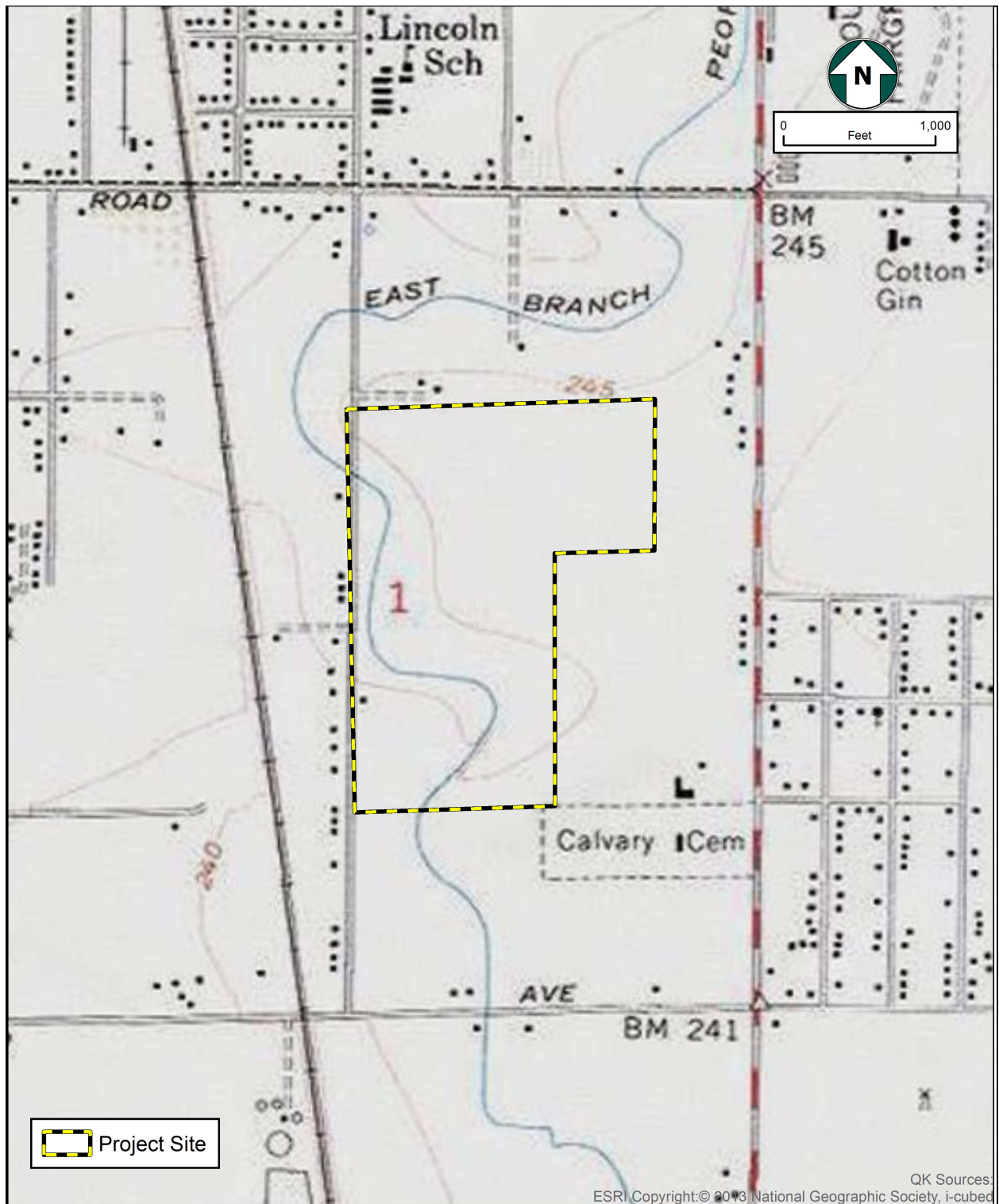


Figure - 4  
Topo



## **TECHNICAL MEMORANDUM**

Attachment B-  
Sacred Lands File Response by the  
Native American Heritage Commission



## NATIVE AMERICAN HERITAGE COMMISSION

June 20, 2022

Jaymie Brauer  
QK Inc.Via Email to: [jaymie.brauer@qkinc.com](mailto:jaymie.brauer@qkinc.com)CHAIRPERSON  
**Laura Miranda**  
LuiseñoVICE CHAIRPERSON  
**Reginald Pagaling**  
ChumashPARLIAMENTARIAN  
**Russell Attebery**  
KarukSECRETARY  
**Sara Dutschke**  
MiwokCOMMISSIONER  
**William Mungary**  
Paiute/White Mountain  
ApacheCOMMISSIONER  
**Isaac Bojorquez**  
Ohlone-CostanoanCOMMISSIONER  
**Buffy McQuillen**  
Yokayo Pomo, Yuki,  
NomlakiCOMMISSIONER  
**Wayne Nelson**  
LuiseñoCOMMISSIONER  
**Stanley Rodriguez**  
KumeyaayEXECUTIVE SECRETARY  
**Raymond C. Hitchcock**  
Miwok/Nisenan**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

**Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Lunaria Residential Development Project, Kings County**

Dear Mr. Brauer:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

*Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.*

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:



- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: [Cameron.vela@nahc.ca.gov](mailto:Cameron.vela@nahc.ca.gov).

Sincerely,

*Cameron Vela*

Cameron Vela  
Cultural Resources Analyst

Attachment

**Native American Heritage Commission  
Tribal Consultation List  
Kings County  
6/20/2022**

***Kings River Choinumni Farm  
Tribe***

Stan Alec,  
3515 East Fedora Avenue                      Foothill Yokut  
Fresno, CA, 93726  
Phone: (559) 647 - 3227

***Santa Rosa Rancheria Tachi  
Yokut Tribe***

Leo Sisco, Chairperson  
P.O. Box 8                                          Southern Valley  
Lemoore, CA, 93245                          Yokut  
Phone: (559) 924 - 1278  
Fax: (559) 924-3583

***Table Mountain Rancheria***

Brenda Lavell, Chairperson  
P.O. Box 410                                      Yokut  
Friant, CA, 93626  
Phone: (559) 822 - 2587  
Fax: (559) 822-2693  
rpennell@tmr.org

***Tule River Indian Tribe***

Neil Peyron, Chairperson  
P.O. Box 589                                      Yokut  
Porterville, CA, 93258  
Phone: (559) 781 - 4271  
Fax: (559) 781-4610  
neil.peyron@tulerivertribe-nsn.gov

***Wuksache Indian Tribe/Eshom  
Valley Band***

Kenneth Woodrow, Chairperson  
1179 Rock Haven Ct.                          Foothill Yokut  
Salinas, CA, 93906                          Mono  
Phone: (831) 443 - 9702  
kwood8934@aol.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Lunaria Residential Development Project, Kings County.

# Traffic Impact Analysis Report

## **Lunaria (Single-Family Detached Housing)**

**Located on the Southeast Quadrant of Hanford-  
Armona Road and 10 ½ Avenue**

**In the City of Hanford, California**

***Prepared for***

Quad Knopf, Inc.  
601 Pollasky Avenue, Suite 301  
Clovis, CA 93612

August 24, 2022

Project No. 047-002



***Traffic Engineering, Transportation Planning, & Parking Solutions***

516 W. Shaw Ave., Ste. 103

Fresno, CA 93710

Phone: (559) 570-8991

[www.JLBtraffic.com](http://www.JLBtraffic.com)



*Traffic Engineering, Transportation Planning, & Parking Solutions*

## Traffic Impact Analysis Report

**For Lunaria located on the Southeast Quadrant of Hanford-Armona Road and  
10 ½ Avenue**

In the City of Hanford, California

August 24, 2022

This Traffic Impact Analysis Report has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions and decisions are based.

Prepared by:

A handwritten signature in black ink, reading "Jose L Benavides", is written over a horizontal line.

Jose Luis Benavides, PE, TE  
President



*Traffic Engineering, Transportation Planning, & Parking Solutions*

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
Phone: (559) 570-8991  
[www.JLBtraffic.com](http://www.JLBtraffic.com)

## Table of Contents

|                                                            |           |
|------------------------------------------------------------|-----------|
| <b>Introduction and Summary.....</b>                       | <b>1</b>  |
| Introduction .....                                         | 1         |
| Summary .....                                              | 1         |
| Existing Traffic Conditions.....                           | 1         |
| Existing plus Project Traffic Conditions.....              | 1         |
| Near Term plus Project Traffic Conditions.....             | 2         |
| Cumulative Year 2042 plus Project Traffic Conditions.....  | 2         |
| <b>Scope of Work .....</b>                                 | <b>3</b>  |
| Study Facilities .....                                     | 3         |
| Study Intersections .....                                  | 4         |
| Study Segments.....                                        | 4         |
| Project Only Trips to State Facilities .....               | 4         |
| Study Scenarios.....                                       | 4         |
| Existing Traffic Conditions.....                           | 4         |
| Existing plus Project Traffic Conditions.....              | 4         |
| Near Term plus Project Traffic Conditions.....             | 5         |
| Cumulative Year 2042 plus Project Traffic Conditions.....  | 5         |
| <b>LOS Methodology .....</b>                               | <b>5</b>  |
| <b>LOS Thresholds .....</b>                                | <b>6</b>  |
| <b>Operational Analysis Assumptions and Defaults .....</b> | <b>6</b>  |
| <b>Existing Traffic Conditions .....</b>                   | <b>7</b>  |
| Roadway Network.....                                       | 7         |
| Traffic Signal Warrants.....                               | 8         |
| Results of Existing Level of Service Analysis .....        | 8         |
| <b>Existing plus Project Traffic Conditions .....</b>      | <b>12</b> |
| Project Description.....                                   | 12        |
| Project Access .....                                       | 12        |
| Trip Generation.....                                       | 12        |
| Trip Distribution .....                                    | 13        |
| Bikeways .....                                             | 14        |

|                                                                              |           |
|------------------------------------------------------------------------------|-----------|
| Walkways .....                                                               | 14        |
| Transit .....                                                                | 14        |
| Traffic Signal Warrants.....                                                 | 15        |
| Results of Existing plus Project Level of Service Analysis .....             | 15        |
| <b>Near Term plus Project Traffic Conditions.....</b>                        | <b>19</b> |
| Description of Near Term Projects.....                                       | 19        |
| Traffic Signal Warrants.....                                                 | 20        |
| Results of Near Term plus Project Level of Service Analysis.....             | 20        |
| <b>Cumulative Year 2042 plus Project Traffic Conditions.....</b>             | <b>23</b> |
| Traffic Signal Warrants.....                                                 | 23        |
| Results of Cumulative Year 2042 plus Project Level of Service Analysis ..... | 23        |
| Latest Site Plan Project Trips.....                                          | 24        |
| Project Only Trip Assignment to State Facilities.....                        | 24        |
| <b>Queuing Analysis .....</b>                                                | <b>30</b> |
| <b>Conclusions and Recommendations.....</b>                                  | <b>34</b> |
| Existing Traffic Conditions.....                                             | 34        |
| Existing plus Project Traffic Conditions.....                                | 34        |
| Near Term plus Project Traffic Conditions.....                               | 34        |
| Cumulative Year 2042 plus Project Traffic Conditions.....                    | 35        |
| Queuing Analysis.....                                                        | 35        |
| <b>Study Participants .....</b>                                              | <b>36</b> |
| <b>References.....</b>                                                       | <b>37</b> |

## List of Figures

|                                                                                               |    |
|-----------------------------------------------------------------------------------------------|----|
| Figure 1: Vicinity Map .....                                                                  | 10 |
| Figure 2: Existing - Traffic Volumes, Geometrics and Controls.....                            | 11 |
| Figure 3: Project Site Plan .....                                                             | 16 |
| Figure 4: 2027 Project Only Trips .....                                                       | 17 |
| Figure 5: Existing plus Project - Traffic Volumes, Geometrics and Controls .....              | 18 |
| Figure 6: 2027 Near Term Projects' Trip Assignment.....                                       | 21 |
| Figure 7: Near Term plus Project - Traffic Volumes, Geometrics and Controls.....              | 22 |
| Figure 8: 2042 Project Only Trips .....                                                       | 25 |
| Figure 9: 2042 Near Term Projects' Trip Assignment.....                                       | 26 |
| Figure 10: Cumulative Year 2042 plus Project - Traffic Volumes, Geometrics and Controls ..... | 27 |
| Figure 11: Project Only Trips to State Route 198 at 11 <sup>th</sup> Avenue .....             | 28 |
| Figure 12: Project Only Trips to State Route 198 at 10 <sup>th</sup> Avenue .....             | 29 |

## List of Tables

|                                                                                               |    |
|-----------------------------------------------------------------------------------------------|----|
| Table I: Existing Intersection LOS Results .....                                              | 9  |
| Table II: Existing Segment LOS Results .....                                                  | 9  |
| Table III: Original Project Site Plan Trip Generation .....                                   | 13 |
| Table IV: Latest Project Site Plan Trip Generation .....                                      | 13 |
| Table V: Difference in Net Trip Generation .....                                              | 13 |
| Table VI: Existing plus Project Intersection LOS Results .....                                | 15 |
| Table VII: Existing plus Project Segment LOS Results .....                                    | 15 |
| Table VIII: Near Term Projects' Trip Generation.....                                          | 19 |
| Table IX: Near Term plus Project Intersection LOS Results .....                               | 20 |
| Table X: Near Term plus Project Segment LOS Results .....                                     | 20 |
| Table XI: Cumulative Year 2042 plus Project Intersection LOS Results .....                    | 23 |
| Table XII: Cumulative Year 2042 plus Project Segment LOS Results .....                        | 24 |
| Table XIII: Cumulative Year 2042 plus Latest Project Site Plan Intersection LOS Results ..... | 24 |
| Table XIV: Queuing Analysis .....                                                             | 31 |

## List of Appendices

|                                                                  |
|------------------------------------------------------------------|
| Appendix A: Scope of Work                                        |
| Appendix B: Traffic Counts                                       |
| Appendix C: Traffic Modeling                                     |
| Appendix D: Methodology                                          |
| Appendix E: Existing Traffic Conditions                          |
| Appendix F: Existing plus Project Traffic Conditions             |
| Appendix G: Near Term plus Project Traffic Conditions            |
| Appendix H: Cumulative Year 2042 plus Project Traffic Conditions |
| Appendix I: Traffic Signal Warrants                              |

## Introduction and Summary

### Introduction

This Report describes a **Traffic Impact Analysis Report (TIA)** prepared by **JLB Traffic Engineering, Inc. (JLB)** for the proposed **Lunaria (Project)** located in the City of Hanford. Specifically, the Project proposes to develop 457 single family residential units and a 5.8-acre public park on the Southeast Quadrant of Hanford-Armona Road and 10 ½ Avenue. Based on information provided to JLB, the Project is consistent with the City's General Plan. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term and long-term roadway and circulation needs, determine potential roadway improvement measures and identify any critical traffic issues that should be addressed in the on-going planning process. The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. The Scope of Work was prepared via consultation with City of Hanford, Kings County and Caltrans staff.

### Summary

The potential traffic impacts of the proposed Project were evaluated in accordance with the standards set forth by the Level of Service (LOS) policies of the City of Hanford, Kings County and Caltrans.

#### *Existing Traffic Conditions*

- At present, all study intersections operate at an acceptable LOS during both peak periods.
- At present, all study segments operate at an acceptable LOS.

#### *Existing plus Project Traffic Conditions*

- Based on the original site plan, the Project is estimated to generate a maximum of 4,181 daily trips, 310 AM peak hour trips and 418 PM peak hour trips at build-out.
- Based on the latest site plan, the Project is estimated to generate a maximum of 4,315 daily trips, 320 AM peak hour trips and 431 PM peak hour trips at build-out.
- Compared to the original site plan, the latest site plan is estimated to yield a greater trip generation by 134 daily trips, 10 AM peak hour trips and 13 PM peak hour trips. These are an increase of 3.20%, 3.23% and 3.11% of the Daily, AM peak hour and PM peak hour, respectively.
- LOS studies were completed using the trip generated by the original site plan. To account for the additional trips produced by the latest site plan, all additional trips (10 AM Peak hour trips and 13 PM peak hour trips) were routed to the worst performing intersection during the worst performing scenario. This was determined to be the intersection of Houston Avenue at 11th Avenue during the Cumulative Year 2042 plus Project Scenario. Based on this analysis, it was determined that that all study intersections and segments would continue to operate within the acceptable LOS for all study scenarios.



- JLB analyzed the location of the existing and proposed roadways and access points. This review revealed that all access points are located at points that minimize traffic operational impacts to existing and future roadway networks.
- It is recommended that the Project implement ADA compliant sidewalks along its frontages to 10 ½ Avenue and Orchard Avenue.
- It is recommended that the Project implement Class II Bike Lanes along its frontage to 10 ½ Avenue and Orchard Avenue.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.
- Under this scenario, all study segments are projected to operate at an acceptable LOS.

#### *Near Term plus Project Traffic Conditions*

- The total trip generation for the Near Term Projects by 2027 is projected as 20,410 daily trips, 1,600 AM peak hour trips and 2,141 PM peak hour trips.
- The total trip generation for the Near Term Projects by 2042 is projected as 25,413 daily trips, 1,992 AM peak hour trips and 2,665 PM peak hour trips.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.
- Under this scenario, all study segments are projected to operate at an acceptable LOS.

#### *Cumulative Year 2042 plus Project Traffic Conditions*

- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.
- Under this scenario, all study segments are projected to operate at an acceptable LOS.
- To account for the difference in trip generation between the original and latest site plan, all additional trips (10 AM Peak hour trips and 13 PM peak hour trips) were routed to the worst performing intersection during the worst performing scenario. This intersection was determined to be Houston Avenue at 11<sup>th</sup> Avenue during the Cumulative Year 2042 plus Project. Even with all additional project trips routed to this intersection, it continues to operate at an acceptable LOS. Therefore, it is the opinion of JLB that all study intersections would continue to operate within the acceptable LOS for all study scenarios if the additional trips were distributed throughout the roadway network and the LOS studies were redone. As a result, JLB does not recommend that this TIA be redone and that the City of Hanford, County of Kings and Caltrans can utilize this TIA to determine the Projects impacts to the study intersections and segments.

## Scope of Work

The TIA focuses on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On January 20, 2022, a Draft Scope of Work for the preparation of a TIA and VMT analysis for this Project was provided to City of Hanford, Kings County and Caltrans staff for their review and comment. The Draft Scope of Work was based on the Traffic Impact Analysis Guidelines of lead and responsible agencies.

On January 27, 2022, City of Hanford staff responded to the Draft Scope of Work. The City of Hanford requested that the intersection of 10<sup>th</sup> Avenue at Houston Avenue and the segments of Hanford-Armona Road between 11<sup>th</sup> Avenue and 10<sup>th</sup> Avenue and Houston Avenue between 11<sup>th</sup> Avenue and 10<sup>th</sup> Avenue be added to the study facilities.

On February 3, 2022, King's County staff responded to the Draft Scope of Work. King's County requested that the intersections of 10<sup>th</sup> Avenue at Houston Avenue and 11<sup>th</sup> Avenue at Houston Avenue and the segment of Houston Avenue between 11<sup>th</sup> Avenue and 10<sup>th</sup> Avenue be added to the study facilities.

On January 28, 2022, Caltrans staff responded to the Draft Scope of Work. Caltrans requested that the following be added to the study facilities 1) SR 198 at Avenue 10 both on/off ramps, 2) SR 198 at Douty Street eastbound off-ramp and 3) SR 198 at Avenue 11 westbound on-ramp. On February 3, 2022, after coordinating with Caltrans, Caltrans revised their comments as follows; a queuing analysis for 1) SR 198 at Avenue 10 westbound off-ramp and 2) SR 198 at Douty St (on 3<sup>rd</sup> Street) eastbound off-ramp and trip trace analysis at 1) SR 198 at Avenue 11 westbound on-ramp and 2) SR 198 at Avenue 10 (on 3<sup>rd</sup> Street) eastbound on-ramp.

Based on the comments received, the TIA includes the study intersections of 10th Avenue at Houston Avenue and 11th Avenue at Houston Avenue, the study segments of Hanford-Armona Road between 11th Avenue and 10th Avenue and Houston Avenue between 11th Avenue and 10th Avenue, the queuing analysis of SR 198 at Avenue 10 westbound off-ramp and SR 198 at Douty St (on 3rd Street) eastbound off-ramp and the trip trace analysis at SR 198 at Avenue 11 westbound on-ramp and SR 198 at Avenue 10 (on 3rd Street) eastbound on-ramp. JLB also coordinated with the City of Hanford Planning Department to verify the list of pending/approved projects. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

## Study Facilities

The existing intersection peak hour turning movement counts were conducted at the study intersections and segments between January 2022 and March 2022, while schools in the vicinity of the Project site were in session. The intersection turning movement counts included pedestrian and bicycle volumes. As proposed in the Draft Scope of Work, traffic conditions have normalized to the new normal and therefore no escalation rate was applied to the collected traffic counts due to Covid-19. The traffic counts for the existing study intersections are contained in Appendix B. The existing intersection turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 2.

### *Study Intersections*

#### **Location**

1. State Route 198 Eastbound Off-Ramp at Douty Street (Queuing Analysis Only)
2. State Route 198 Westbound Off-Ramp at 10<sup>th</sup> Avenue (Queuing Analysis Only)
3. Hanford-Armona Road / 10 ½ Avenue
4. Hanford-Armona Road / Jordan Way
5. Hanford-Armona Road / 10<sup>th</sup> Avenue
6. Orchard Avenue / 10 ½ Avenue (Future Intersection)
7. Houston Avenue / 11<sup>th</sup> Avenue
8. Houston Avenue / 10 ½ Avenue
9. Houston Avenue / 10<sup>th</sup> Avenue

### *Study Segments*

#### **Location**

1. Hanford-Armona Road Between 11<sup>th</sup> Avenue and 10 ½ Avenue
2. Hanford-Armona Road Between 10 ½ Avenue and Jordan Way
3. Hanford-Armona Road Between Jordan Way and 10<sup>th</sup> Avenue
4. 10 ½ Avenue Between Hanford-Armona Road and Orchard Avenue
5. 10 ½ Avenue Between Orchard Avenue and Houston Avenue
6. Houston Avenue Between 11<sup>th</sup> Avenue and 10 ½ Avenue
7. Houston Avenue Between 10 ½ Avenue and 10<sup>th</sup> Avenue

### *Project Only Trips to State Facilities*

#### **Location**

1. State Route 198 at 11<sup>th</sup> Avenue Westbound On-Ramp
2. State Route 198 at 10<sup>th</sup> Avenue (on 3rd Street) Eastbound On-Ramp

## **Study Scenarios**

### *Existing Traffic Conditions*

This scenario evaluates the Existing Traffic Conditions based on existing traffic volumes and roadway conditions from traffic counts and field surveys conducted in between January 2022 and March 2022.

### *Existing plus Project Traffic Conditions*

This scenario evaluates total traffic volumes and roadway conditions based on the Existing plus Project Traffic Conditions. The Existing plus Project traffic volumes were obtained by adding the Project Only Trips to the Existing Traffic Conditions scenario. The Project Only Trips to the study facilities were developed based on existing travel patterns, the Kings County Association of Governments (KCAG) Project Select Zone, the existing roadway network, data provided by the developer, knowledge of the study area, engineering judgment, existing residential and commercial densities and the City of Hanford *General Plan* Background Report in the vicinity of the Project site. The KCAG Project only trip output was lower than the Project's trip generation, so the volumes were manually increased and proportionally distributed through the study intersections. The KCAG Project Select Zone results are contained in Appendix C.



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

Page | 4

### *Near Term plus Project Traffic Conditions*

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term plus Project Traffic Conditions. Since not all the Near Term Projects are projected to be fully built out in the next five (5) years, we estimated a percentage of what could be constructed within this period. This percentage was determined to be 67%, therefore 67% of the Project's Near Term trips were included in this scenario. The Near Term plus Project traffic volumes were obtained by adding the 2027 Near Term related trips to the Existing plus Project Traffic Conditions scenario.

### *Cumulative Year 2042 plus Project Traffic Conditions*

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2042 plus Project Traffic Conditions. The Cumulative Year 2042 plus Project traffic volumes were obtained by using a combination of the KCAG traffic model runs (Base Year 2021 and Cumulative Year 2042) and existing traffic counts. Based on the *City of Hanford 2035 General Plan Circulation Map*, Orchard Avenue is planned to connect 10 ½ Avenue and 10<sup>th</sup> Avenue. Therefore, the 2042 Project Only trips were modified to allow access to 10<sup>th</sup> Avenue from Orchard Avenue. The Near Term Projects are also projected to be fully built prior to this scenario, therefore 100% of the Near Term trips were included. Under this scenario, the increment method was utilized to determine the Cumulative Year 2042 traffic volumes. The KCAG Activity Based-Model (ABM) results provided by KCAG modeler Kittelson & Associates are contained in Appendix C.

## LOS Methodology

LOS is a qualitative index of the performance of an element of the transportation system. LOS is a rating scale running from "A" to "F", with "A" indicating no congestion of any kind and "F" indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for signalized and unsignalized intersections.

The *Highway Capacity Manual* (HCM) 6th Edition is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. U-turn movements were analyzed using HCM 2000 methodologies and would yield more accurate results for the reason that HCM 6th Edition methodologies do not allow the analysis of U-turns. Lane configurations not reflective of existing conditions are a result of software limitations and thus represent a worst-case scenario. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix D.

While LOS is no longer the criteria of significance for traffic impacts in the state of California, the City of Hanford continues to apply congestion-related conditions or requirements for land development projects through planning approval processes outside of CEQA guidelines in order to continue the implementation of *Hanford General Plan* policies.

## LOS Thresholds

The City of Hanford *2035 General Plan Policy Document* has established LOS E as the acceptable level on streets and intersections within the area bounded by Highway 198, 10<sup>th</sup> Avenue, 11<sup>th</sup> Avenue, and Florinda Avenue, inclusive of these streets and a peak hour LOS D on all other streets and intersections within the Planned Growth Boundary. All the study facilities lie outside of the SR 198, 10<sup>th</sup> Avenue, 11<sup>th</sup> Avenue and Florinda Avenue boundary, therefore, the LOS D threshold was utilized to evaluate the potential significance of LOS impacts to City of Hanford roadway facilities.

The County of Kings has established LOS D as the acceptable level of traffic congestion on county roads. Therefore, LOS D is used to evaluate the potential significance of LOS impacts to King's County intersections. In this case, since the LOS threshold for the City and County is the same, LOS D was utilized as the criteria of significance for this TIA.

## Operational Analysis Assumptions and Defaults

The following operational analysis values, assumptions and defaults were used in this study to ensure a consistent analysis of LOS among the various scenarios.

- Yellow time consistent with the *California Manual on Uniform Traffic Control Devices* (CA MUTCD) based on approach speeds (Caltrans 2021)
- Yellow time of 3.2 seconds for left-turn phases
- All-red clearance intervals of 1.0 second for all phases
- Walk intervals of 7.0 seconds
- Flashing Don't Walk based on 3.5 feet/second walking speed with yellow plus all-red clearance subtracted and 2.0 seconds added
- The number of observed pedestrians at existing intersections was utilized under all study scenarios
- All new or modified signals utilize protective left-turn phasing
- A 3 percent Heavy Vehicle Factor (HVF), or the existing HVF if higher, was utilized under all study scenarios
- An average of 10 pedestrian calls per hour at signalized study intersections
- At existing intersections, the observed Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project and Near Term plus Project Traffic Conditions scenarios.
- For the Cumulative Year 2042 scenario, the PHF's were increased to reflect traffic operations and an increase in future traffic volumes. As roadways start to reach their saturated flow rates, PHF's tend to increase to 0.92 or higher in urban settings. A PHF of 0.92, or the existing PHF if higher, is utilized for under this scenario.
  - For the intersection of 10½ Avenue and Hanford-Armona Road, the following PHF's were utilized in order to reflect general peak hour factors near the proximity of a school:
    - A PHF of 0.86, or the existing if higher, is utilized during the AM peak.
    - A PHF of 0.90, or the existing if higher, is utilized during the PM peak.
  - A PHF of 0.92, or the existing if higher, is utilized for all remaining study intersections.

## Existing Traffic Conditions

### Roadway Network

The Project site and surrounding study area are illustrated in Figure 1. Important roadways serving the Project are discussed below.

**11<sup>th</sup> Avenue** is an existing north-south four-lane divided arterial in the vicinity of the proposed Project site. In this area, 11<sup>th</sup> Avenue exists between Dover Avenue and Kansas Avenue. The *City of Hanford 2035 General Plan Circulation Map* designates 11<sup>th</sup> Avenue as an arterial between Flint Avenue and Jackson Avenue.

**10 ½ Avenue** is an existing north-south two-lane undivided collector adjacent to the proposed Project site. In this area, 10 ½ Avenue exists between Scott Street and Houston Avenue. The *City of Hanford 2035 General Plan Circulation Map* designates 10 ½ Avenue as a collector.

**Douty Street** is an existing north-south two-lane undivided collector in the vicinity of the proposed Project site. In this area, Douty Street exists between Flint Avenue and Scott Street. The *City of Hanford 2035 General Plan Circulation Map* designates Douty Street as a collector.

**Jordan Way** is an existing north-south two-lane undivided local street adjacent to the proposed Project site. In this area, Jordan Way currently exists between Hanford-Armona Road and Sydney Court. As part of the project, Jordan Way is expected to be extended further South approximately 850 feet.

**10<sup>th</sup> Avenue** is an existing north-south two-lane undivided arterial in the vicinity of the proposed Project site. In this area, 10<sup>th</sup> Avenue currently exists between State Route 43 and Lansing Avenue. The *City of Hanford 2035 General Plan Circulation Map* designates 10<sup>th</sup> Avenue as an arterial.

**4<sup>th</sup> Street** is an existing east-west two-lane collector in the vicinity of the proposed Project site. In this area, 4<sup>th</sup> Street currently exists between 11<sup>th</sup> Avenue and 10<sup>th</sup> Avenue. 4<sup>th</sup> Street is a one-way street with traffic flowing westbound. The *City of Hanford 2035 General Plan Circulation Map* designates 4<sup>th</sup> Street as a collector.

**3<sup>rd</sup> Street** is an existing east-west two-lane collector in the vicinity of the proposed Project site. In this area, 3<sup>rd</sup> Street currently exists between 11<sup>th</sup> Avenue and approximately half a mile east of 8 ¾ Avenue. Between 11<sup>th</sup> Avenue and 10<sup>th</sup> Avenue, 3<sup>rd</sup> Street is a one-way street with traffic flowing eastbound. The *City of Hanford 2035 General Plan Circulation Map* designates 3<sup>rd</sup> Street as a collector.

**Hanford-Armona Road** is an existing east-west two-lane undivided arterial in the vicinity of the proposed Project site. Hanford-Armona Road currently extends throughout King's County. The *City of Hanford 2035 General Plan Circulation Map* designates Hanford-Armona Road as an arterial between 13<sup>th</sup> Avenue and 8<sup>th</sup> Avenue.

**Orchard Avenue** is a future east-west two-lane undivided collector street that will be partially constructed with the Project. The Project will only be constructing Orchard Avenue within the Project limits. The *City of Hanford 2035 General Plan Circulation Map* designates Orchard Avenue as a collector between 10 ½



Avenue and 10<sup>th</sup> Avenue. Therefore, it is assumed Orchard Avenue will be fully constructed to 10<sup>th</sup> Avenue prior to 2035.

**Houston Avenue** is an existing east-west two-lane undivided major arterial in the vicinity of the proposed Project site. In this area, Houston Avenue exists between State Route 198 and the eastern King's County Limits. The *City of Hanford 2035 General Plan Circulation Map* designates Houston Avenue as a major arterial between 13<sup>th</sup> Avenue and 8<sup>th</sup> Avenue.

## Traffic Signal Warrants

The CA MUTCD indicates that an engineering study of traffic conditions, pedestrian characteristics and physical features of an intersection shall be conducted to determine whether installation of traffic signal controls are justified. The CA MUTCD provides a total of nine (9) warrants to evaluate the need for traffic signal controls. These warrants include 1) Eight-Hour Vehicular Volume, 2) Four-Hour Vehicular Volume, 3) Peak Hour, 4) Pedestrian Volume, 5) School Crossing, 6) Coordinated Signal System, 7) Crash Experience, 8) Roadway Network and 9) Intersection Near a Grade Crossing. Signalization of an intersection may be appropriate if one or more of the signal warrants is satisfied. However, the CA MUTCD also states that "[t]he satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic control signal" (Caltrans 2021).

If traffic signal warrants are satisfied when a LOS threshold impact is identified at an unsignalized intersection, then installation of a traffic signal control may serve as an improvement measure. For instances where traffic signal warrants are satisfied, a traffic signal control is not considered to be the default improvement measure. Prior to assuming that an intersection will be signalized, an attempt is made to improve the intersection approach lane geometrics in order to improve its LOS while maintaining the existing intersection controls. If the additional lanes did not result in acceptable LOS at the intersection, then in those cases implementation of a traffic signal control would be considered.

Warrant 3 was prepared for the unsignalized intersections under the Existing Traffic Conditions scenario. These warrants are contained in Appendix I. Under this scenario, no unsignalized study intersection satisfies Warrant 3. Based on the traffic signal warrants, operational analysis and engineering judgment, it is not recommended that the City consider implementing traffic signal controls at any of the unsignalized study intersections especially since these operate at an acceptable LOS during both peak periods under stop sign control.

## Results of Existing Level of Service Analysis

Figure 2 illustrates the Existing Traffic Conditions turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing Traffic Conditions scenario are provided in Appendix E. Table I presents a summary of the Existing peak hour LOS at the study intersections, while Table II presents a summary of the Existing LOS for the study segments.

At present, all study intersections operate at an acceptable LOS during both peak periods.

**Table I: Existing Intersection LOS Results**

| ID | Intersection                        | Intersection Control | AM (7-9) Peak Hour      |     | PM (4-6) Peak Hour      |     |
|----|-------------------------------------|----------------------|-------------------------|-----|-------------------------|-----|
|    |                                     |                      | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 3  | 10 1/2 Avenue / Hanford Armona Road | Traffic Signal       | 14.4                    | B   | 13.1                    | B   |
| 4  | Jordan Way / Hanford Armona Road    | Two-Way Stop         | 11.6                    | B   | 12.2                    | B   |
| 5  | 10th Avenue / Hanford Armona Road   | Traffic Signal       | 18.2                    | B   | 17.7                    | B   |
| 6  | 10 ½ Avenue / Orchard Avenue        | Does Not Exist       | -                       | -   | -                       | -   |
| 7  | 11th Avenue / Houston Avenue        | Traffic Signal       | 26.5                    | C   | 24.8                    | C   |
| 8  | Houston Avenue / 10 1/2 Avenue      | Two-Way Stop         | 9.6                     | A   | 10.0                    | B   |
| 9  | 10th Avenue / Houston Avenue        | All-Way Stop         | 8.8                     | A   | 8.8                     | A   |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls  
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

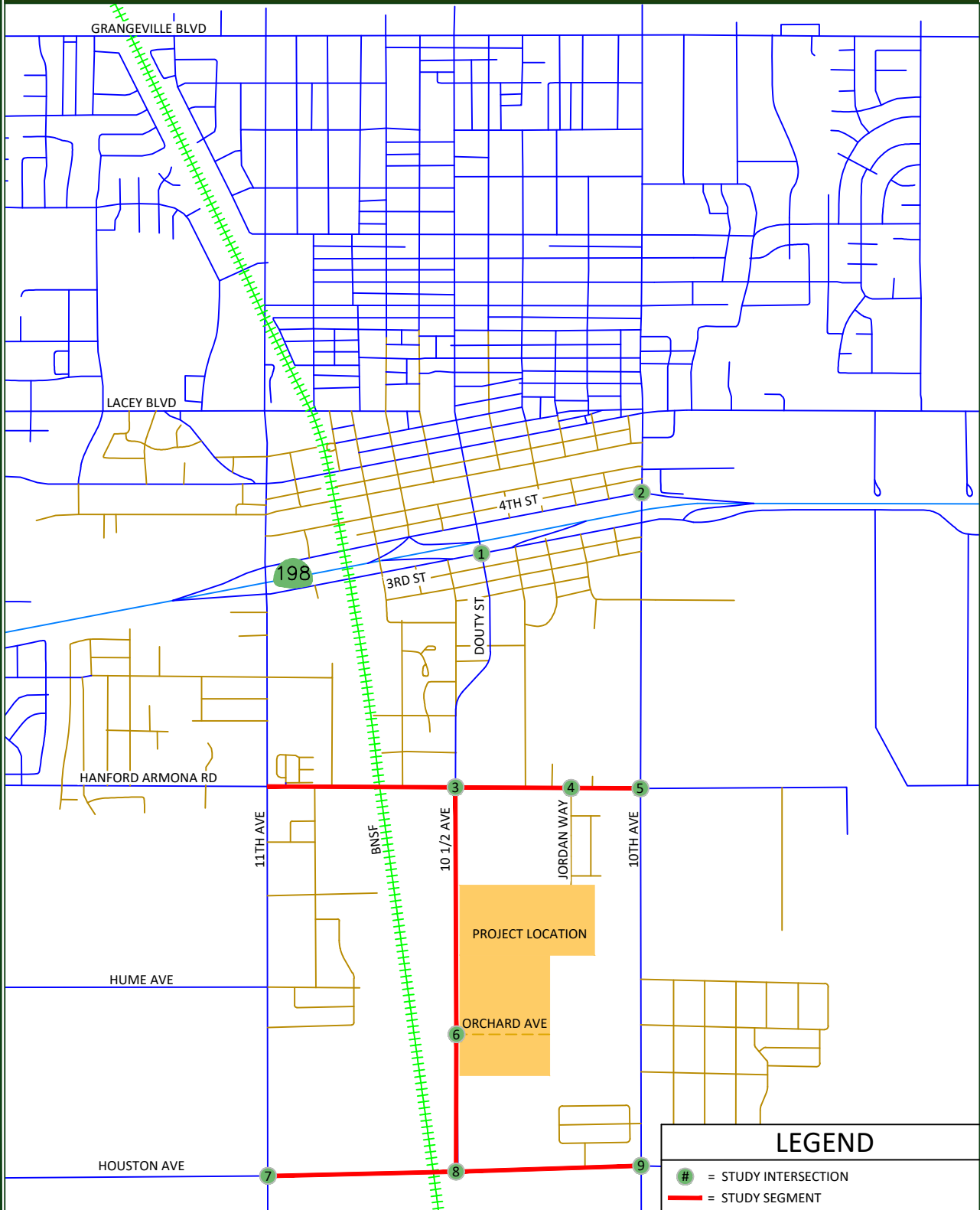
At present, all study segments operate at an acceptable LOS during both peak periods.

**Table II: Existing Segment LOS Results**

| ID | Segment             | Limits                                  | Lanes | 24-hour Volume | AM Peak Volume | AM LOS | PM Peak Volume | PM LOS |
|----|---------------------|-----------------------------------------|-------|----------------|----------------|--------|----------------|--------|
| 1  | Hanford-Armona Road | 11 <sup>th</sup> Avenue and 10 ½ Avenue | 2     | 8,480          | 298            | C      | 429            | C      |
| 2  | Hanford-Armona Road | 10 ½ Avenue and Jordan Way              | 2     | 6,320          | 248            | C      | 318            | C      |
| 3  | Hanford-Armona Road | Jordan Way and 10 <sup>th</sup> Avenue  | 2     | 5,560          | 220            | B      | 296            | B      |
| 4  | 10 ½ Avenue         | Hanford-Armona Road and Orchard Avenue  | 2     | 990            | 55             | A      | 50             | A      |
| 5  | 10 ½ Avenue         | Orchard Avenue and Houston Avenue       | 2     | 850            | 40             | A      | 45             | A      |
| 6  | Houston Avenue      | 11 <sup>th</sup> Avenue and 10 ½ Avenue | 2     | 3,490          | 143            | A      | 178            | A      |
| 7  | Houston Avenue      | 10 ½ Avenue and 10 <sup>th</sup> Avenue | 2     | 3,590          | 165            | A      | 205            | A      |

Note: LOS =Level of Service per HCM 6th Edition methodologies in HCS7 software. Peak hour volumes are from the highest directional volume.





516 W. Shaw Ave., Ste. 103, Fresno, CA 93704  
PHONE: (559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

### LEGEND

- # = STUDY INTERSECTION
- = STUDY SEGMENT
- - - = FUTURE ROADWAY

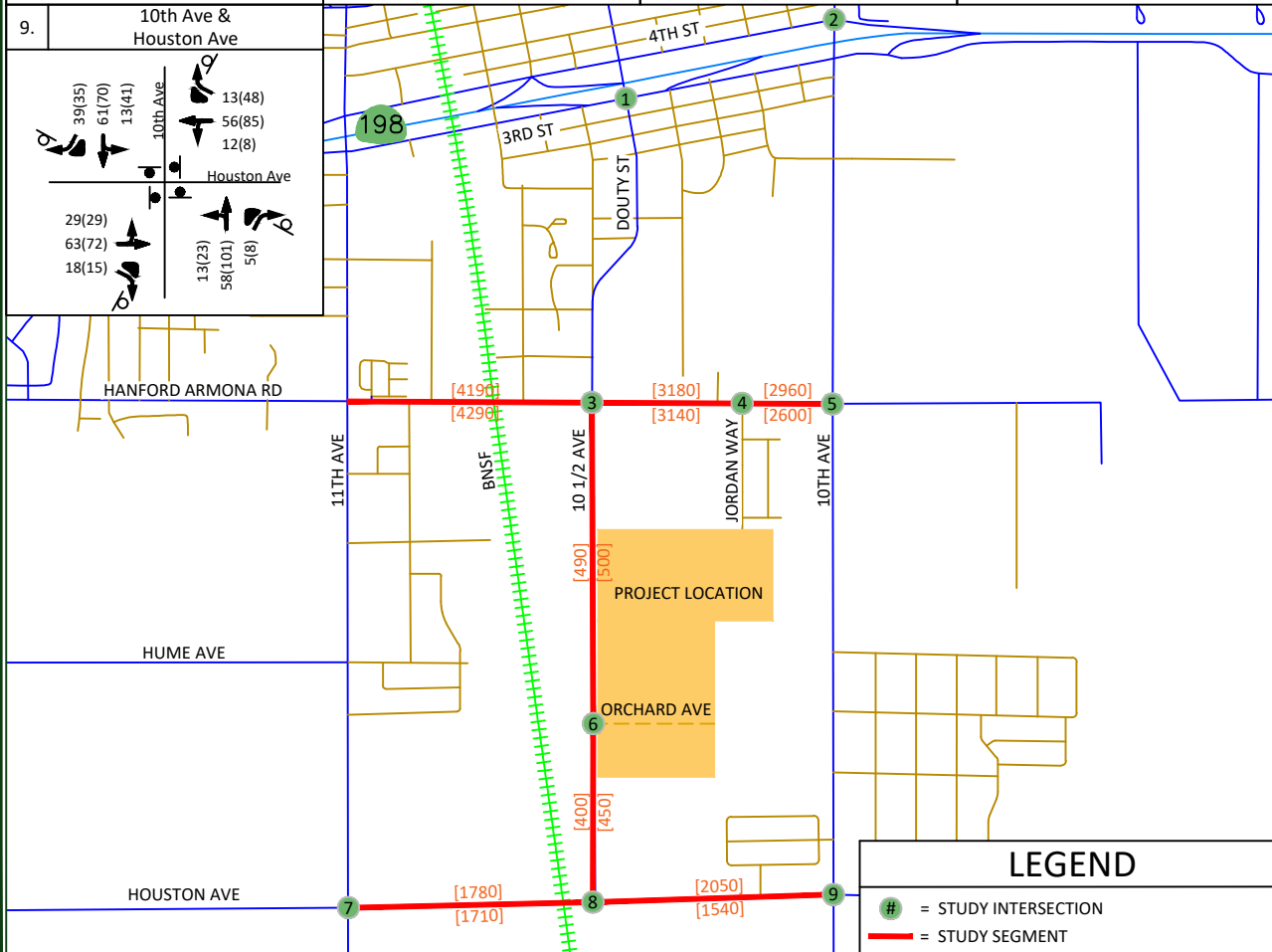


Not To Scale

# Lunaria TIA - City of Hanford Existing - Traffic Volumes, Geometrics and Controls

Figure 2

|                                         |                                                                               |                                   |                                   |
|-----------------------------------------|-------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| 1. SR 198 EB Off Ramp/3rd St & Douty St | 2. SR 198 WB Off Ramp/4th St & 10th Ave                                       | 3. 10 1/2 Ave & Hanford-Armona Rd | 4. Jordan Way & Hanford-Armona Rd |
|                                         |                                                                               |                                   |                                   |
| 5. 10th Ave & Hanford-Armona Rd         | 6. 10 1/2 Ave & Orchard Ave                                                   | 7. 11th Ave & Houston Ave         | 8. 10 1/2 Ave & Houston Ave       |
|                                         | <p style="color: red; text-align: center; font-size: 2em;">DOES NOT EXIST</p> |                                   |                                   |
| 9. 10th Ave & Houston Ave               |                                                                               |                                   |                                   |
|                                         |                                                                               |                                   |                                   |



516 W. Shaw Ave., Ste. 103, Fresno, CA 93704  
PHONE: (559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

## LEGEND

- # = STUDY INTERSECTION
- = STUDY SEGMENT
- - - = FUTURE ROADWAY
- XX = AM PEAK HOUR TRIPS
- (XX) = PM PEAK HOUR TRIPS
- [XX] = DAILY VOLUMES
- ⬮ = STOP SIGN
- ⬮ = YIELD SIGN
- ⬮ = TRAFFIC SIGNAL



Not To Scale

## Existing plus Project Traffic Conditions

### Project Description

At the time of the preparation of this TIA, the Project proposed to develop approximately 96.22 gross acres with 443 single-family housing units and a 4.9-acre park. Once all the LOS studies for this TIA were completed, the site plan was revised to include 457 single-family housing units and a 5.8-acre park within the same 96.22 gross acres. Based on information provided to JLB, the Project is consistent with the City's General Plan. Figure 3 illustrates the latest Project Site Plan.

### Project Access

Based on the latest Project Site Plan, access to and from the Project site will be from six (6) access points. One (1) access point will be from the existing local street of Jordan Way. Two (2) access points will be located along the east side of 10 ½ Avenue. The Project will be constructing Orchard Avenue within the Project limits. The Project will have three (3) access points to Orchard Avenue.

JLB analyzed the location of the existing and proposed roadways and access points relative to those in the vicinity of the Project site. A review of the existing and proposed roadways and access points indicates that they are located at points that minimize traffic operational impacts to existing and future roadway networks. A Project Site Plan can be found in Figure 3.

### Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table III presents the trip generation for the original project site plan for 443 Single-Family Detached Housing units and a 4.9-acre public park. At build-out, the Project is estimated to generate a maximum of 4,181 daily trips, 310 AM peak hour trips and 418 PM peak hour trips. Once all LOS studies for this TIA were completed using the total trips generated by the original site plan, the site plan was slightly revised to increase the number of lots and acreage of park. Table IV presents the trip generation for the latest project site plan for 457 Single-Family Detached Housing units and a 5.8-acre public park. At build-out, the Project is estimated to generate a maximum of 4,315 daily trips, 320 AM peak hour trips and 431 PM peak hour trips. The difference in trip generation between the original site plan and the latest site plan is summarized in Table V. Compared to the original site plan, the latest site plan is estimated to generate an increase of 134 daily trips, 10 AM peak hour trips and 13 PM peak hour trips. These are an increase of 3.20%, 3.23% and 3.11% of the daily, AM peak hour and PM peak hour, respectively. Since the increases are very minor, JLB kept the original LOS studies and only analyzed the worst performing study facility during the worst scenario. This was determined to be the intersection of Houston Avenue at 11<sup>th</sup> Avenue during the Cumulative Year 2042 plus Project Scenario. Based on this analysis, it was determined that that all study intersections and segments would continue to operate within the acceptable LOS for all study scenarios. The detailed results of this analysis will be discussed later in the Report under the Cumulative Year plus Project scenario.

**Table III: Original Project Site Plan Trip Generation**

| Land Use (ITE Code)                  | Size | Unit  | Daily |       | AM (7-9) Peak Hour |    |     |    |     |       | PM (4-6) Peak Hour |    |     |     |     |       |
|--------------------------------------|------|-------|-------|-------|--------------------|----|-----|----|-----|-------|--------------------|----|-----|-----|-----|-------|
|                                      |      |       | Rate  | Total | Trip Rate          | In | Out | In | Out | Total | Trip Rate          | In | Out | In  | Out | Total |
|                                      |      |       |       |       |                    | %  |     |    |     |       |                    | %  |     |     |     |       |
| Single-Family Detached Housing (210) | 443  | d.u.  | 9.43  | 4,177 | 0.70               | 26 | 74  | 80 | 230 | 310   | 0.94               | 63 | 37  | 262 | 155 | 417   |
| Public Park (411)                    | 4.9  | Acres | 0.78  | 4     | 0.02               | 59 | 41  | 0  | 0   | 0     | 0.11               | 55 | 45  | 1   | 0   | 1     |
| Total Project Trips                  |      |       |       | 4,181 |                    |    |     | 80 | 230 | 310   |                    |    |     | 263 | 155 | 418   |

Note: d.u. = Dwelling Units

**Table IV: Latest Project Site Plan Trip Generation**

| Land Use (ITE Code)                  | Size | Unit  | Daily |       | AM (7-9) Peak Hour |    |     |    |     |       | PM (4-6) Peak Hour |    |     |     |     |       |
|--------------------------------------|------|-------|-------|-------|--------------------|----|-----|----|-----|-------|--------------------|----|-----|-----|-----|-------|
|                                      |      |       | Rate  | Total | Trip Rate          | In | Out | In | Out | Total | Trip Rate          | In | Out | In  | Out | Total |
|                                      |      |       |       |       |                    | %  |     |    |     |       |                    | %  |     |     |     |       |
| Single-Family Detached Housing (210) | 457  | d.u.  | 9.43  | 4,310 | 0.70               | 26 | 74  | 83 | 237 | 320   | 0.94               | 63 | 37  | 271 | 159 | 430   |
| Public Park (411)                    | 5.8  | Acres | 0.78  | 5     | 0.02               | 59 | 41  | 0  | 0   | 0     | 0.11               | 55 | 45  | 1   | 0   | 1     |
| Total Project Trips                  |      |       |       | 4,315 |                    |    |     | 83 | 237 | 320   |                    |    |     | 272 | 159 | 431   |

Note: d.u. = Dwelling Units

**Table V: Difference in Net Trip Generation**

|                                              | Daily        | AM (7-9) Peak Hour |              |              | PM (4-6) Peak Hour |              |              |
|----------------------------------------------|--------------|--------------------|--------------|--------------|--------------------|--------------|--------------|
|                                              | Total        | In                 | Out          | Total        | In                 | Out          | Total        |
| Original Project Site Plan                   | 4,181        | 80                 | 230          | 310          | 263                | 155          | 418          |
| Latest Project Site Plan                     | 4,315        | 83                 | 237          | 320          | 272                | 159          | 431          |
| <b>Difference in Trip Generation</b>         | <b>134</b>   | <b>3</b>           | <b>7</b>     | <b>10</b>    | <b>9</b>           | <b>4</b>     | <b>13</b>    |
| <b>Percent Difference in Trip Generation</b> | <b>3.20%</b> | <b>3.75%</b>       | <b>3.04%</b> | <b>3.23%</b> | <b>3.42%</b>       | <b>2.58%</b> | <b>3.11%</b> |

## Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the KCAG Project Select Zone, the existing roadway network, engineering judgment, data provided by the developer, knowledge of the study area, existing residential and commercial densities and the City of Hanford 2035 General Plan Transportation and Circulation Element in the vicinity of the Project site. The Project's trip generation data was provided to KCAG in order to conduct a Project-specific Traffic Analysis Zone (TAZ) analysis using the KCAG ABM (Cumulative Year 2042). The KCAG Project only trip output was lower than the Project's trip generation, so the volumes were manually increased and proportionally distributed through the study intersections. The KCAG Project Select Zone results are contained in Appendix C. Figure 4 illustrates the 2027 Project Only Trips at the study intersections.

## Bikeways

The *City of Hanford Pedestrian and Bicycle Master Plan* classifies bicycle facilities three categories: Class II (Bike Lanes), Class III (Bike Routes), and Class III (Bike Routes with Stripes). In the vicinity of the Project, Class II (Bike Lanes) currently exist on Hanford-Armona Road between Greenbrier Drive and 10<sup>th</sup> Avenue, while Class III (Bike Routes) exist on Douty Street between Cortner Street and Scott Street and 10 ½ Avenue between Scott Street and Hanford-Armona Road and Class III (Bike Routes with Stripes) exist on 10<sup>th</sup> Avenue between Houston Avenue and Hanford-Armona Road. In the vicinity of the Project, Class II (Bike Lanes) are planned on 10 ½ Avenue between Hanford-Armona Road and Houston Avenue, 10<sup>th</sup> Avenue between State Route 43 and Houston Avenue, Hanford-Armona Road between 10<sup>th</sup> Avenue and 9 ¾ Avenue, Orchard Avenue between 10 ½ Avenue and 10<sup>th</sup> Avenue and Houston Avenue between 13<sup>th</sup> Avenue and 9<sup>th</sup> Avenue. Class III (Bike Routes) are planned on 11<sup>th</sup> Avenue between 6<sup>th</sup> Street and Jackson Avenue. Therefore, it is recommended that the Project implement Class II Bike Lanes along its frontages to 10 ½ Avenue and Orchard Avenue.

## Walkways

Currently, walkways exist in the vicinity of the proposed Project site along Jordan Way and Hanford-Armona Road. Douty Street between Grangeville Boulevard and Scott Street, 10 ½ Avenue between Scott Street and Hanford-Armona Road, 10<sup>th</sup> Avenue between State Route 43 and Hanford-Armona Road and Hanford-Armona Road between 13<sup>th</sup> Avenue and 9 ¾ Avenue are dedicated as Walking Corridors. The *City of Hanford Pedestrian and Bicycle Master Plan* states curb, gutter and sidewalk are required for all new developments. Therefore, it is recommended that the Project implement walkways that are ADA compliant along its frontages to 10 ½ Avenue and Orchard Avenue.

## Transit

Kings Area Rural Transit (KART) is the transit operator in the City of Hanford. At present, there are two (2) KART routes, Route 4 and Route 8, that operate and have stops in the vicinity of the Project. KART Route 4, which runs along 10th Avenue from Downtown Hanford to 10th Avenue at Home Avenue, operates at 30-minute intervals on weekdays from 6:30 AM - 7:30 PM and 60-minute intervals on Saturday's from 9:30 AM to 4:30 PM. The closest stop to the Project on Route 4 is located on the north side of Hanford-Armona Road 150 feet east of 10 ½ Avenue. This route provides a direct connection to the Cole Park, Longfield Center, Lincoln Elementary School, Hanford Soccer Complex, Downtown Hanford and the KART Transit Center. KART Route 8, which runs along 11th Avenue, 10th Avenue, Hanford-Armona Road and Houston Avenue operates at 30-minute intervals on weekdays from 6:45 AM – 7: 15 PM and 60-minute intervals on Saturday's from 10:00 AM to 4:00 PM. The closest stop to the Project on Route 8 is located on the north side of Hanford-Armona Road 150 feet east of 10 ½ Avenue. This route provides a direct connection to the Home Garden Park, Martin Luther King Jr. Elementary School, Hanford DMV, Roosevelt Elementary School, Downtown Hanford and the KART Transit Center. Retention of the existing and expansion of future transit routes is dependent on transit ridership demand and available funding.

## Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix I. Under this scenario, none of the unsignalized intersections are projected to satisfy Warrant 3. Based on the traffic signal warrants, operational analysis and engineering judgement, signalization of any of the study intersections is not recommended.

## Results of Existing plus Project Level of Service Analysis

The Existing plus Project Traffic Conditions scenario assumes the existing roadway geometrics and traffic controls will remain in place. Figure 5 illustrates the Existing plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing plus Project Traffic Conditions scenario are provided in Appendix F. Table VI presents a summary of the Existing plus Project peak hour LOS at the study intersections, while Table VII presents a summary of the Existing plus Project LOS for the study segment.

Under this scenario, all study intersections are projected to operate at an acceptable LOS.

**Table VI: Existing plus Project Intersection LOS Results**

| ID | Intersection                        | Intersection Control | AM (7-9) Peak Hour      |     | PM (4-6) Peak Hour      |     |
|----|-------------------------------------|----------------------|-------------------------|-----|-------------------------|-----|
|    |                                     |                      | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 3  | 10 1/2 Avenue / Hanford Armona Road | Traffic Signal       | 17.9                    | B   | 15.9                    | B   |
| 4  | Jordan Way / Hanford Armona Road    | Two-Way Stop         | 12.7                    | B   | 13.3                    | B   |
| 5  | 10th Avenue / Hanford Armona Road   | Traffic Signal       | 20.9                    | C   | 19.8                    | B   |
| 6  | 10 1/2 Avenue / Orchard Avenue      | Two-Way Stop         | 9.5                     | A   | 9.7                     | A   |
| 7  | 11th Avenue / Houston Avenue        | Traffic Signal       | 20.7                    | C   | 22.4                    | C   |
| 8  | Houston Avenue / 10 1/2 Avenue      | Two-Way Stop         | 10.0                    | B   | 10.7                    | B   |
| 9  | 10th Avenue / Houston Avenue        | All-Way Stop         | 8.9                     | A   | 9.0                     | A   |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls (AWSC)  
LOS for two-way stop controlled (TWSC) and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Under this scenario, all study segments are projected to operate at an acceptable LOS.

**Table VII: Existing plus Project Segment LOS Results**

| ID | Segment             | Limits                                    | Lanes | 24-hour Volume | AM Peak Volume | AM LOS | PM Peak Volume | PM LOS |
|----|---------------------|-------------------------------------------|-------|----------------|----------------|--------|----------------|--------|
| 1  | Hanford-Armona Road | 11 <sup>th</sup> Avenue and 10 1/2 Avenue | 2     | 10,350         | 394            | C      | 542            | D      |
| 2  | Hanford-Armona Road | 10 1/2 Avenue and Jordan Way              | 2     | 6,940          | 268            | C      | 350            | C      |
| 3  | Hanford-Armona Road | Jordan Way and 10 <sup>th</sup> Avenue    | 2     | 6,280          | 255            | B      | 346            | B      |
| 4  | 10 1/2 Avenue       | Hanford-Armona Road and Orchard Avenue    | 2     | 3,290          | 184            | B      | 188            | B      |
| 5  | 10 1/2 Avenue       | Orchard Avenue and Houston Avenue         | 2     | 1,900          | 65             | A      | 115            | B      |
| 6  | Houston Avenue      | 11 <sup>th</sup> Avenue and 10 1/2 Avenue | 2     | 4,250          | 177            | A      | 223            | A      |
| 7  | Houston Avenue      | 10 1/2 Avenue and 10 <sup>th</sup> Avenue | 2     | 3,880          | 174            | A      | 223            | B      |

Note: LOS =Level of Service per HCM 6th Edition methodologies in HCS7 software. Peak hour volumes are from the highest directional volume.

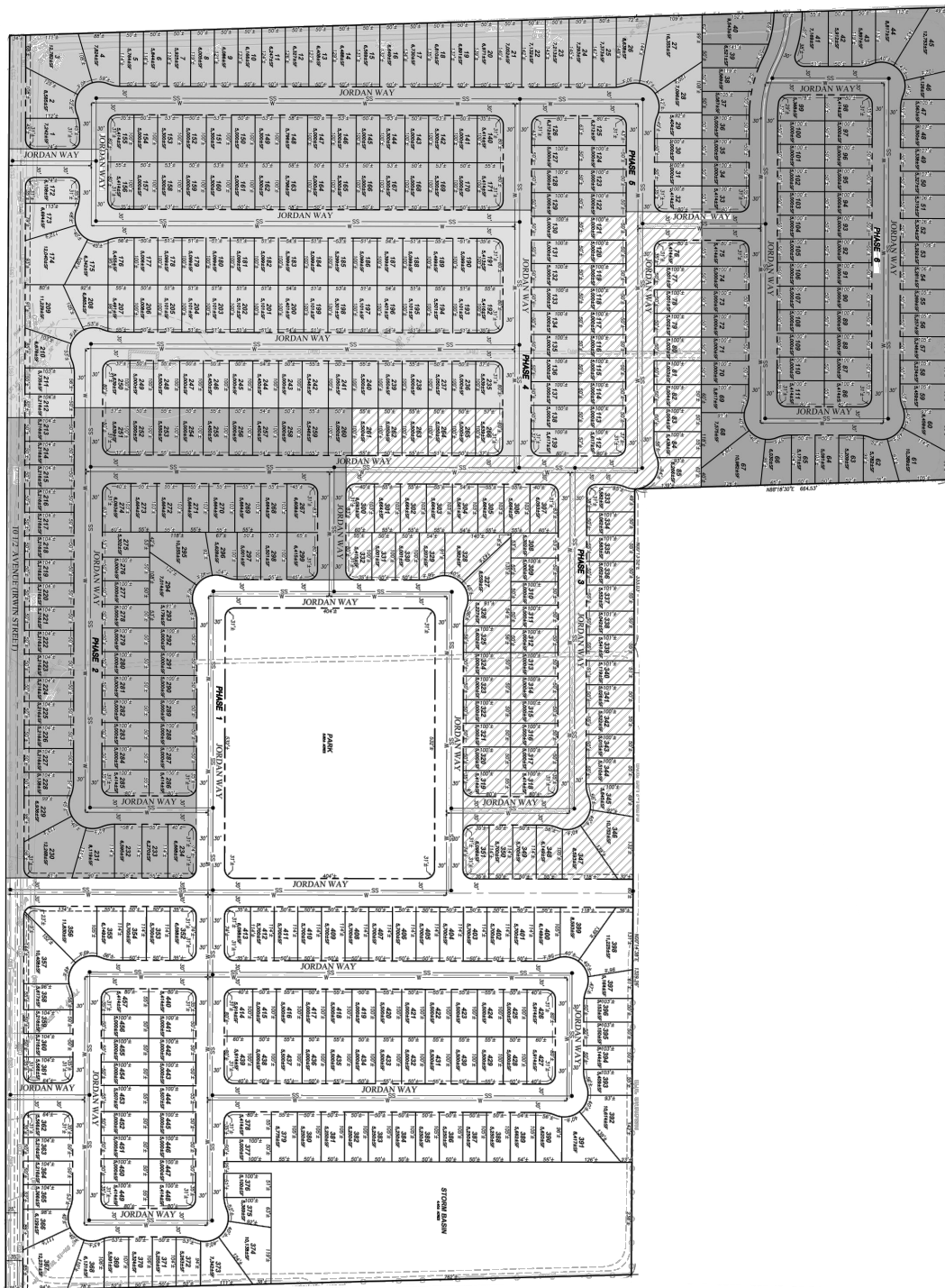


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Page | 15





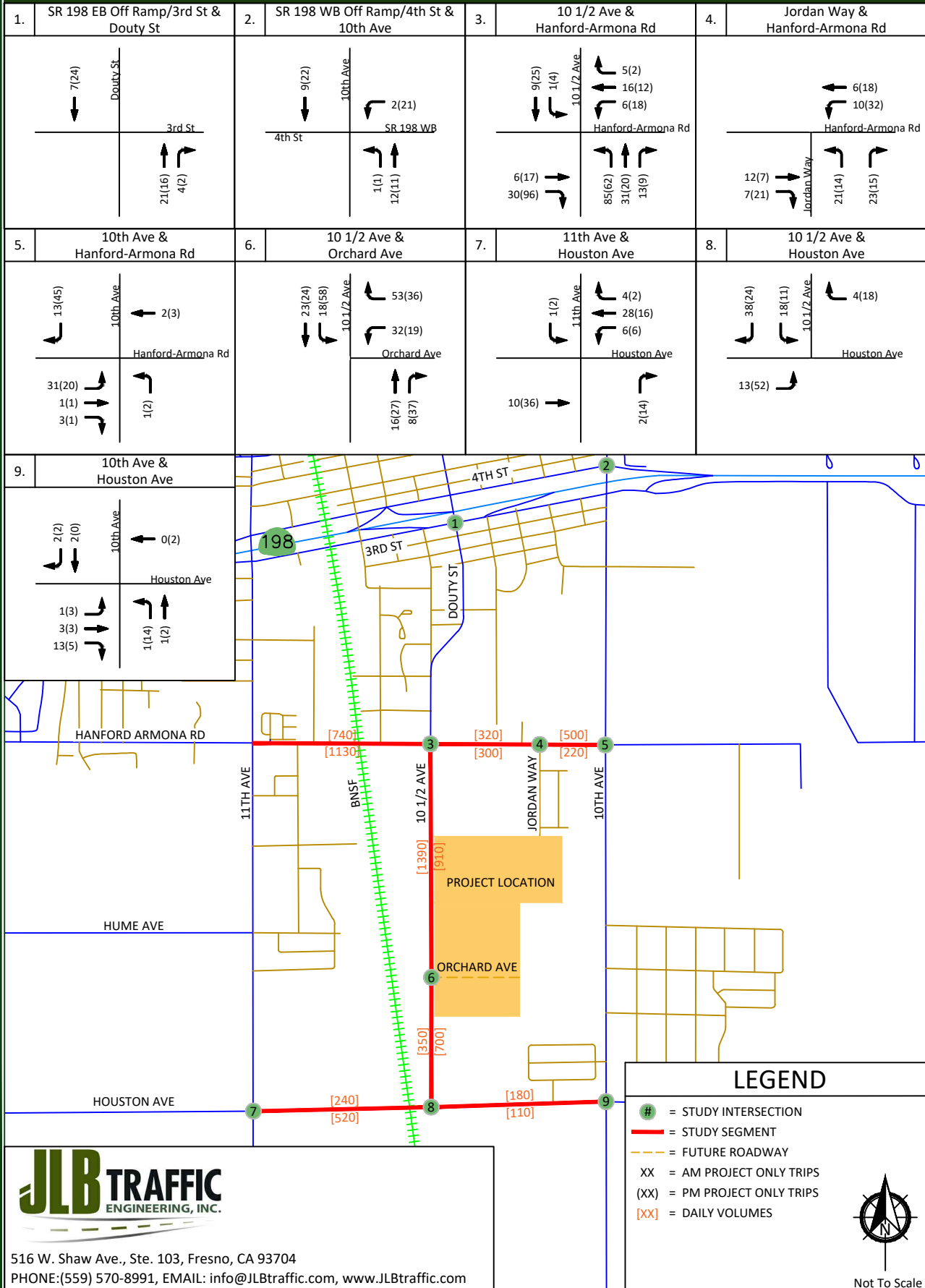
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Not To Scale

# Lunaria TIA - City of Hanford 2027 Project Only Trips

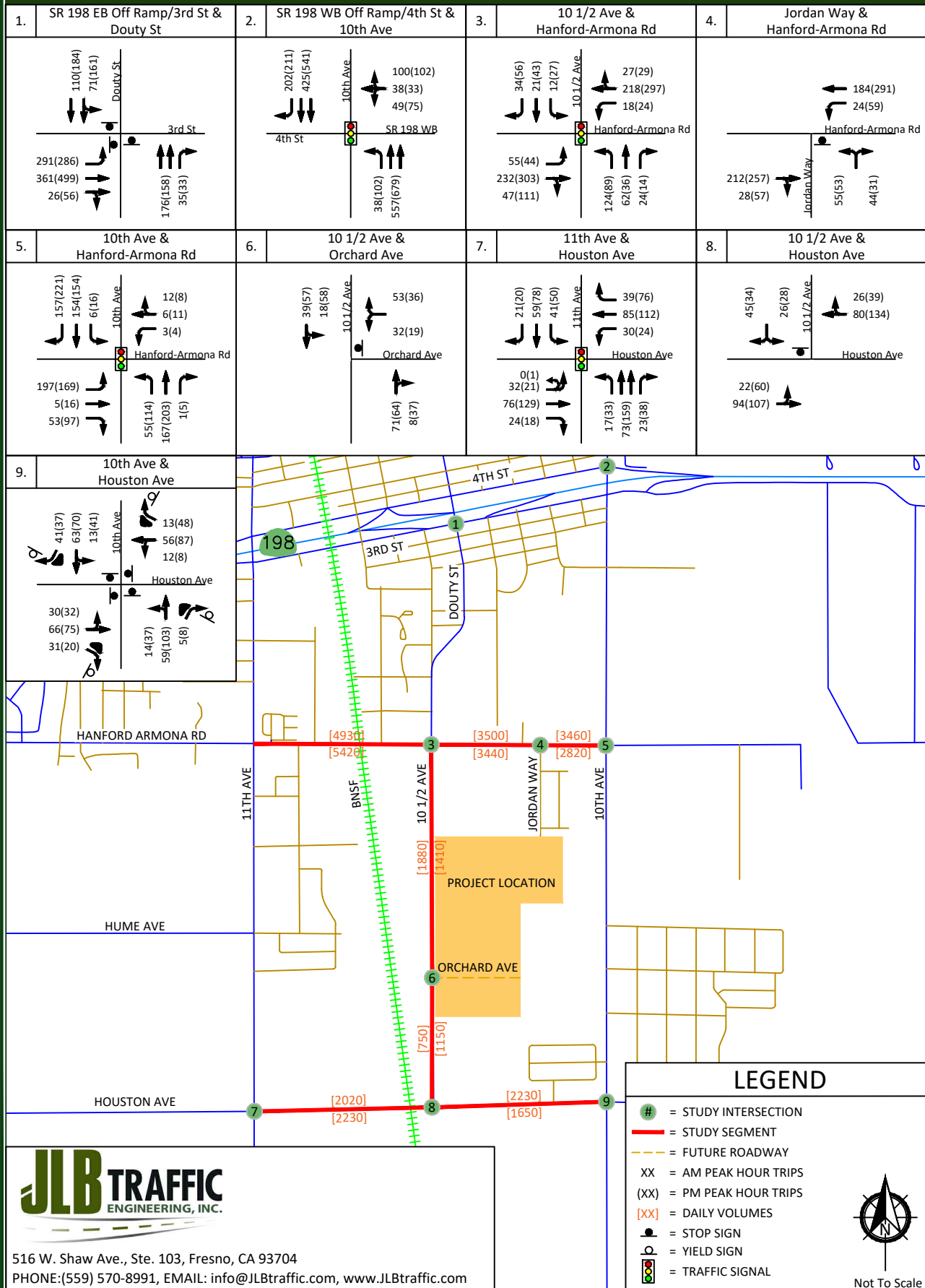
Figure 4





# Lunaria TIA - City of Hanford Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



## Near Term plus Project Traffic Conditions

### Description of Near Term Projects

Near Term Projects are approved and/or known Projects that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval or for which the lead agency or responsible agencies have knowledge of. The City of Hanford staff were consulted throughout the preparation of this Report regarding approved and/or known projects that could potentially impact the study intersections and study segment. JLB staff conducted a reconnaissance of the surrounding area to confirm the Near Term Projects. Therefore, the Near Term Projects listed in Table VIII were approved, near approval, or in the pipeline within the proximity of the proposed Project.

**Table VIII: Near Term Projects' Trip Generation**

| <i>Near Term<br/>Project ID</i>     | <i>Near Term<br/>Project Name</i> | <i>Daily<br/>Trips</i> | <i>AM<br/>Peak Hour</i> | <i>PM<br/>Peak Hour</i> |
|-------------------------------------|-----------------------------------|------------------------|-------------------------|-------------------------|
| A                                   | Live Oak <sup>1</sup>             | 14,726                 | 1,154                   | 1,544                   |
| B                                   | Billingsley Ranch <sup>2</sup>    | 916                    | 72                      | 96                      |
| C                                   | Tract 927 <sup>3</sup>            | 1256                   | 98                      | 132                     |
| D                                   | Tract 922 <sup>3</sup>            | 1831                   | 144                     | 192                     |
| E                                   | Tract 929 <sup>3</sup>            | 1492                   | 117                     | 156                     |
| F                                   | Tract 928 <sup>3</sup>            | 2672                   | 209                     | 280                     |
| G                                   | Tract 912 <sup>3</sup>            | 1340                   | 105                     | 141                     |
| H                                   | Tract 919 <sup>3</sup>            | 1180                   | 93                      | 124                     |
| <b>2027 Near Term Project Trips</b> |                                   | <b>20,410</b>          | <b>1,600</b>            | <b>2,141</b>            |
| <b>2042 Near Term Project Trips</b> |                                   | <b>25,413</b>          | <b>1,992</b>            | <b>2,665</b>            |

Note: 1 = Trip Generation prepared by KD Anderson Traffic Impact Analysis Report  
2= Trip Generation prepared by VRPA Traffic Impact Analysis Report  
3= Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information

The trip generation listed in Table VIII is that which is anticipated to be added to the roadway network by the Near Term Projects. Since the entire Live Oak Project is not projected to be fully built out in the next five (5) years, we estimated a percentage of what could be constructed within this period. This percentage was determined to be approximately two thirds, or 67%, therefore 67% of the Live Oak Project trips were included in this scenario. As shown in Table VIII, the total trip generation for the 2027 Near Term Projects is 20,410 daily trips, 1,600 AM peak hour trips and 2,141 PM peak hour trips, while the total trip generation for the 2042 Near Term Projects is 25,413 daily trips, 1,992 AM peak hour trips and 2,665 PM peak hour trips. The Near Term plus Project traffic volumes were obtained by adding the 2027 Near Term related trips to the Existing plus Project Traffic Conditions scenario. Figure 6 illustrates the location of the 2027 Near Term Projects and their combined trip assignment to the study intersections under this scenario.

## Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Near Term plus Project Traffic Conditions scenario. These warrants are found in Appendix I. Under this scenario, none of the unsignalized intersections are projected to satisfy Warrant 3. Based on the traffic signal warrants, operational analysis and engineering judgement, signalization of any of the study intersections is not recommended.

## Results of Near Term plus Project Level of Service Analysis

The Near Term plus Project Traffic Conditions scenario assumes the same roadway geometrics and traffic controls as those assumed in the Existing plus Project Traffic Conditions scenario. Figure 7 illustrates the Near Term plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Near Term plus Project Traffic Conditions scenario are provided in Appendix G. Table IX presents a summary of the Near Term plus Project intersection LOS intersections, while Table X presents a summary of the Near Term plus Project LOS for the study segment.

Under this scenario, all study intersections are projected to operate at an acceptable LOS.

**Table IX: Near Term plus Project Intersection LOS Results**

| ID | Intersection                        | Intersection Control | AM (7-9) Peak Hour      |     | PM (4-6) Peak Hour      |     |
|----|-------------------------------------|----------------------|-------------------------|-----|-------------------------|-----|
|    |                                     |                      | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 3  | 10 1/2 Avenue / Hanford Armona Road | Traffic Signal       | 18.0                    | B   | 16.0                    | B   |
| 4  | Jordan Way / Hanford Armona Road    | Two-Way Stop         | 12.7                    | B   | 13.4                    | B   |
| 5  | 10th Avenue / Hanford Armona Road   | Traffic Signal       | 21.5                    | C   | 19.9                    | B   |
| 6  | 10 ½ Avenue / Orchard Avenue        | Two-Way Stop         | 9.6                     | A   | 9.8                     | A   |
| 7  | 11th Avenue / Houston Avenue        | Traffic Signal       | 22.3                    | C   | 19.2                    | B   |
| 8  | Houston Avenue / 10 1/2 Avenue      | Two-Way Stop         | 10.2                    | B   | 11.7                    | B   |
| 9  | 10th Avenue / Houston Avenue        | All-Way Stop         | 9.1                     | A   | 9.6                     | A   |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls  
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Under this scenario, all study segments are projected to operate at an acceptable LOS.

**Table X: Near Term plus Project Segment LOS Results**

| ID | Segment             | Limits                                  | Lanes | 24-hour Volume | AM Peak Volume | AM LOS | PM Peak Volume | PM LOS |
|----|---------------------|-----------------------------------------|-------|----------------|----------------|--------|----------------|--------|
| 1  | Hanford-Armona Road | 11 <sup>th</sup> Avenue and 10 ½ Avenue | 2     | 10,490         | 398            | C      | 546            | D      |
| 2  | Hanford-Armona Road | 10 ½ Avenue and Jordan Way              | 2     | 7,020          | 271            | C      | 355            | C      |
| 3  | Hanford-Armona Road | Jordan Way and 10 <sup>th</sup> Avenue  | 2     | 6,340          | 258            | B      | 351            | B      |
| 4  | 10 ½ Avenue         | Hanford-Armona Road and Orchard Avenue  | 2     | 3,550          | 196            | C      | 197            | B      |
| 5  | 10 ½ Avenue         | Orchard Avenue and Houston Avenue       | 2     | 2,160          | 70             | A      | 132            | B      |
| 6  | Houston Avenue      | 11 <sup>th</sup> Avenue and 10 ½ Avenue | 2     | 4,800          | 193            | B      | 269            | B      |
| 7  | Houston Avenue      | 10 ½ Avenue and 10 <sup>th</sup> Avenue | 2     | 4,890          | 197            | A      | 295            | B      |

Note: LOS=Level of Service per HCM 6th Edition methodologies in HCS7 software. Peak hour volumes are from the highest directional volume.



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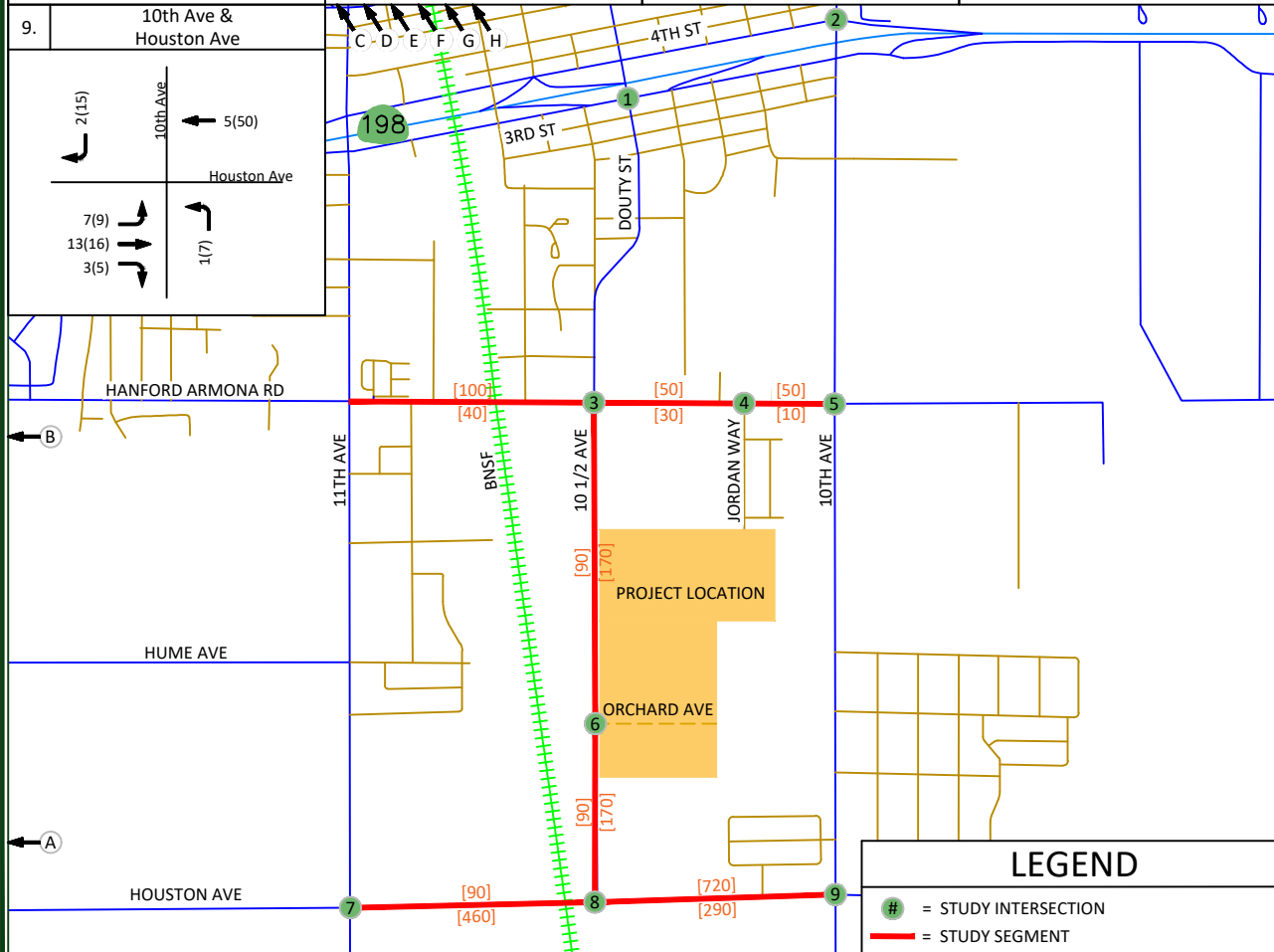
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Page | 20

# Lunaria TIA - City of Hanford 2027 Near Term Projects' Trip Assignment

Figure 6

|                                         |                                         |                                   |                                   |
|-----------------------------------------|-----------------------------------------|-----------------------------------|-----------------------------------|
| 1. SR 198 EB Off Ramp/3rd St & Douty St | 2. SR 198 WB Off Ramp/4th St & 10th Ave | 3. 10 1/2 Ave & Hanford-Armona Rd | 4. Jordan Way & Hanford-Armona Rd |
|                                         |                                         |                                   |                                   |
| 5. 10th Ave & Hanford-Armona Rd         | 6. 10 1/2 Ave & Orchard Ave             | 7. 11th Ave & Houston Ave         | 8. 10 1/2 Ave & Houston Ave       |
|                                         |                                         |                                   |                                   |
| 9. 10th Ave & Houston Ave               |                                         |                                   |                                   |
|                                         |                                         |                                   |                                   |



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## LEGEND

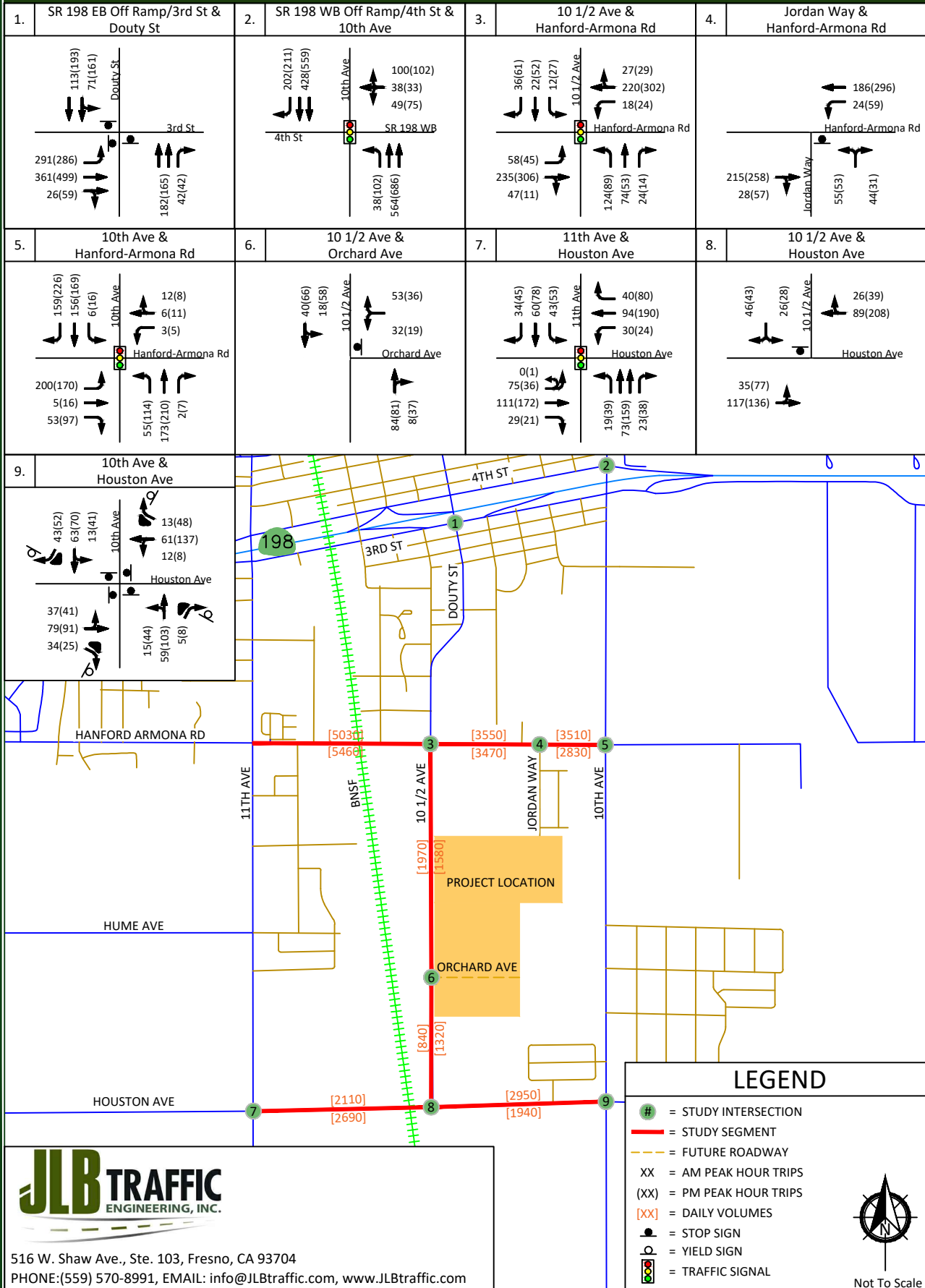
- # = STUDY INTERSECTION
- = STUDY SEGMENT
- - - = FUTURE ROADWAY
- XX = AM NEAR TERM TRIPS
- (XX) = PM NEAR TERM TRIPS
- [XX] = DAILY VOLUMES
- # = NEAR TERM PROJECT LOCATION



Not To Scale

# Lunaria TIA - City of Hanford Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



## Cumulative Year 2042 plus Project Traffic Conditions

### Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Cumulative Year 2042 plus Project Traffic Conditions scenario. These warrants are contained in Appendix I. Under this scenario, the intersection of 10<sup>th</sup> Avenue at Houston Avenue is projected to satisfy Warrant 3 in the PM peak period only. Based on the traffic signal warrants, operational analysis and engineering judgement, signalization of this intersection is not recommended.

### Results of Cumulative Year 2042 plus Project Level of Service Analysis

The Cumulative Year 2042 plus Project Traffic Conditions scenario assumes the same roadway geometrics and traffic controls as those assumed in the Near Term Plus Project Traffic Conditions scenario. Additionally, this scenario assumes Orchard Avenue will be fully constructed easterly to 10<sup>th</sup> Avenue. As a result, the Project Only trips have been revised to allow access to 10<sup>th</sup> Avenue from Orchard Avenue. Figure 8 illustrates the 2042 Project Only Trip to the study intersections. This scenario also assumes the Live Oak Project will be fully built, as a result the 2042 Near Term Trips were used instead of the 2027 Near Term Trips. Figure 9 illustrates the 2042 Near Term Trips. Figure 10 illustrates the Cumulative Year 2042 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2042 plus Project Traffic Conditions scenario are provided in Appendix H. Table XI presents a summary of the Cumulative Year 2042 plus Project peak hour LOS at the study intersections, while Table XII presents a summary of the Cumulative Year 2042 plus Project LOS for the study segments.

Under this scenario, all study intersections are projected to operate at an acceptable LOS.

**Table XI: Cumulative Year 2042 plus Project Intersection LOS Results**

| ID | Intersection                        | Intersection Control | AM (7-9) Peak Hour      |     | PM (4-6) Peak Hour      |     |
|----|-------------------------------------|----------------------|-------------------------|-----|-------------------------|-----|
|    |                                     |                      | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 3  | 10 1/2 Avenue / Hanford Armona Road | Traffic Signal       | 16.6                    | B   | 19.4                    | B   |
| 4  | Jordan Way / Hanford Armona Road    | Two-Way Stop         | 11.6                    | B   | 14.5                    | B   |
| 5  | 10th Avenue / Hanford Armona Road   | Traffic Signal       | 18.8                    | B   | 21.9                    | C   |
| 6  | 10 ½ Avenue / Orchard Avenue        | Two-Way Stop         | 9.4                     | A   | 9.7                     | A   |
| 7  | 11th Avenue / Houston Avenue        | Traffic Signal       | 22.2                    | C   | 24.7                    | C   |
| 8  | Houston Avenue / 10 1/2 Avenue      | Two-Way Stop         | 10.1                    | B   | 12.1                    | B   |
| 9  | 10th Avenue / Houston Avenue        | All-Way Stop         | 9.9                     | A   | 14.8                    | B   |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls (AWSC)  
LOS for two-way stop controlled (TWSC) and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Under this scenario, all study segments are projected to operate at an acceptable LOS.

**Table XII: Cumulative Year 2042 plus Project Segment LOS Results**

| ID | Segment             | Limits                                  | Lanes | 24-hour Volume | AM Peak Volume | AM LOS | PM Peak Volume | PM LOS |
|----|---------------------|-----------------------------------------|-------|----------------|----------------|--------|----------------|--------|
| 1  | Hanford-Armona Road | 11 <sup>th</sup> Avenue and 10 ½ Avenue | 2     | 11,750         | 400            | C      | 591            | D      |
| 2  | Hanford-Armona Road | 10 ½ Avenue and Jordan Way              | 2     | 7,330          | 261            | C      | 394            | C      |
| 3  | Hanford-Armona Road | Jordan Way and 10 <sup>th</sup> Avenue  | 2     | 7,820          | 252            | B      | 455            | C      |
| 4  | 10 ½ Avenue         | Hanford-Armona Road and Orchard Avenue  | 2     | 4,930          | 190            | B      | 276            | C      |
| 5  | 10 ½ Avenue         | Orchard Avenue and Houston Avenue       | 2     | 2,080          | 74             | A      | 128            | B      |
| 6  | Houston Avenue      | 11 <sup>th</sup> Avenue and 10 ½ Avenue | 2     | 6,300          | 224            | B      | 408            | C      |
| 7  | Houston Avenue      | 10 ½ Avenue and 10 <sup>th</sup> Avenue | 2     | 5,840          | 197            | A      | 319            | B      |

Note: LOS = Level of Service per HCM 6th Edition methodologies in HCS7 software. Peak hour volumes are from the highest directional volume.

## Latest Site Plan Project Trips

The LOS studies were completed using the trips generated by the original Project site plan. The revised project site plan added 10 AM peak hour trips and 13 PM peak hour trips. Since all intersections fall well within the LOS threshold in all scenarios, the additional project trips were all distributed to the worst performing intersection during the worst scenario in an effort to represent a worst-case scenario and determine if the LOS results of this TIA, which were based on the original site plan that contained 14 less single-family residential lots and 0.9 less acres of park, would result in unacceptable LOS thresholds. The critical intersection was determined to be that of Houston Avenue and 11<sup>th</sup> Avenue during the Cumulative Year 2042 plus Project scenario. LOS worksheets for this scenario are provided in Appendix H. Table XIII presents a summary of the Cumulative Year 2042 plus Project peak hour LOS for the intersection of Houston Avenue and 11<sup>th</sup> Avenue. Under this scenario, this intersection is projected to operate at an acceptable LOS. Therefore, it is the opinion of JLB that all study intersections and segments would continue to operate within the acceptable LOS for all study scenarios if the additional trips were distributed throughout the roadway network and the LOS studies were redone. As a result, JLB does not recommend that this LOS analysis be redone and that the City of Hanford, County of Kings and Caltrans can utilize this TIA to determine the Projects impacts to the study intersections and segments.

**Table XIII: Cumulative Year 2042 plus Latest Project Site Plan Intersection LOS Results**

| ID | Intersection                 | Intersection Control | AM (7-9) Peak Hour      |     | PM (4-6) Peak Hour      |     |
|----|------------------------------|----------------------|-------------------------|-----|-------------------------|-----|
|    |                              |                      | Average Delay (sec/veh) | LOS | Average Delay (sec/veh) | LOS |
| 7  | 11th Avenue / Houston Avenue | Traffic Signal       | 22.3                    | C   | 24.8                    | C   |

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls  
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

## Project Only Trip Assignment to State Facilities

Figure 11 illustrates the Project Only Trips to State Route 198 at 11<sup>th</sup> Avenue. Similarly, Figure 12 illustrates the Project Only Trips to State Route 198 at 10<sup>th</sup> Avenue. The project only trips from both of these figures also include the trips from the added lots and park acreage from the latest Project site plan.



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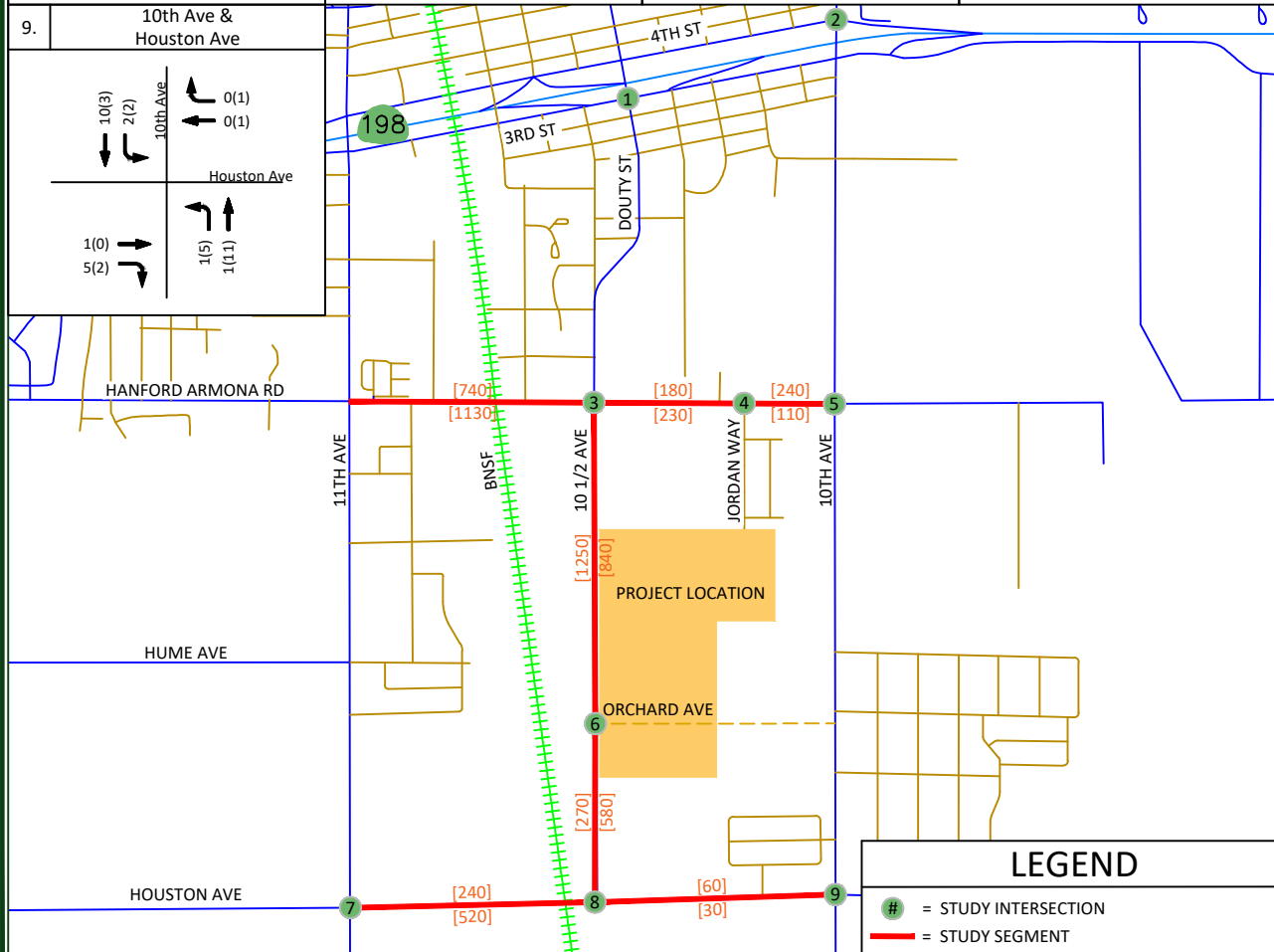
Page | 24



# Lunaria TIA - City of Hanford 2042 Project Only Trips

Figure 8

|                                         |                                         |                                   |                                   |
|-----------------------------------------|-----------------------------------------|-----------------------------------|-----------------------------------|
| 1. SR 198 EB Off Ramp/3rd St & Douty St | 2. SR 198 WB Off Ramp/4th St & 10th Ave | 3. 10 1/2 Ave & Hanford-Armona Rd | 4. Jordan Way & Hanford-Armona Rd |
|                                         |                                         |                                   |                                   |
| 5. 10th Ave & Hanford-Armona Rd         | 6. 10 1/2 Ave & Orchard Ave             | 7. 11th Ave & Houston Ave         | 8. 10 1/2 Ave & Houston Ave       |
|                                         |                                         |                                   |                                   |
| 9. 10th Ave & Houston Ave               |                                         |                                   |                                   |
|                                         |                                         |                                   |                                   |



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**LEGEND**

- # = STUDY INTERSECTION
- = STUDY SEGMENT
- - - = FUTURE ROADWAY
- XX = AM PROJECT ONLY TRIPS
- (XX) = PM PROJECT ONLY TRIPS
- [XX] = DAILY VOLUMES

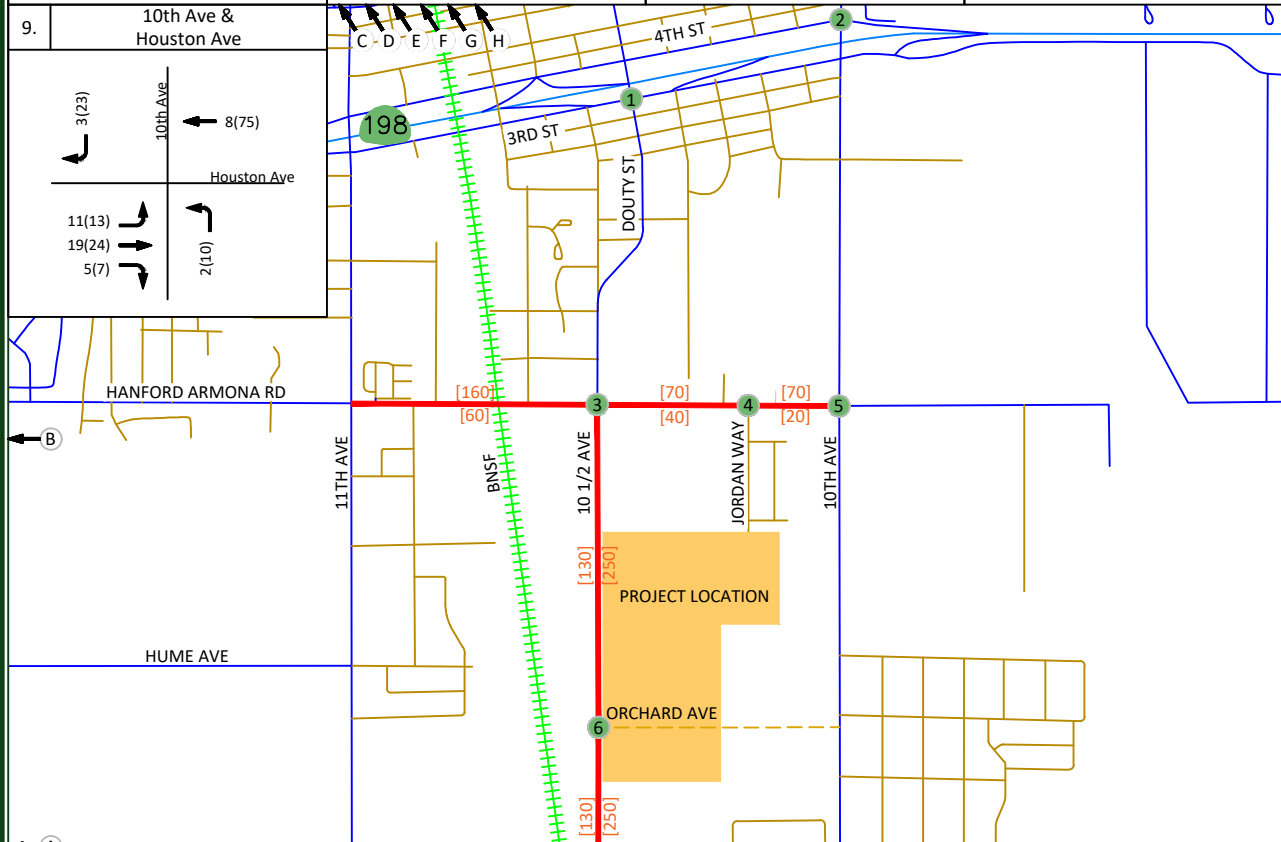
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# Lunaria TIA - City of Hanford 2042 Near Term Projects' Trip Assignment

Figure 9

|                                         |                                         |                                   |                                   |
|-----------------------------------------|-----------------------------------------|-----------------------------------|-----------------------------------|
| 1. SR 198 EB Off Ramp/3rd St & Douty St | 2. SR 198 WB Off Ramp/4th St & 10th Ave | 3. 10 1/2 Ave & Hanford-Armona Rd | 4. Jordan Way & Hanford-Armona Rd |
|                                         |                                         |                                   |                                   |
| 5. 10th Ave & Hanford-Armona Rd         | 6. 10 1/2 Ave & Orchard Ave             | 7. 11th Ave & Houston Ave         | 8. 10 1/2 Ave & Houston Ave       |
|                                         |                                         |                                   |                                   |
| 9. 10th Ave & Houston Ave               |                                         |                                   |                                   |



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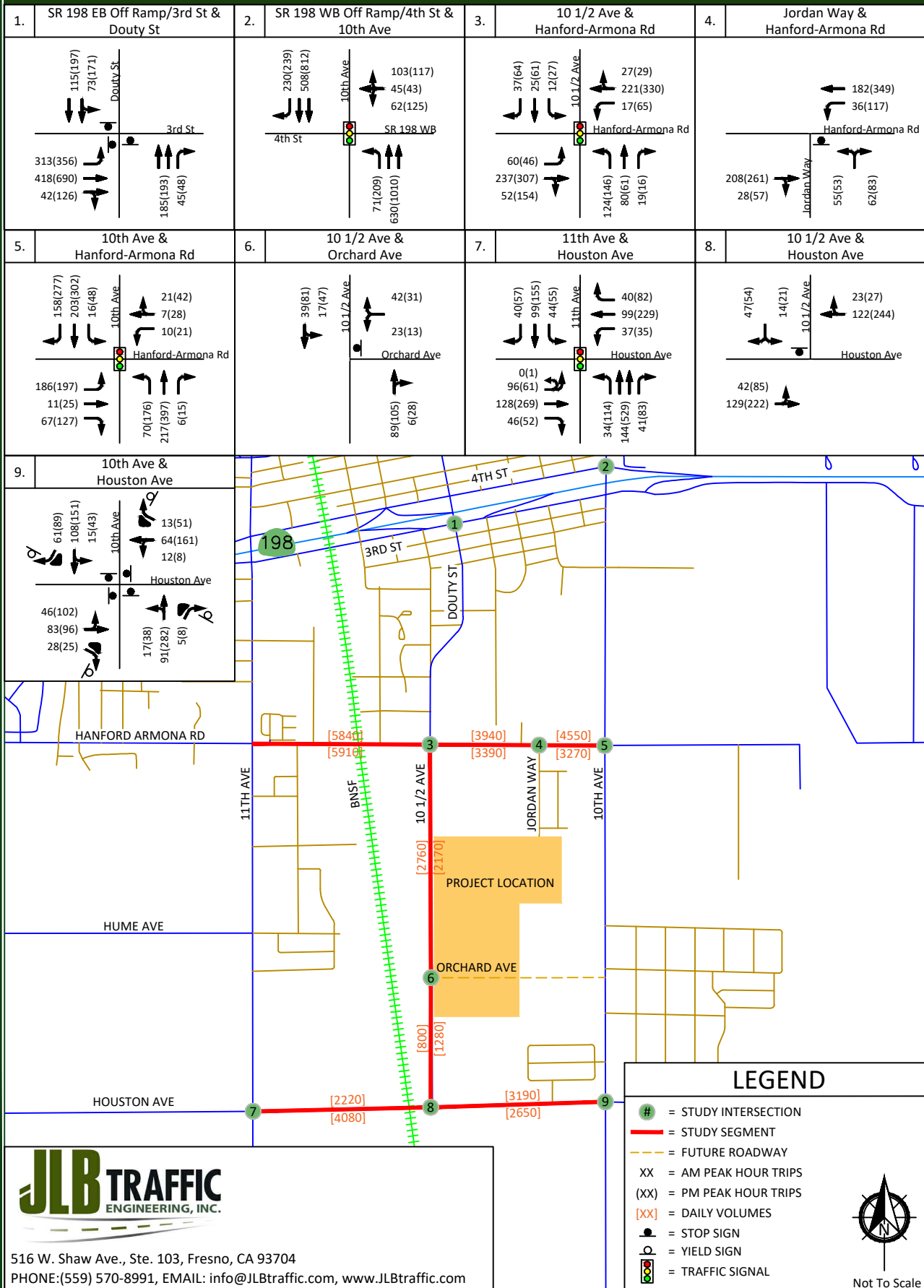
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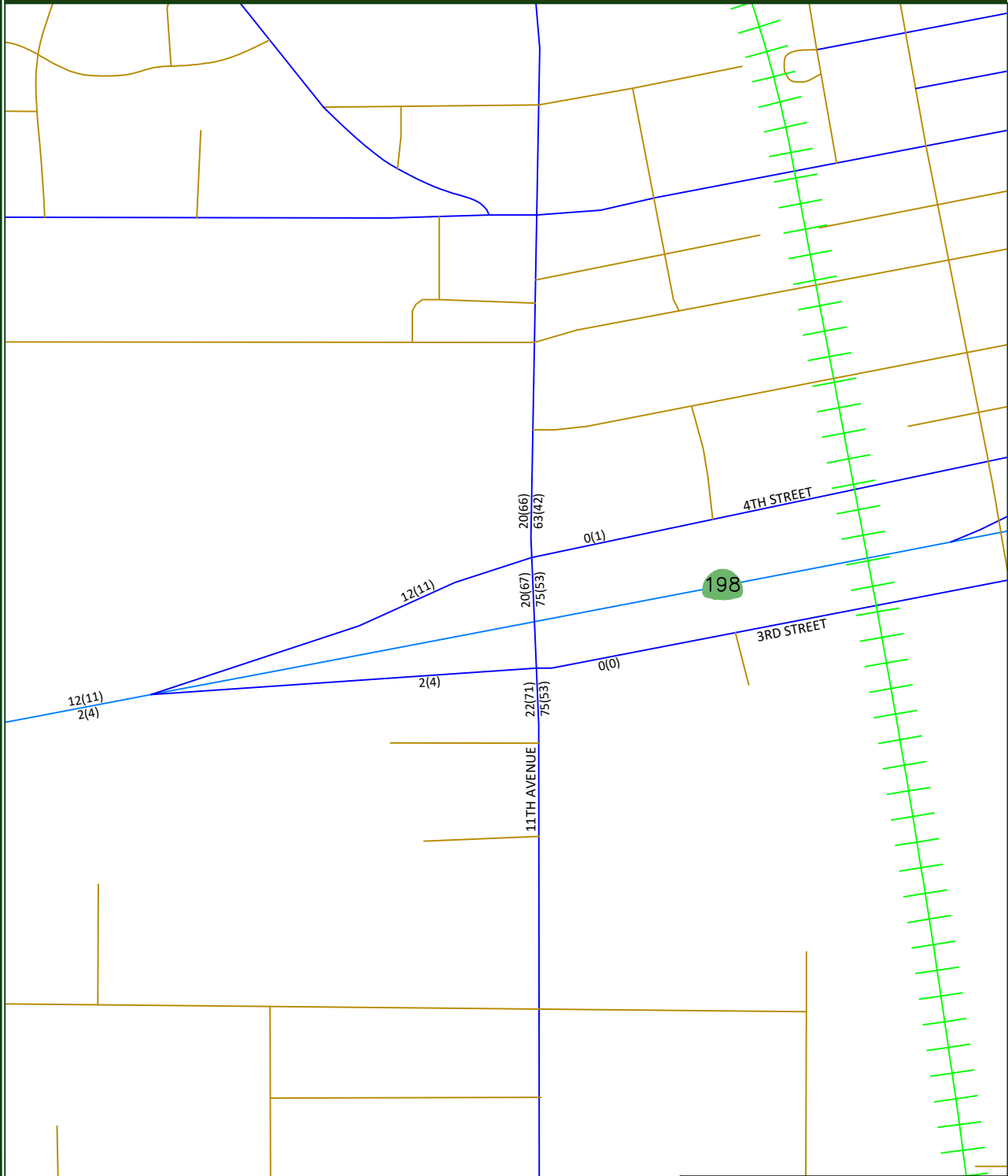
- # = STUDY INTERSECTION
- = STUDY SEGMENT
- = FUTURE ROADWAY
- XX = AM NEAR TERM TRIPS
- (XX) = PM NEAR TERM TRIPS
- [XX] = DAILY VOLUMES
- # = NEAR TERM PROJECT LOCATION

Not To Scale

# Lunaria TIA - City of Hanford Cumulative Year 2042 plus Project - Traffic Volumes, Geometrics and Controls

Figure 10





### LEGEND

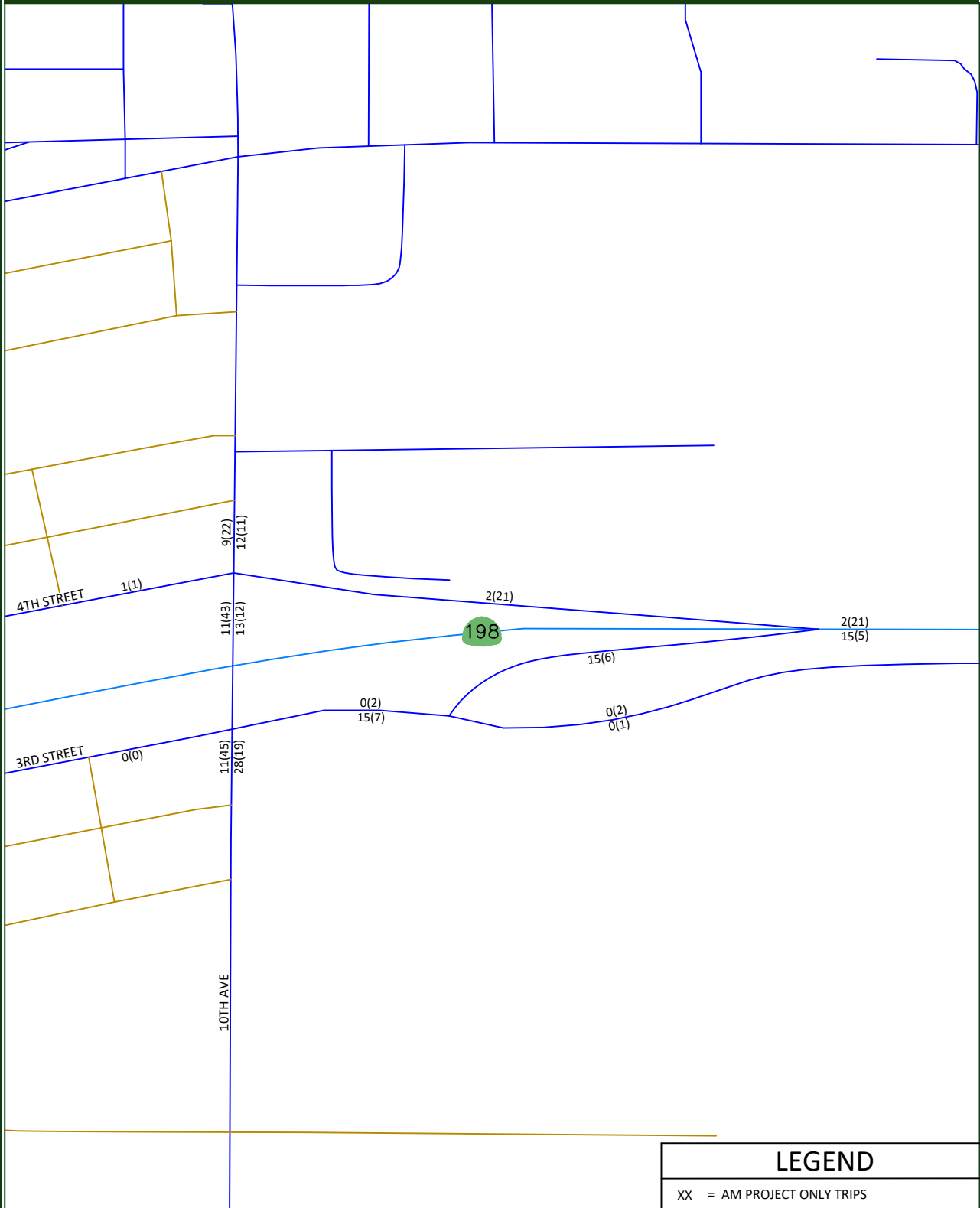
XX = AM PROJECT ONLY TRIPS  
(XX) = PM PROJECT ONLY TRIPS



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### LEGEND

XX = AM PROJECT ONLY TRIPS  
(XX) = PM PROJECT ONLY TRIPS



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## Queuing Analysis

Table XIV provides a queue length summary for left-turn and right-turn lanes at the study intersections under all study scenarios. The queuing analyses for the study intersections are contained in the LOS worksheets for the respective scenarios. Appendix D contains the methodologies used to evaluate these intersections. Queuing analyses were completed using SimTraffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the *Synchro Studio 11 User Guide*, “the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes” (Cubic ITS, Inc., 2019). The queues shown on Table XIV are the 95th percentile queue lengths for the respective lane movements.

The *California Highway Design Manual* (CA HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. According to the CA HDM, tapers for right-turn lanes are “usually unnecessary since main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane” (Caltrans 2019). Therefore, a bay taper length pursuant to the CA HDM would need to be added, as necessary, to the recommended storage lengths presented in Table XIV.

The storage capacity for the Cumulative Year 2042 plus Project Traffic Conditions shall be based on the SimTraffic output files and engineering judgement. The values in bold presented in Table XIV are the projected queue lengths that will likely need to be accommodated by the Cumulative Year 2042 plus Project Traffic Conditions scenario. At the remaining approaches of the study intersections, the existing storage capacity will be sufficient to accommodate the maximum queue.

**Table XIV: Queuing Analysis**

| ID | Intersection                                                   | Existing Queue Storage Length (ft.) |      | Existing |     | Existing plus Project |     | Near Term plus Project |     | Cumulative Year 2042 plus Project |     |
|----|----------------------------------------------------------------|-------------------------------------|------|----------|-----|-----------------------|-----|------------------------|-----|-----------------------------------|-----|
|    |                                                                |                                     |      | AM       | PM  | AM                    | PM  | AM                     | PM  | AM                                | PM  |
| 1  | Douty Street / 3rd Street (State Route 198 Eastbound Off Ramp) | EB L                                | 100  | 81       | 86  | 87                    | 92  | 103                    | 95  | 90                                | 123 |
|    |                                                                | EB T                                | >300 | 81       | 89  | 72                    | 92  | 68                     | 92  | 81                                | 153 |
|    |                                                                | EB TR                               | >300 | 71       | 97  | 62                    | 85  | 68                     | 82  | 78                                | 139 |
|    |                                                                | NB T                                | >300 | 59       | 59  | 54                    | 59  | 54                     | 57  | 58                                | 60  |
|    |                                                                | NB T                                | >300 | 65       | 72  | 67                    | 58  | 62                     | 70  | 64                                | 64  |
|    |                                                                | NB R                                | 90   | 43       | 37  | 43                    | 54  | 55                     | 53  | 55                                | 54  |
|    |                                                                | SB LT                               | >300 | 69       | 118 | 83                    | 146 | 75                     | 133 | 88                                | 177 |
|    |                                                                | SB T                                | >300 | 0        | 35  | 28                    | 56  | 10                     | 34  | 0                                 | 53  |
| 2  | 10th Avenue / SR-99 WB Off Ramp                                | WB LTR                              | >500 | 84       | 126 | 103                   | 115 | 92                     | 104 | 156                               | 156 |
|    |                                                                | NB L                                | 295  | 52       | 85  | 53                    | 87  | 49                     | 110 | 76                                | 421 |
|    |                                                                | NB T                                | 295  | 101      | 124 | 110                   | 110 | 125                    | 114 | 136                               | 561 |
|    |                                                                | NB T                                | 295  | 102      | 121 | 142                   | 121 | 120                    | 106 | 144                               | 381 |
|    |                                                                | SB T                                | >300 | 161      | 170 | 151                   | 210 | 151                    | 219 | 195                               | 327 |
|    |                                                                | SB T                                | >300 | 121      | 99  | 101                   | 159 | 36                     | 142 | 144                               | 278 |
|    |                                                                | SB R                                | 105  | 64       | 67  | 59                    | 68  | 55                     | 73  | 82                                | 135 |
| 3  | 10 1/2 Avenue / Hanford Armona Road                            | EB L                                | 150  | 48       | 56  | 77                    | 61  | 81                     | 81  | 73                                | 143 |
|    |                                                                | EB TR                               | >500 | 105      | 85  | 106                   | 198 | 144                    | 203 | 128                               | 324 |
|    |                                                                | WB L                                | 95   | 22       | 25  | 27                    | 41  | 50                     | 45  | 49                                | 140 |
|    |                                                                | WB TR                               | >500 | 82       | 133 | 113                   | 138 | 135                    | 158 | 139                               | 186 |
|    |                                                                | NB L                                | 150  | 55       | 49  | 109                   | 99  | 121                    | 84  | 112                               | 149 |
|    |                                                                | NB T                                | >500 | 38       | 32  | 79                    | 61  | 61                     | 60  | 66                                | 108 |
|    |                                                                | NB R                                | 95   | 26       | 25  | 37                    | 33  | 50                     | 22  | 47                                | 29  |
|    |                                                                | SB L                                | 150  | 28       | 53  | 33                    | 47  | 41                     | 53  | 32                                | 49  |
|    |                                                                | SB T                                | >500 | 47       | 36  | 38                    | 53  | 56                     | 66  | 61                                | 72  |
|    |                                                                | SB R                                | 100  | 49       | 57  | 45                    | 57  | 45                     | 56  | 37                                | 57  |
| 4  | Jordan Way / Hanford Armona Road                               | EB TR                               | >500 | 0        | 0   | 0                     | 10  | 0                      | 0   | 0                                 | 0   |
|    |                                                                | WB L                                | 75   | 28       | 23  | 22                    | 46  | 19                     | 40  | 22                                | 52  |
|    |                                                                | WB T                                | >500 | 0        | 0   | 0                     | 0   | 0                      | 0   | 0                                 | 0   |
|    |                                                                | NB LR                               | >300 | 61       | 55  | 71                    | 68  | 69                     | 72  | 65                                | 71  |

Note: \* = Does not exist or is not projected to exist

**Table XIV: Queuing Analysis (Continued)**

| ID | Intersection                      | Existing Queue Storage Length (ft.) |      | Existing |     | Existing plus Project |     | Near Term plus Project |     | Cumulative Year 2042 plus Project |     |
|----|-----------------------------------|-------------------------------------|------|----------|-----|-----------------------|-----|------------------------|-----|-----------------------------------|-----|
|    |                                   |                                     |      | AM       | PM  | AM                    | PM  | AM                     | PM  | AM                                | PM  |
| 5  | 10th Avenue / Hanford Armona Road | EB L                                | 105  | 127      | 112 | 146                   | 156 | 157                    | 151 | 140                               | 153 |
|    |                                   | EB T                                | >500 | 32       | 20  | 27                    | 21  | 15                     | 64  | 28                                | 79  |
|    |                                   | EB R                                | 55   | 31       | 44  | 38                    | 71  | 39                     | 73  | 44                                | 57  |
|    |                                   | WB L                                | 155  | 18       | 19  | 10                    | 8   | 13                     | 22  | 19                                | 41  |
|    |                                   | WB TR                               | >500 | 37       | 36  | 33                    | 39  | 40                     | 41  | 46                                | 91  |
|    |                                   | NB L                                | 155  | 58       | 92  | 61                    | 116 | 75                     | 108 | 77                                | 134 |
|    |                                   | NB T                                | >500 | 86       | 107 | 111                   | 130 | 82                     | 149 | 130                               | 198 |
|    |                                   | NB R                                | 130  | 0        | 0   | 0                     | 7   | 7                      | 10  | 0                                 | 22  |
|    |                                   | SB L                                | 110  | 24       | 42  | 23                    | 49  | 28                     | 37  | 29                                | 99  |
|    |                                   | SB T                                | >500 | 97       | 85  | 115                   | 111 | 123                    | 111 | 130                               | 258 |
|    |                                   | SB R                                | 265  | 58       | 76  | 70                    | 78  | 85                     | 91  | 95                                | 187 |
| 6  | 10 ½ Avenue / Orchard Avenue      | WB LR                               | *    | *        | *   | 66                    | 52  | 53                     | 46  | 59                                | 42  |
|    |                                   | NB TR                               | *    | *        | *   | 0                     | 0   | 0                      | 0   | 0                                 | 0   |
|    |                                   | SB LT                               | *    | *        | *   | 0                     | 22  | 9                      | 39  | 9                                 | 19  |
| 7  | 11th Avenue / Houston Avenue      | EB L                                | 165  | 49       | 38  | 59                    | 35  | 103                    | 49  | 94                                | 76  |
|    |                                   | EB T                                | >500 | 45       | 60  | 53                    | 77  | 66                     | 78  | 117                               | 162 |
|    |                                   | EB R                                | 150  | 32       | 18  | 24                    | 22  | 37                     | 20  | 45                                | 36  |
|    |                                   | WB L                                | 175  | 49       | 33  | 44                    | 34  | 55                     | 34  | 47                                | 50  |
|    |                                   | WB T                                | >500 | 66       | 78  | 74                    | 83  | 70                     | 90  | 111                               | 165 |
|    |                                   | WB R                                | 175  | 38       | 37  | 39                    | 32  | 38                     | 47  | 31                                | 38  |
|    |                                   | NB L                                | 175  | 34       | 50  | 49                    | 52  | 45                     | 60  | 77                                | 83  |
|    |                                   | NB T                                | >300 | 50       | 58  | 47                    | 57  | 38                     | 56  | 67                                | 149 |
|    |                                   | NB T                                | >300 | 45       | 41  | 32                    | 36  | 25                     | 46  | 82                                | 143 |
|    |                                   | NB R                                | 100  | 25       | 20  | 31                    | 25  | 17                     | 25  | 39                                | 43  |
|    |                                   | SB L                                | 250  | 49       | 52  | 57                    | 67  | 51                     | 56  | 71                                | 70  |
|    |                                   | SB T                                | >500 | 29       | 58  | 53                    | 62  | 49                     | 56  | 82                                | 172 |
|    |                                   | SB R                                | >300 | 34       | 18  | 47                    | 23  | 29                     | 24  | 27                                | 25  |
| 8  | Houston Avenue / 10 1/2 Avenue    | EB LT                               | >500 | 0        | 0   | 0                     | 31  | 22                     | 30  | 36                                | 45  |
|    |                                   | WB TR                               | >500 | 0        | 0   | 0                     | 0   | 0                      | 0   | 0                                 | 0   |
|    |                                   | SB LR                               | >500 | 36       | 41  | 68                    | 44  | 67                     | 59  | 62                                | 58  |
| 9  | 10th Avenue / Houston Avenue      | EB LTR                              | >500 | 75       | 55  | 83                    | 57  | 77                     | 55  | 93                                | 84  |
|    |                                   | WB LTR                              | >500 | 65       | 60  | 80                    | 72  | 86                     | 66  | 62                                | 119 |
|    |                                   | NB LTR                              | >500 | 69       | 52  | 66                    | 58  | 67                     | 68  | 70                                | 119 |
|    |                                   | SB LTR                              | >500 | 67       | 66  | 77                    | 57  | 70                     | 70  | 100                               | 138 |

Note: \* = Does not exist or is not projected to exist



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Page | 32

**Table XIV: Queuing Analysis (Continued)**

|    |                                                |      |      |    |    |    |    |    |    |    |     |
|----|------------------------------------------------|------|------|----|----|----|----|----|----|----|-----|
| 10 | 3 <sup>rd</sup> Street / SR-198<br>EB Off Ramp | EB T | >500 | 10 | 0  | 10 | 43 | 20 | 14 | 0  | 40  |
|    |                                                | SB L | >500 | 52 | 98 | 65 | 71 | 77 | 96 | 66 | 204 |

Note: \* = Does not exist or is not projected to exist



## Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Project are presented below.

### *Existing Traffic Conditions*

- At present, all study intersections operate at an acceptable LOS during both peak periods.
- At present, all study segments operate at an acceptable LOS.

### *Existing plus Project Traffic Conditions*

- Based on the original site plan, the Project is estimated to generate a maximum of 4,181 daily trips, 310 AM peak hour trips and 418 PM peak hour trips at build-out.
- Based on the latest site plan, the Project is estimated to generate a maximum of 4,315 daily trips, 320 AM peak hour trips and 431 PM peak hour trips at build-out.
- Compared to the original site plan, the latest site plan is estimated to yield a greater trip generation by 134 daily trips, 10 AM peak hour trips and 13 PM peak hour trips. These are an increase of 3.20%, 3.23% and 3.11% of the Daily, AM peak hour and PM peak hour respectively.
- LOS studies were completed using the trip generated by the original site plan. To account for the additional trips produced by the latest site plan, all additional trips (10 AM Peak hour trips and 13 PM peak hour trips) were routed to the worst performing intersection during the worst performing scenario. This was determined to be the intersection of Houston Avenue at 11th Avenue during the Cumulative Year 2042 plus Project Scenario. Based on this analysis, it was determined that that all study intersections and segments would continue to operate within the acceptable LOS for all study scenarios.
- JLB analyzed the location of the existing and proposed roadways and access points. This review revealed that all access points are located at points that minimize traffic operational impacts to existing and future roadway networks.
- It is recommended that the Project implement ADA compliant sidewalks along its frontages to 10 ½ Avenue and Orchard Avenue.
- It is recommended that the Project implement Class II Bike Lanes along its frontage to 10 ½ Avenue and Orchard Avenue.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.
- Under this scenario, all study segments are projected to operate at an acceptable LOS.

### *Near Term plus Project Traffic Conditions*

- The total trip generation for the Near Term Projects by 2027 is projected as 20,410 daily trips, 1,600 AM peak hour trips and 2,141 PM peak hour trips.
- The total trip generation for the Near Term Projects by 2042 is projected as 25,413 daily trips, 1,992 AM peak hour trips and 2,665 PM peak hour trips.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.
- Under this scenario, all study segments are projected to operate at an acceptable LOS.



### *Cumulative Year 2042 plus Project Traffic Conditions*

- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.
- Under this scenario, all study segments are projected to operate at an acceptable LOS.
- To account for the difference in trip generation between the original and latest site plan, all additional trips (10 AM Peak hour trips and 13 PM peak hour trips) were routed to the worst performing intersection during the worst performing scenario. This intersection was determined to be Houston Avenue at 11<sup>th</sup> Avenue during the Cumulative Year 2042 plus Project. Even with all additional project trips routed to this intersection, it continues to operate at an acceptable LOS. Therefore, it is the opinion of JLB that all study intersections would continue to operate within the acceptable LOS for all study scenarios if the additional trips were distributed throughout the roadway network and the LOS studies were redone. As a result, JLB does not recommend that this TIA be redone and that the City of Hanford, County of Kings and Caltrans can utilize this TIA to determine the Projects impacts to the study intersections and segments.

### *Queuing Analysis*

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

## Study Participants

### JLB Traffic Engineering, Inc. Personnel:

|                             |                            |
|-----------------------------|----------------------------|
| Jose Luis Benavides, PE, TE | Project Manager            |
| Carlos Ayala-Magaña, EIT    | Engineer I/II              |
| Matthew Arndt, EIT          | Engineer I/II              |
| Jove Alcazar, EIT           | Engineer I/II              |
| Javier Rios                 | Engineer I/II              |
| Dennis Wynn                 | Sr. Engineering Technician |
| Adrian Benavides            | Engineering Aide           |
| Christian Sanchez           | Engineering Aide           |

### Persons Consulted:

|                   |                              |
|-------------------|------------------------------|
| Ernie Escobedo    | QK Inc.                      |
| Mary Beatie       | City of Hanford              |
| John Doyel        | City of Hanford              |
| Dominic Tyburski  | County of Kings              |
| Chuck Kinney      | County of Kings              |
| David Padilla     | Caltrans                     |
| Christopher Xiong | Caltrans                     |
| Mike Aronson      | Kittleson & Associates, Inc. |
| Miao Gao          | Kittleson & Associates, Inc. |



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## Appendix A: Scope of Work



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info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
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A p p | A

January 20, 2022

Gabrielle de Silva Myers  
Senior Planner  
City of Hanford  
317 N. Douty Street  
Hanford, CA 93230

Via Email Only: [gmyers@cityofhanfordca.com](mailto:gmyers@cityofhanfordca.com)

**Subject: Proposed Scope of Work for the Preparation of a Traffic Impact Analysis and Vehicle Miles Traveled Analysis for the Lunaria Project in the City of Hanford (JLB Project 047-002)**

Dear Ms. Myers,

JLB Traffic Engineering, Inc. (JLB) hereby submits this Draft Scope of Work for the preparation of a Traffic Impact Analysis (TIA) and Vehicle Miles Traveled (VMT) Analysis for the Lunaria Project (Project) located at the southeast quadrant of Hanford-Armona Road and Avenue 10 ½ in the City of Hanford. The Project proposes to develop the site with 443 single family residential units and a 4.9-acre public park. Based on information provided to JLB, the Project is consistent with the City's General Plan. An aerial of the Project vicinity and Project Site Plan are shown in Exhibits A and Exhibit B, respectively.

The purpose of the TIA and VMT Analysis is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. To evaluate the on-site and off-site traffic impacts of the proposed Project, JLB proposes the following Scope of Work.

### **Scope of Work**

- JLB will obtain new traffic counts at the study facility(ies) when schools in the vicinity are in session. These counts will include pedestrians and vehicles. Schools in the proximity of these intersections are in sessions and have had in-person learning this academic year, unless students opt out for at-home learning. According to VMT data on the Transportation Injury Mapping System (TIMS) database, VMT has been normalizing to pre-Covid numbers. As a result of VMT data normalizing and schools being in session, JLB proposes that no escalation be applied to the traffic counts due to Covid.
- JLB will request a Kings County Association of Governments (Kings CAG) traffic forecasting modeling for the Project. The Kings CAG traffic forecasting model will be used to forecast traffic volumes for the Base Year and Cumulative Year 2042 scenarios.
- JLB will perform a site visit to observe existing traffic conditions, especially during the AM and PM peak hours. Existing roadway conditions including speed limits, lane geometrics, turn prohibitions and traffic controls will be verified.



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Page | 1

- JLB will evaluate on-site circulation and provide recommendations as necessary to improve circulation to and within the Project site.
- JLB will qualitatively analyze existing and planned transit routes in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned walkways in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned bikeways in the vicinity of the Project.
- JLB will prepare CA MUTCD Warrant 3 “Peak Hour” for unsignalized study intersections under all study scenarios.
- JLB will forecast trip distribution based on turn count information and knowledge of the existing and planned circulation network in the vicinity of the Project.
- JLB will evaluate existing and forecasted levels of service (LOS) at the study intersection(s). JLB will use HCM 6th or HCM 2000 methodologies (as appropriate) within Synchro to perform this analysis for the AM and PM peak hours. JLB will identify the causes of poor LOS.

### ***Study Scenarios***

1. Existing Traffic Conditions with needed improvements (if any);
2. Existing plus Project Buildout Traffic Conditions with proposed improvements (if any);
3. Near Term plus Project Buildout Traffic Conditions with proposed improvements (if any); and
4. Cumulative Year 2042 plus Project Buildout Traffic Conditions with proposed improvements (if any).

### ***Weekday peak hours to be analyzed (Tuesday or Thursday only)***

1. 7 - 9 AM peak hour
2. 4 - 6 PM peak hour

### ***Study Intersections***

1. Hanford-Armona Road / Avenue 10 1/2
2. Hanford-Armona Road / Jordan Way
3. Hanford-Armona Road / Avenue 10
4. Orchard Avenue / Avenue 10 1/2 (Future Intersection)
5. Houston Avenue / Avenue 10 1/2

Queuing analysis is included in the proposed Scope of Work for the study intersection(s) listed above under all study scenarios. This analysis will be utilized to recommend minimum storage lengths for left-turn and right-turn lanes at all study intersections.

### ***Study Segments***

1. Avenue 10 1/2 between Hanford Armona Road and Orchard Avenue alignment
2. Avenue 10 1/2 between Orchard Avenue alignment and Houston Avenue

### ***Project Only Trip Assignment to State Facilities***

1. State Route 198 at Douty Street
2. State Route 198 at 10<sup>th</sup> Avenue

### ***Access to the Project***

Access to and from the Project site will be from four (4) access points. Three of these access points will connect directly to 10 1/2 Avenue, while the fourth will tie into existing local street Jordan Way. Jordan Way connects to Hanford Armona Road.



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Page | 2

### Project Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for the proposed Project with trip generation rates for 443 Single-Family Detached Housing units and a 4.9-acre public park. At buildout, the proposed Project is estimated to generate a maximum of 4,181 daily trips, 310 AM peak hour trips and 418 PM peak hour trips.

**Table I: Project Trip Generation**

| Land Use (ITE Code)                  | Size | Unit  | Daily |       | AM (7-9) Peak Hour |    |     |    |     |       | PM (4-6) Peak Hour |    |     |     |     |       |
|--------------------------------------|------|-------|-------|-------|--------------------|----|-----|----|-----|-------|--------------------|----|-----|-----|-----|-------|
|                                      |      |       | Rate  | Total | Trip Rate          | In | Out | In | Out | Total | Trip Rate          | In | Out | In  | Out | Total |
|                                      |      |       |       |       |                    |    |     |    |     |       |                    |    |     |     |     |       |
|                                      |      |       |       |       |                    | %  |     |    |     |       |                    | %  |     |     |     |       |
| Single-Family Detached Housing (210) | 443  | d.u.  | 9.43  | 4,177 | 0.70               | 26 | 74  | 80 | 230 | 310   | 0.94               | 63 | 37  | 262 | 155 | 417   |
| Public Park (411)                    | 4.9  | Acres | 0.78  | 4     | 0.02               | 59 | 41  | 0  | 0   | 0     | 0.11               | 55 | 54  | 1   | 0   | 1     |
| Total Project Trips                  |      |       |       | 4,181 |                    |    |     | 80 | 230 | 310   |                    |    |     | 263 | 155 | 418   |

Note: d.u. = Dwelling Units

### Near Term Projects to be Included

JLB will be consulting with City of Hanford Planning Department and Engineering staff to determine which Projects should be included in the Near Term plus Project analysis. JLB will include Near Term Projects in the vicinity of the proposed Project under the Near Term plus Project analysis for which the City, County or Caltrans has knowledge of and for which it is anticipated that said project(s) is/are projected to be whole or partially built by the Near-Term Project year 2025. City of Hanford, County of Kings and Caltrans, as appropriate, would provide JLB with Near Term Project details such as a project description, location, proposed land uses with breakdowns and type of residential units and amount of square footages for non-residential uses.

The Scope of Work is based on our understanding of this Project and our experience with similar TIAs. In the absence of comments by January 31, 2022 it will be assumed that the Scope of Work is acceptable to the agency(ies) that have not submitted any comments. If you have any questions or require additional information, please contact via email at [cayala@JLBtraffic.com](mailto:cayala@JLBtraffic.com).

Sincerely,

*Carlos Ayala*

Carlos Ayala-Magana, EIT  
Engineer I/II

cc: John Doyle, City of Hanford  
Dominic Tyburski, County of Kings  
David Padilla, Caltrans  
Jose Benavides, JLB Traffic Engineering, Inc.

Z:\01 Projects\047 Hanford\047-002 Lunaria TIA & VMT\Scope of Work\01 Draft Scope of Work\L01202022 Lunaria Project TIA Draft Scope of Work.docx



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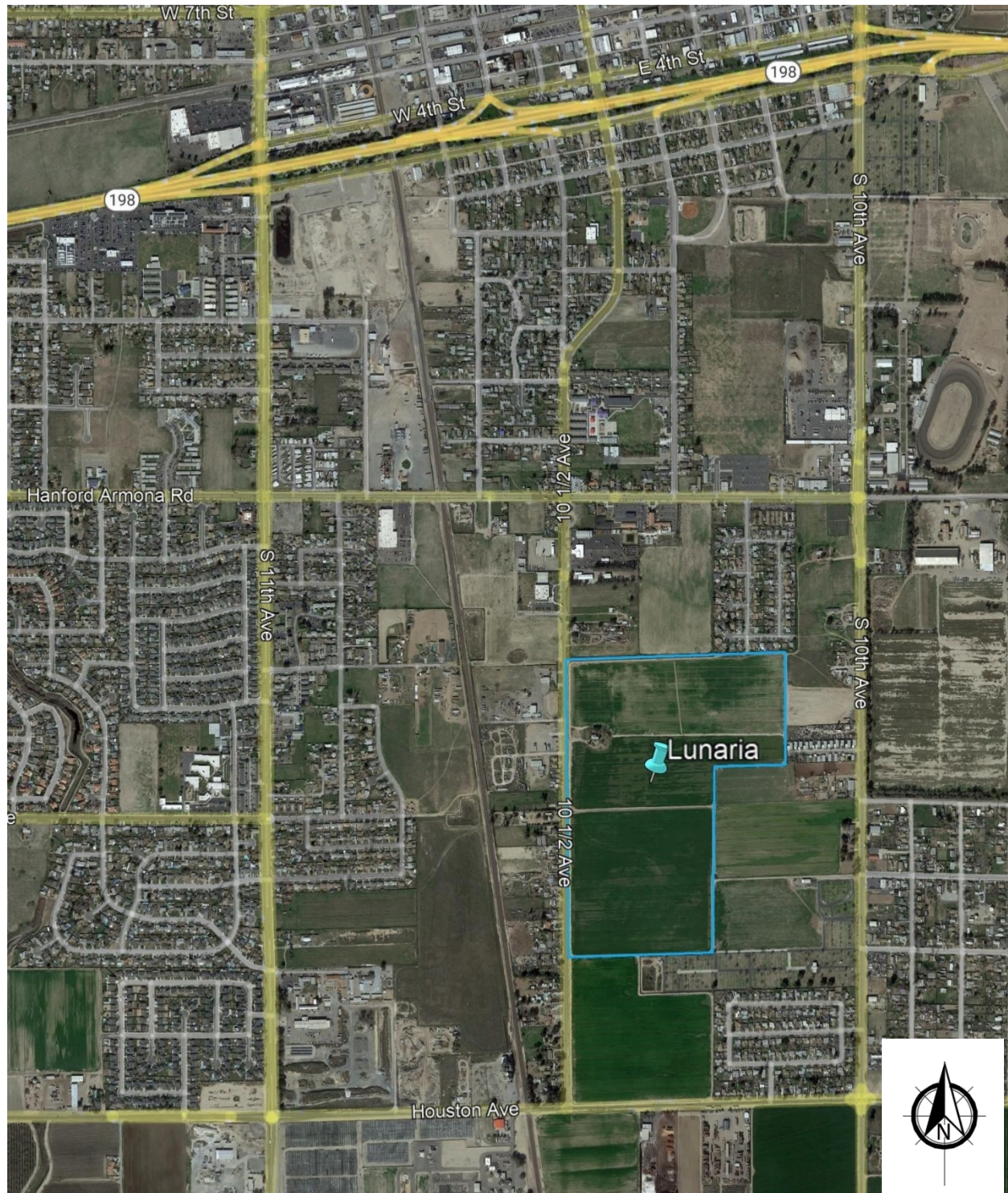
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Page | 3

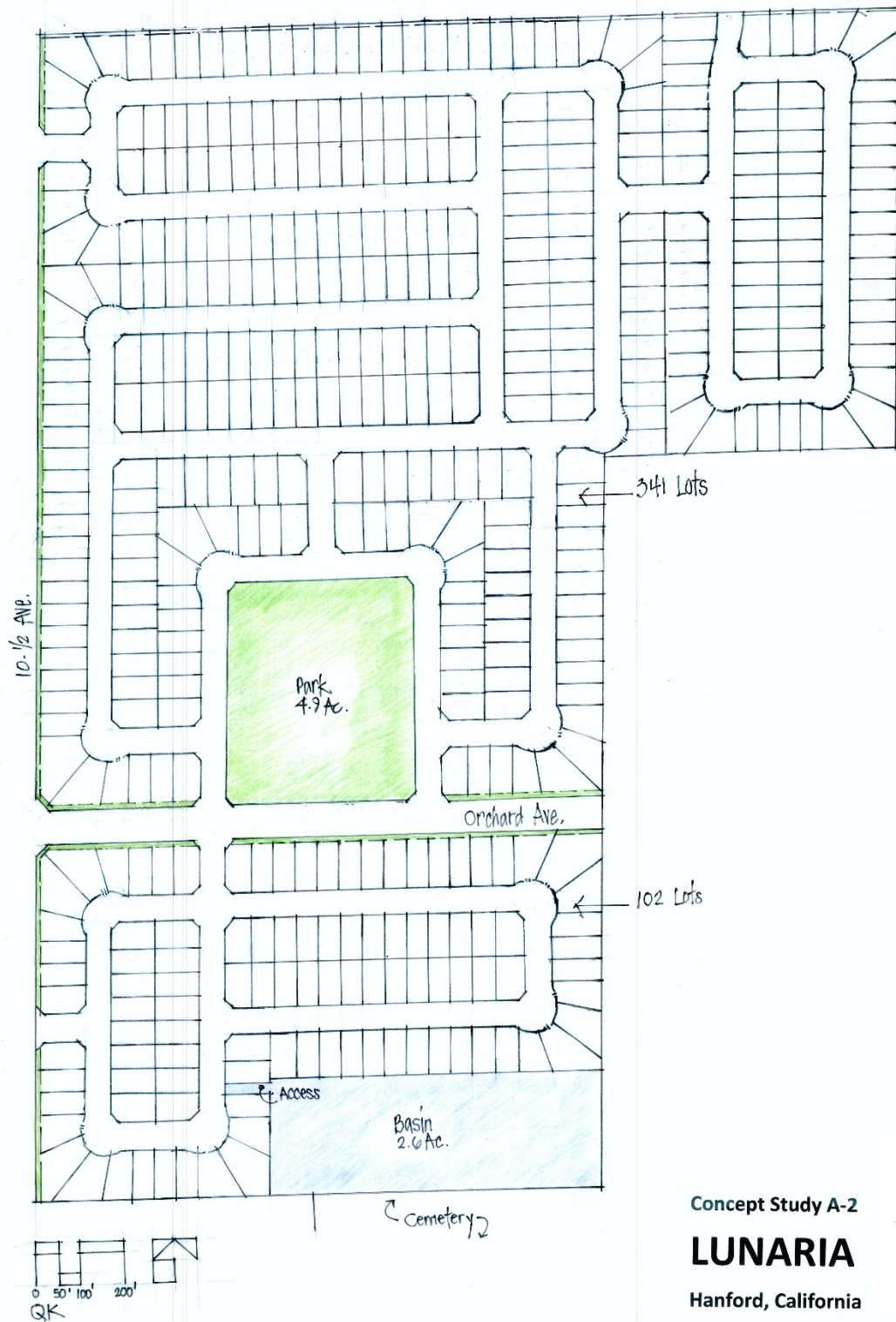


## Exhibit A – Project Vicinity





## Exhibit B – Project Site Plan



- JLB will evaluate on-site circulation and provide recommendations as necessary to improve circulation to and within the Project site.
- JLB will qualitatively analyze existing and planned transit routes in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned walkways in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned bikeways in the vicinity of the Project.
- JLB will prepare CA MUTCD Warrant 3 "Peak Hour" for unsignalized study intersections under all study scenarios.
- JLB will forecast trip distribution based on turn count information and knowledge of the existing and planned circulation network in the vicinity of the Project.
- JLB will evaluate existing and forecasted levels of service (LOS) at the study intersection(s). JLB will use HCM 6th or HCM 2000 methodologies (as appropriate) within Synchro to perform this analysis for the AM and PM peak hours. JLB will identify the causes of poor LOS.

### ***Study Scenarios***

1. Existing Traffic Conditions with needed improvements (if any);
2. Existing plus Project Buildout Traffic Conditions with proposed improvements (if any);
3. Near Term plus Project Buildout Traffic Conditions with proposed improvements (if any); and
4. Cumulative Year 2042 plus Project Buildout Traffic Conditions with proposed improvements (if any).

### ***Weekday peak hours to be analyzed (Tuesday or Thursday only)***

1. 7 - 9 AM peak hour
2. 4 - 6 PM peak hour

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2. Hanford-Armona Road / Jordan Way
3. Hanford-Armona Road / Avenue 10
4. Orchard Avenue / Avenue 10 1/2 (Future Intersection)
5. Houston Avenue / Avenue 10 1/2



Queuing analysis is included in the proposed Scope of Work for the study intersection(s) listed above under all study scenarios. This analysis will be utilized to recommend minimum storage lengths for left-turn and right-turn lanes at all study intersections.

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1. Avenue 10 1/2 between Hanford Armona Road and Orchard Avenue alignment
2. Avenue 10 1/2 between Orchard Avenue alignment and Houston Avenue



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2. State Route 198 at 10<sup>th</sup> Avenue

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Page | 2

## Carlos Ayala

---

**From:** Jose Benavides  
**Sent:** Thursday, February 3, 2022 4:44 PM  
**To:** Kinney, Chuck; Tyburski, Dominic  
**Cc:** Carlos Ayala  
**Subject:** RE: Lunaria Hanford TIA: Scope of Work

Thanks Chuck for the very quick response.

We will include your comments to the TIA scope of work within the appendix of the TIA. I believe that your reply to me will suffice, but feel free to provide your comments directly to the City of Hanford if that is the County's protocol.

Once the TIA and VMT reports have been completed, we will be sending these to you and Dominic in PDF format for your review and comment. We will also be providing the TIA and VMT reports to the City and Caltrans.

Sincerely,

Jose Luis Benavides, P.E., T.E.  
President



*Traffic Engineering, Transportation Planning and Parking Solutions*  
**Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)**

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Fresno, CA 93704  
Direct: (559) 317-6249  
Main: (559) 570-8991  
Cell: (559) 694-6000  
Fax: (559) 317-6854  
[www.JLBtraffic.com](http://www.JLBtraffic.com)

---

**From:** Kinney, Chuck <Chuck.Kinney@co.kings.ca.us>  
**Sent:** Thursday, February 3, 2022 4:21 PM  
**To:** Tyburski, Dominic <Dominic.Tyburski@co.kings.ca.us>  
**Cc:** Jose Benavides <jbenavides@jlbtraffic.com>  
**Subject:** RE: Lunaria Hanford TIA: Scope of Work

Hi Dominic and Jose,

Based upon the project scope, in addition to the LOS study intersections proposed it would probably also be a good idea to study the following intersections:

- a. 10 Ave. and Houston Ave. (included as a City of Hanford addition in the email below)
- b. 11<sup>th</sup> Ave. and Houston Ave.

I also concur with the City of Hanford on analyzing the segment of Houston Avenue from 10<sup>th</sup> Avenue to 11<sup>th</sup> Avenue. With the addition of the 443 new homes it is likely to generate significant new traffic along Houston Avenue as it is an arterial street which can connect that new area to the 12<sup>th</sup> Avenue shopping centers (Walmart/Target) and it would be prudent to calculate the impact on those intersections and roadways so that recommendations can be developed offsetting any negative impacts to LOS.

Jose, would you confirm if I need to send this information to Mary Beatie (acting Community Development Director for Hanford) since Gabrielle is on her extended leave or am I good just submitting this information to you? Thank you for your assistance on this.

Sincerely,  
Chuck K.

Chuck Kinney, Director  
Kings County Community Development Agency  
1400 W. Lacey Blvd.  
Hanford, CA 93230  
559-852-2674

---

**From:** Tyburski, Dominic <[Dominic.Tyburski@co.kings.ca.us](mailto:Dominic.Tyburski@co.kings.ca.us)>  
**Sent:** Thursday, February 3, 2022 3:37 PM  
**To:** Kinney, Chuck <[Chuck.Kinney@co.kings.ca.us](mailto:Chuck.Kinney@co.kings.ca.us)>  
**Cc:** 'Jose Benavides' <[jbenavides@jlbtraffic.com](mailto:jbenavides@jlbtraffic.com)>  
**Subject:** FW: Lunaria Hanford TIA: Scope of Work

Hi Chuck,

Does CDA have any comments on the attached TIA scope of work? Thank you.

**Dominic Tyburski, P.E.**  
**Director | Public Works**

County of Kings | Public Works Department  
1400 W. Lacey Blvd. | Hanford, CA 93230

Direct 559-852-2698 | Fax 559-582-2506  
[Dominic.Tyburski@co.kings.ca.us](mailto:Dominic.Tyburski@co.kings.ca.us) | [www.countyofkings.com](http://www.countyofkings.com)



---

**From:** Jose Benavides <[jbenavides@jlbtraffic.com](mailto:jbenavides@jlbtraffic.com)>  
**Sent:** Thursday, February 3, 2022 3:27 PM  
**To:** Tyburski, Dominic <[Dominic.Tyburski@co.kings.ca.us](mailto:Dominic.Tyburski@co.kings.ca.us)>  
**Cc:** Carlos Ayala <[cayala@jlbtraffic.com](mailto:cayala@jlbtraffic.com)>  
**Subject:** FW: Lunaria Hanford TIA: Scope of Work

Good afternoon Dominic,

Sorry that I missed your call this afternoon.

Anyway, attached you will find the proposed scope of work for the preparation of a TIA in the City of Hanford. Furthermore, the City of Hanford has recently requested that we also include in the TIA analysis the following study segments and intersections.

Segment LOS:

- Hanford Armona Road between 11th Avenue and 10 ½ Avenue
- Hanford Armona Road between 10 1/2 Avenue and 10<sup>th</sup> Avenue
- Houston Avenue between 11th Avenue and 10 ½ Avenue
- Houston Avenue between 10 1/2 Avenue and 10th Avenue

Intersection LOS:

- Houston Avenue and 10<sup>th</sup> Avenue

Can you please share this with Chuck or provide me with his email so that we can send this to him so that we may get comments if any from the County?

Sincerely,

Jose Luis Benavides, P.E., T.E.  
President



*Traffic Engineering, Transportation Planning and Parking Solutions*  
**Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)**

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
Direct: (559) 317-6249  
Main: (559) 570-8991  
Cell: (559) 694-6000  
Fax: (559) 317-6854  
[www.JLBtraffic.com](http://www.JLBtraffic.com)

---

**From:** Carlos Ayala <[cayala@jlbtraffic.com](mailto:cayala@jlbtraffic.com)>  
**Sent:** Thursday, February 3, 2022 9:37 AM  
**To:** Jose Benavides <[jbenavides@jlbtraffic.com](mailto:jbenavides@jlbtraffic.com)>  
**Subject:** FW: Lunaria Hanford TIA: Scope of Work

Initial Lunaria SOW email.

Thank you,

Carlos Ayala-Magana  
Engineer I/II



*Traffic Engineering, Transportation Planning and Parking Solutions*  
**Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)**

516 W. Shaw Ave., Ste. 103  
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Direct: (559) 869-4514  
Fax: (559) 317-6854  
[www.JLBtraffic.com](http://www.JLBtraffic.com)

---

**From:** Carlos Ayala  
**Sent:** Thursday, January 20, 2022 10:44 AM  
**To:** Gabrielle de Silva Myers ([gmyers@cityofhanfordca.com](mailto:gmyers@cityofhanfordca.com)) <[gmyers@cityofhanfordca.com](mailto:gmyers@cityofhanfordca.com)>  
**Cc:** John Doyel ([JDoyel@cityofhanfordca.com](mailto:JDoyel@cityofhanfordca.com)) <[JDoyel@cityofhanfordca.com](mailto:JDoyel@cityofhanfordca.com)>; Dominic Tyburski ([dominic.tyburski@co.kings.ca.us](mailto:dominic.tyburski@co.kings.ca.us)) <[dominic.tyburski@co.kings.ca.us](mailto:dominic.tyburski@co.kings.ca.us)>; David Padilla ([dave.padilla@dot.ca.gov](mailto:dave.padilla@dot.ca.gov)) <[dave.padilla@dot.ca.gov](mailto:dave.padilla@dot.ca.gov)>; Jose Benavides <[jbenavides@jlbtraffic.com](mailto:jbenavides@jlbtraffic.com)>  
**Subject:** Lunaria Hanford TIA: Scope of Work

Hello Gabrielle,

Attached you will find a Draft Scope of Work for the preparation of a Traffic Impact Analysis for a Project in the City of Hanford/County of Kings.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by January 31, 2022, it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact me by phone at 559.869.4514 or by e-mail at [cayala@JLBtraffic.com](mailto:cayala@JLBtraffic.com). We appreciate your time and attention to this matter and look forward to hearing from you soon.

Thank you,

Carlos Ayala-Magana  
Engineer I/II



*Traffic Engineering, Transportation Planning and Parking Solutions*  
**Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)**

516 W. Shaw Ave., Ste. 103

## Carlos Ayala

---

**From:** Xiong, Christopher@DOT <Christopher.Xiong@dot.ca.gov>  
**Sent:** Thursday, February 3, 2022 2:42 PM  
**To:** Carlos Ayala  
**Cc:** Padilla, Dave@DOT; gmyers@cityofhanfordca.com; JDoyel@cityofhanfordca.com; dominic.tyburski@co.kings.ca.us; Jose Benavides  
**Subject:** RE: Lunaria Hanford TIA: Scope of Work  
**Attachments:** KIN-198-R18.373\_Proposed Scope of Work for Traffic Impact Analysis - Lunaria Project\_revised\_response.pdf

Hello Carlos,

Attached is our revised comment letter regarding the proposed scope of work, which supersedes our previous letter.

Please let me know if you have any questions.

Best regards,

**Christopher Xiong**  
Associate Transportation Planner  
Caltrans District 6  
1352 W. Olive Avenue  
Fresno, CA 93728  
[Christopher.Xiong@dot.ca.gov](mailto:Christopher.Xiong@dot.ca.gov)  
(559) 908-7064

---

**From:** Xiong, Christopher@DOT  
**Sent:** Friday, January 28, 2022 3:58 PM  
**To:** cayala@jlbtraffic.com  
**Cc:** Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; gmyers@cityofhanfordca.com; JDoyel@cityofhanfordca.com; dominic.tyburski@co.kings.ca.us; jbenavides@jlbtraffic.com  
**Subject:** RE: Lunaria Hanford TIA: Scope of Work

Hello Carlos,

Attached are our comments regarding the proposed Scope of Work and project.

Please let me know if you have any questions.

Best regards,

**Christopher Xiong**  
Associate Transportation Planner  
Caltrans District 6  
1352 W. Olive Avenue  
Fresno, CA 93728  
[Christopher.Xiong@dot.ca.gov](mailto:Christopher.Xiong@dot.ca.gov)  
(559) 908-7064



---

**From:** Carlos Ayala <[cayala@jlbtraffic.com](mailto:cayala@jlbtraffic.com)>  
**Sent:** Thursday, January 20, 2022 10:44 AM  
**To:** Gabrielle de Silva Myers ([gmyers@cityofhanfordca.com](mailto:gmyers@cityofhanfordca.com)) <[gmyers@cityofhanfordca.com](mailto:gmyers@cityofhanfordca.com)>  
**Cc:** John Doyel ([JDoyel@cityofhanfordca.com](mailto:JDoyel@cityofhanfordca.com)) <[JDoyel@cityofhanfordca.com](mailto:JDoyel@cityofhanfordca.com)>; Dominic Tyburski ([dominic.tyburski@co.kings.ca.us](mailto:dominic.tyburski@co.kings.ca.us)) <[dominic.tyburski@co.kings.ca.us](mailto:dominic.tyburski@co.kings.ca.us)>; Padilla, Dave@DOT <[dave.padilla@dot.ca.gov](mailto:dave.padilla@dot.ca.gov)>; Jose Benavides <[jbenavides@jlbtraffic.com](mailto:jbenavides@jlbtraffic.com)>  
**Subject:** Lunaria Hanford TIA: Scope of Work

**EXTERNAL EMAIL.** Links/attachments may not be safe.

Hello Gabrielle,

Attached you will find a Draft Scope of Work for the preparation of a Traffic Impact Analysis for a Project in the City of Hanford/County of Kings.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by January 31, 2022, it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact me by phone at 559.869.4514 or by e-mail at [cayala@JLBtraffic.com](mailto:cayala@JLBtraffic.com). We appreciate your time and attention to this matter and look forward to hearing from you soon.

Thank you,

Carlos Ayala-Magana  
Engineer I/II



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## California Department of Transportation

### DISTRICT 6 OFFICE

1352 WEST OLIVE AVENUE | P.O. BOX 12616 | FRESNO, CA 93778-2616  
(559) 981-1041 | FAX (559) 488-4195 | TTY 711

[www.dot.ca.gov](http://www.dot.ca.gov)



February 3, 2022

KIN-198-R18.373

Lunaria Project

Proposed Scope of Work for Traffic Impact Analysis

Revised

<https://ld-igr-gts.dot.ca.gov/district/6/report/25306>

### **SENT VIA EMAIL**

Carlos Ayala-Magana,  
JLB Traffic Engineering, Inc.  
516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704

Dear Mr. Ayala-Magana,

This comment letter supersedes our previous letter dated January 28, 2022 for the Proposed Scope of Work for the Preparations of a Traffic Impact Analysis (TIA) and Vehicle Miles Traveled (VMT) Analysis for the Lunaria Project, proposing to develop 443 single-family residential units and a 4.9-acre public park. The project site is located at the southeast quadrant of Hanford-Armona Road and 10-1/2 Avenue in the City of Hanford, approximately one mile south of the State Route (SR) 198 / Douty Street ramps, southwest of the SR 198 / 10th Avenue ramps, and southeast of the SR 198 / 11th Avenue ramps.

### **General Comments**

The submitted Scope of Work (SOW) for the Preparation of a Traffic Impact Analysis and VMT Analysis proposes to study (including queuing analysis) for the following 5 intersections:

1. Hanford-Armona Road / Avenue 10 1/2
2. Hanford-Armona Road / Jordan Way
3. Hanford-Armona Road / Avenue 10
4. Orchard Avenue / Avenue 10 1/2 (Future Intersection)
5. Houston Avenue / Avenue 10 1/2

While the proposed SOW is satisfactory, Caltrans recommends a queuing analysis for the following facilities be included in the study:

1. SR 198 / Avenue 10 – Westbound off-ramp
2. SR 198 / Douty Street (on 3rd Street) – Eastbound off-ramp

This is due to the potential project trips from the 443 single-family residential units and public park that would utilize the State facilities, which were not designed as high capacity ramps. In addition, please include a trip trace to the following locations:

1. SR 198 / Avenue 11 – Westbound on-ramp
2. SR 198 / Avenue 10 (on 3rd Street) – Eastbound on-ramp

Caltrans provides the following additional comments to better support the State's smart mobility goals that support a vibrant economy and sustainable communities:

1. Caltrans recommends the project proponents(s) consider working with the City to convert a portion of the units to affordable housing units.
2. Caltrans concurs with the project proponent(s) conducting a vehicle miles traveled (VMT) study. The preparer should refer to the Caltrans *Vehicle Miles Traveled Transportation Impact Study Guide*, dated May 20, 2020. Improvements for existing/future bike and pedestrian facilities on roads in the vicinity of the Project and connectivity between home to work/home to shops should be considered and included in the VMT mitigation plan.
3. Caltrans recommends the City consider creating a VMT Mitigation Impact Fee to help reduce impacts on the State Highway System.
4. According to the City of Hanford's Pedestrian and Bicycle Master Plan (2016), 10-1/2 Avenue is proposed as Class III bike lane as part of the 2016 Initial Stage Bikeway Plan (see page 3-22) and as a Class II bike lane in the 2035 Bikeway Plan (see page 3-23). Therefore, Caltrans recommends the project proponent(s) coordinate with the City regarding these alternative transportation measures.

February 3, 2022

Page 3

5. Active Transportation Plans and Smart Growth efforts support the state's 2050 Climate goals. Caltrans supports reducing VMT and GHG emissions in ways that increase the likelihood people will use and benefit from a multimodal transportation network.

If you have any other questions, please call or email Christopher Xiong at (559) 908-7064 or [Christopher.Xiong@dot.ca.gov](mailto:Christopher.Xiong@dot.ca.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read 'David Padilla', with a stylized flourish extending to the right.

DAVID PADILLA, Branch Chief  
Transportation Planning – North

Appendix B: Traffic Counts



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION 3rd St @ Douty St

LATITUDE 36.3225

COUNTY Kings

LONGITUDE -119.6447

COLLECTION DATE Tuesday, March 1, 2022

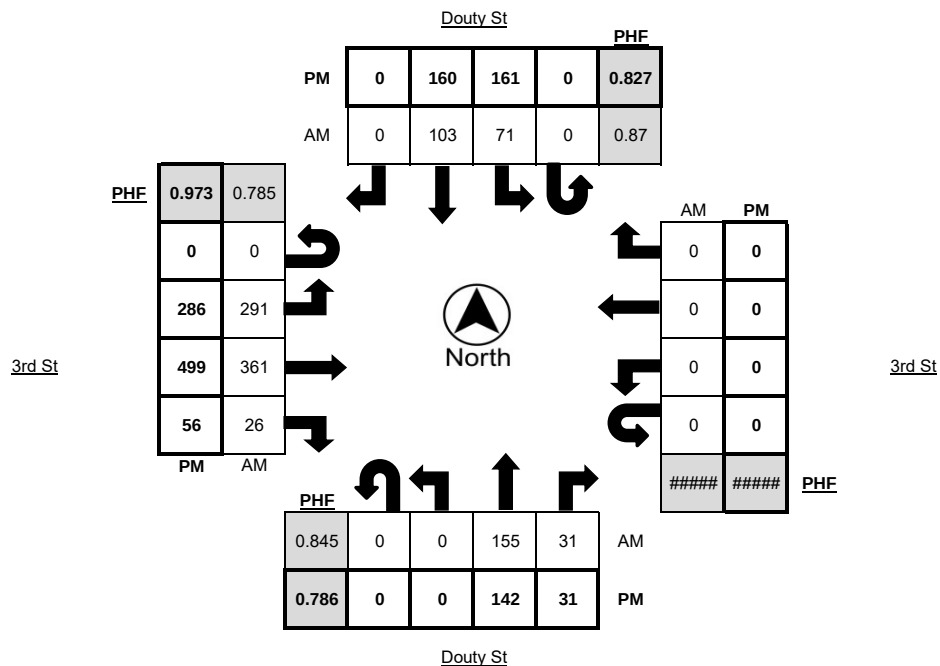
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 0    | 15   | 2     | 0      | 0          | 12   | 5    | 0     | 1      | 0         | 30   | 60   | 3     | 11     | 0         | 0    | 0    | 0     | 0      |
| 7:15 AM - 7:30 AM | 0          | 0    | 22   | 6     | 3      | 0          | 10   | 9    | 0     | 0      | 0         | 41   | 67   | 5     | 5      | 0         | 0    | 0    | 0     | 0      |
| 7:30 AM - 7:45 AM | 0          | 0    | 34   | 7     | 1      | 0          | 17   | 15   | 0     | 2      | 0         | 48   | 91   | 3     | 2      | 0         | 0    | 0    | 0     | 0      |
| 7:45 AM - 8:00 AM | 0          | 0    | 43   | 12    | 2      | 0          | 19   | 29   | 0     | 0      | 0         | 103  | 104  | 9     | 11     | 0         | 0    | 0    | 0     | 0      |
| 8:00 AM - 8:15 AM | 0          | 0    | 41   | 7     | 2      | 0          | 16   | 34   | 0     | 3      | 0         | 75   | 87   | 6     | 4      | 0         | 0    | 0    | 0     | 0      |
| 8:15 AM - 8:30 AM | 0          | 0    | 37   | 5     | 2      | 0          | 19   | 25   | 0     | 3      | 0         | 65   | 79   | 8     | 5      | 0         | 0    | 0    | 0     | 0      |
| 8:30 AM - 8:45 AM | 0          | 0    | 30   | 8     | 1      | 0          | 13   | 24   | 0     | 2      | 0         | 59   | 70   | 6     | 17     | 0         | 0    | 0    | 0     | 0      |
| 8:45 AM - 9:00 AM | 0          | 0    | 42   | 3     | 2      | 0          | 16   | 10   | 0     | 1      | 0         | 66   | 67   | 7     | 4      | 0         | 0    | 0    | 0     | 0      |
| TOTAL             | 0          | 0    | 264  | 50    | 13     | 0          | 122  | 151  | 0     | 12     | 0         | 487  | 625  | 47    | 59     | 0         | 0    | 0    | 0     | 0      |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 0    | 33   | 7     | 0      | 0          | 38   | 33   | 0     | 2      | 0         | 81   | 126  | 12    | 9      | 0         | 0    | 0    | 0     | 0      |
| 4:15 PM - 4:30 PM | 0          | 0    | 36   | 5     | 3      | 0          | 32   | 33   | 0     | 1      | 0         | 76   | 121  | 14    | 5      | 0         | 0    | 0    | 0     | 0      |
| 4:30 PM - 4:45 PM | 0          | 0    | 31   | 8     | 0      | 0          | 47   | 36   | 0     | 1      | 0         | 72   | 128  | 11    | 4      | 0         | 0    | 0    | 0     | 0      |
| 4:45 PM - 5:00 PM | 0          | 0    | 45   | 10    | 1      | 0          | 28   | 48   | 0     | 0      | 0         | 75   | 118  | 10    | 2      | 0         | 0    | 0    | 0     | 0      |
| 5:00 PM - 5:15 PM | 0          | 0    | 30   | 8     | 0      | 0          | 54   | 43   | 0     | 3      | 0         | 63   | 132  | 21    | 3      | 0         | 0    | 0    | 0     | 0      |
| 5:15 PM - 5:30 PM | 0          | 0    | 39   | 5     | 1      | 0          | 31   | 34   | 0     | 0      | 0         | 60   | 129  | 19    | 3      | 0         | 0    | 0    | 0     | 0      |
| 5:30 PM - 5:45 PM | 0          | 0    | 28   | 5     | 0      | 0          | 26   | 22   | 0     | 2      | 0         | 69   | 113  | 14    | 6      | 0         | 0    | 0    | 0     | 0      |
| 5:45 PM - 6:00 PM | 0          | 0    | 35   | 3     | 1      | 0          | 29   | 32   | 0     | 0      | 0         | 58   | 95   | 10    | 0      | 0         | 0    | 0    | 0     | 0      |
| TOTAL             | 0          | 0    | 277  | 51    | 6      | 0          | 285  | 281  | 0     | 9      | 0         | 554  | 962  | 111   | 32     | 0         | 0    | 0    | 0     | 0      |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 0    | 155  | 31    | 7      | 0          | 71   | 103  | 0     | 8      | 0         | 291  | 361  | 26    | 22     | 0         | 0    | 0    | 0     | 0      |
| 4:15 PM - 5:15 PM | 0          | 0    | 142  | 31    | 4      | 0          | 161  | 160  | 0     | 5      | 0         | 286  | 499  | 56    | 14     | 0         | 0    | 0    | 0     | 0      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.813 | 3.6%   |
| PM | 0.951 | 1.7%   |





**Metro Traffic Data Inc.**  
 310 N. Irwin Street - Suite 20  
 Hanford, CA 93230  
 800-975-6938 Phone/Fax  
 www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

**JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** 3rd St @ Douty St

**LATITUDE** 36.3225

**COUNTY** Kings

**LONGITUDE** -119.6447

**COLLECTION DATE** Tuesday, March 1, 2022

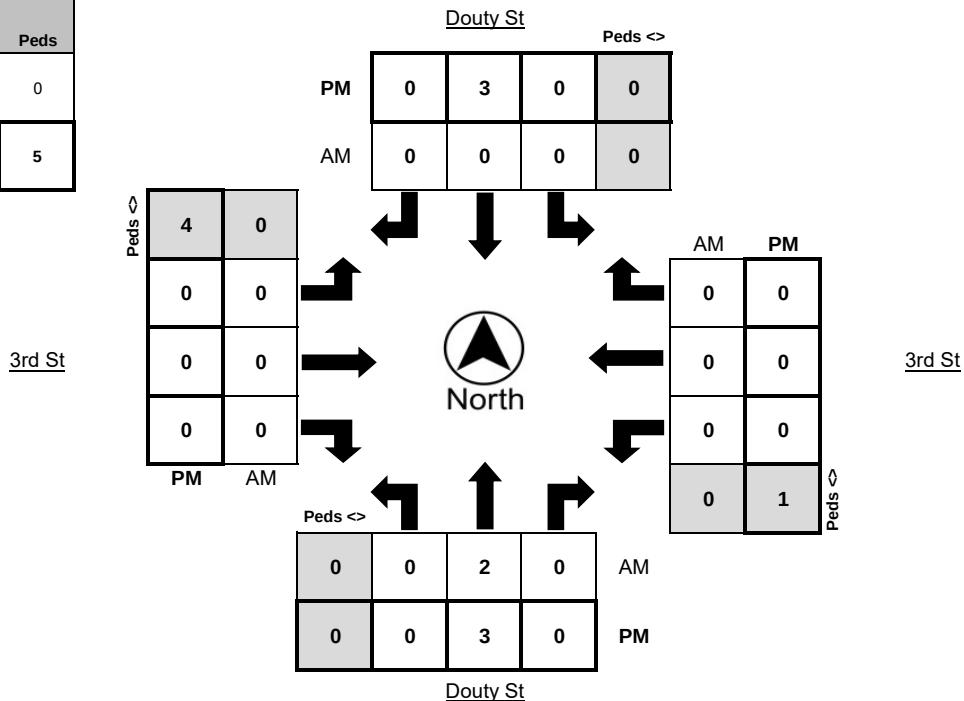
**WEATHER** Clear

| Time              | Northbound Bikes |          |          | N.Leg<br>Peds | Southbound Bikes |          |          | S.Leg<br>Peds | Eastbound Bikes |          |          | E.Leg<br>Peds | Westbound Bikes |          |          | W.Leg<br>Peds |
|-------------------|------------------|----------|----------|---------------|------------------|----------|----------|---------------|-----------------|----------|----------|---------------|-----------------|----------|----------|---------------|
|                   | Left             | Thru     | Right    |               | Left             | Thru     | Right    |               | Left            | Thru     | Right    |               | Left            | Thru     | Right    |               |
| 7:00 AM - 7:15 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 7:15 AM - 7:30 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 7:30 AM - 7:45 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 7:45 AM - 8:00 AM | 0                | 1        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:00 AM - 8:15 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:15 AM - 8:30 AM | 0                | 1        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:30 AM - 8:45 AM | 0                | 0        | 0        | 0             | 0                | 0        | 1        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:45 AM - 9:00 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 2             |
| <b>TOTAL</b>      | <b>0</b>         | <b>2</b> | <b>0</b> | <b>0</b>      | <b>0</b>         | <b>0</b> | <b>1</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>2</b>      |

| Time              | Northbound Bikes |          |          | N.Leg<br>Peds | Southbound Bikes |           |          | S.Leg<br>Peds | Eastbound Bikes |          |          | E.Leg<br>Peds | Westbound Bikes |          |          | W.Leg<br>Peds |
|-------------------|------------------|----------|----------|---------------|------------------|-----------|----------|---------------|-----------------|----------|----------|---------------|-----------------|----------|----------|---------------|
|                   | Left             | Thru     | Right    |               | Left             | Thru      | Right    |               | Left            | Thru     | Right    |               | Left            | Thru     | Right    |               |
| 4:00 PM - 4:15 PM | 0                | 0        | 0        | 0             | 0                | 0         | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 4:15 PM - 4:30 PM | 0                | 2        | 0        | 0             | 0                | 0         | 0        | 0             | 0               | 0        | 0        | 1             | 0               | 0        | 0        | 0             |
| 4:30 PM - 4:45 PM | 0                | 0        | 0        | 0             | 0                | 0         | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 4:45 PM - 5:00 PM | 0                | 0        | 0        | 0             | 0                | 3         | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 4             |
| 5:00 PM - 5:15 PM | 0                | 1        | 0        | 0             | 0                | 0         | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:15 PM - 5:30 PM | 0                | 1        | 0        | 0             | 0                | 2         | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:30 PM - 5:45 PM | 0                | 1        | 0        | 0             | 0                | 4         | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:45 PM - 6:00 PM | 0                | 0        | 0        | 0             | 0                | 1         | 0        | 0             | 0               | 0        | 0        | 1             | 0               | 0        | 0        | 0             |
| <b>TOTAL</b>      | <b>0</b>         | <b>5</b> | <b>0</b> | <b>0</b>      | <b>0</b>         | <b>10</b> | <b>0</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>2</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>4</b>      |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 7:30 AM - 8:30 AM | 0                | 2    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 4:15 PM - 5:15 PM | 0                | 3    | 0     | 0             | 0                | 3    | 0     | 0             | 0               | 0    | 0     | 1             | 0               | 0    | 0     | 4             |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 2     | 0    |
| PM Peak Total | 6     | 5    |





**Metro Traffic Data Inc.**  
 310 N. Irwin Street - Suite 20  
 Hanford, CA 93230  
 800-975-6938 Phone/Fax  
 www.metrotrafficdata.com

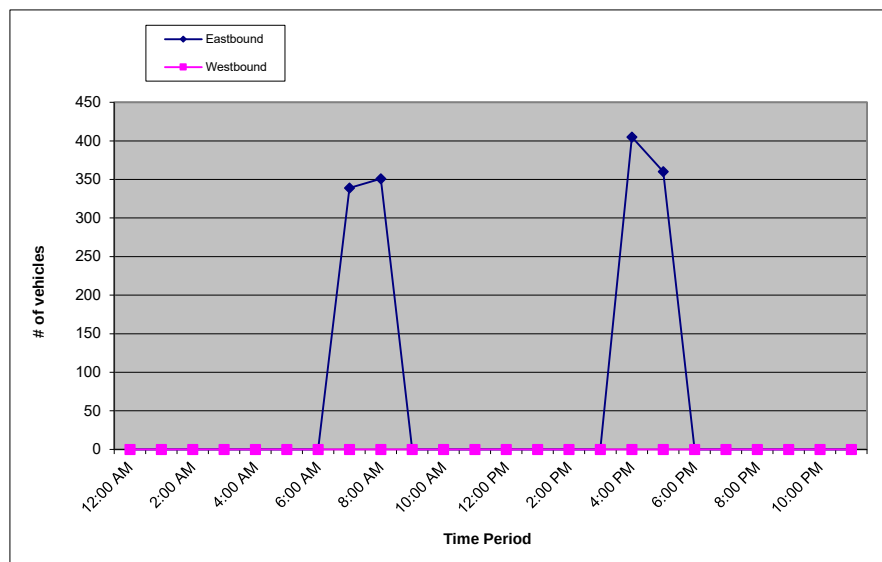
# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** SR 198 EB Off-ramp @ Douty St **LATITUDE** 36.3221936  
**COUNTY** Kings **LONGITUDE** -119.6463439  
**COLLECTION DATE** Thursday, March 3, 2022 **WEATHER** Clear  
**NUMBER OF LANES** 1

|          | Eastbound |     |     |     |       | Westbound |     |     |     |       | Hourly |
|----------|-----------|-----|-----|-----|-------|-----------|-----|-----|-----|-------|--------|
| Hour     | 1st       | 2nd | 3rd | 4th | Total | 1st       | 2nd | 3rd | 4th | Total | Totals |
| 12:00 AM | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 1:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 2:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 3:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 4:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 5:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 6:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 7:00 AM  | 37        | 72  | 82  | 148 | 339   | 0         | 0   | 0   | 0   | 0     | 339    |
| 8:00 AM  | 112       | 100 | 79  | 60  | 351   | 0         | 0   | 0   | 0   | 0     | 351    |
| 9:00 AM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 10:00 AM | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 11:00 AM | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 12:00 PM | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 1:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 2:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 3:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 4:00 PM  | 104       | 105 | 87  | 109 | 405   | 0         | 0   | 0   | 0   | 0     | 405    |
| 5:00 PM  | 91        | 92  | 83  | 94  | 360   | 0         | 0   | 0   | 0   | 0     | 360    |
| 6:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 7:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 8:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 9:00 PM  | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 10:00 PM | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| 11:00 PM | 0         | 0   | 0   | 0   | 0     | 0         | 0   | 0   | 0   | 0     | 0      |
| Total    | 100.0%    |     |     |     | 1455  | 0.0%      |     |     |     | 0     |        |
|          | 1455      |     |     |     |       |           |     |     |     |       |        |

AM% 47.4% AM Peak 442 7:30 am to 8:30 am AM P.H.F. 0.75  
 PM% 52.6% PM Peak 405 4:00 pm to 5:00 pm PM P.H.F. 0.93







Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION 4th St / SR 198 WB Off-ramp @ 10th Ave

LATITUDE 36.3248

COUNTY Kings

LONGITUDE -119.6370

COLLECTION DATE Tuesday, March 1, 2022

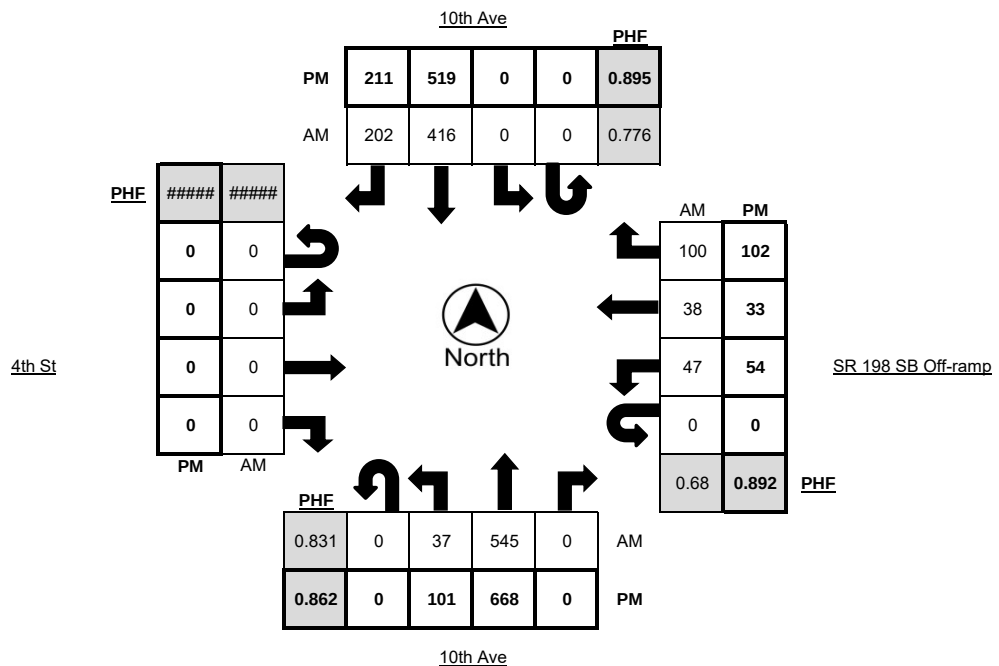
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 6    | 78   | 0     | 6      | 0          | 0    | 0    | 68    | 40     | 2         | 0    | 0    | 0     | 0      | 0         | 12   | 5    | 19    | 4      |
| 7:15 AM - 7:30 AM | 0          | 12   | 82   | 0     | 3      | 0          | 0    | 0    | 80    | 48     | 4         | 0    | 0    | 0     | 0      | 0         | 8    | 3    | 32    | 1      |
| 7:30 AM - 7:45 AM | 0          | 11   | 103  | 0     | 2      | 0          | 0    | 0    | 91    | 49     | 1         | 0    | 0    | 0     | 0      | 0         | 10   | 3    | 18    | 0      |
| 7:45 AM - 8:00 AM | 0          | 10   | 150  | 0     | 4      | 0          | 0    | 0    | 137   | 62     | 5         | 0    | 0    | 0     | 0      | 0         | 15   | 14   | 39    | 2      |
| 8:00 AM - 8:15 AM | 0          | 13   | 162  | 0     | 5      | 0          | 0    | 0    | 102   | 56     | 7         | 0    | 0    | 0     | 0      | 0         | 13   | 14   | 14    | 2      |
| 8:15 AM - 8:30 AM | 0          | 3    | 130  | 0     | 6      | 0          | 0    | 0    | 86    | 35     | 14        | 0    | 0    | 0     | 0      | 0         | 9    | 7    | 29    | 1      |
| 8:30 AM - 8:45 AM | 0          | 9    | 57   | 0     | 3      | 0          | 0    | 0    | 83    | 41     | 6         | 0    | 0    | 0     | 0      | 0         | 9    | 6    | 22    | 3      |
| 8:45 AM - 9:00 AM | 0          | 9    | 82   | 0     | 7      | 0          | 0    | 0    | 69    | 32     | 8         | 0    | 0    | 0     | 0      | 0         | 4    | 5    | 26    | 2      |
| TOTAL             | 0          | 73   | 844  | 0     | 36     | 0          | 0    | 0    | 716   | 363    | 47        | 0    | 0    | 0     | 0      | 0         | 80   | 57   | 199   | 15     |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 13   | 165  | 0     | 4      | 0          | 0    | 0    | 135   | 69     | 3         | 0    | 0    | 0     | 0      | 0         | 15   | 7    | 25    | 3      |
| 4:15 PM - 4:30 PM | 0          | 39   | 172  | 0     | 6      | 0          | 0    | 0    | 132   | 49     | 8         | 0    | 0    | 0     | 0      | 0         | 11   | 11   | 31    | 3      |
| 4:30 PM - 4:45 PM | 0          | 33   | 190  | 0     | 7      | 0          | 0    | 0    | 145   | 52     | 2         | 0    | 0    | 0     | 0      | 0         | 14   | 10   | 23    | 5      |
| 4:45 PM - 5:00 PM | 0          | 16   | 141  | 0     | 5      | 0          | 0    | 0    | 107   | 41     | 1         | 0    | 0    | 0     | 0      | 0         | 14   | 5    | 23    | 2      |
| 5:00 PM - 5:15 PM | 0          | 26   | 158  | 0     | 3      | 0          | 0    | 0    | 132   | 42     | 3         | 0    | 0    | 0     | 0      | 0         | 17   | 4    | 24    | 1      |
| 5:15 PM - 5:30 PM | 0          | 16   | 111  | 0     | 4      | 0          | 0    | 0    | 111   | 41     | 2         | 0    | 0    | 0     | 0      | 0         | 10   | 9    | 27    | 1      |
| 5:30 PM - 5:45 PM | 0          | 8    | 110  | 0     | 1      | 0          | 0    | 0    | 86    | 55     | 7         | 0    | 0    | 0     | 0      | 0         | 16   | 3    | 28    | 2      |
| 5:45 PM - 6:00 PM | 0          | 9    | 96   | 0     | 0      | 0          | 0    | 0    | 91    | 46     | 4         | 0    | 0    | 0     | 0      | 0         | 14   | 6    | 17    | 0      |
| TOTAL             | 0          | 160  | 1143 | 0     | 30     | 0          | 0    | 0    | 939   | 395    | 30        | 0    | 0    | 0     | 0      | 0         | 111  | 55   | 198   | 17     |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 37   | 545  | 0     | 17     | 0          | 0    | 416  | 202   | 27     | 0         | 0    | 0    | 0     | 0      | 0         | 47   | 38   | 100   | 5      |
| 4:00 PM - 5:00 PM | 0          | 101  | 668  | 0     | 22     | 0          | 0    | 519  | 211   | 14     | 0         | 0    | 0    | 0     | 0      | 0         | 54   | 33   | 102   | 13     |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.811 | 3.5%   |
| PM | 0.904 | 2.9%   |



# Turning Movement Report

Prepared For:

**JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

**LOCATION** 4th St / SR 198 WB Off-ramp @ 10th Ave

LATITUDE 36.3248

COUNTY Kings

**LONGITUDE** -119.6370

**COLLECTION DATE** Tuesday, March 1, 2022

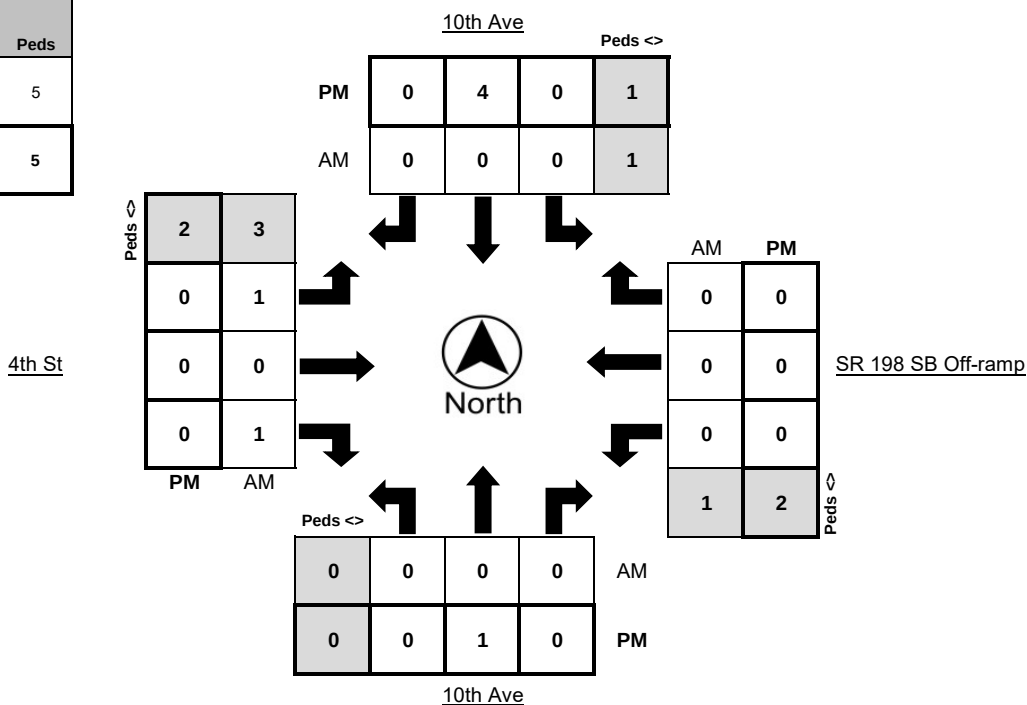
**WEATHER** Clear

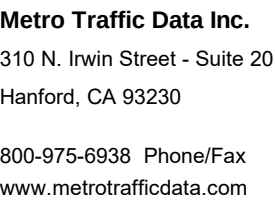
|                   | Northbound Bikes |      |       | N.Leg | Southbound Bikes |      |       | S.Leg | Eastbound Bikes |      |       | E.Leg | Westbound Bikes |      |       | W.Leg |
|-------------------|------------------|------|-------|-------|------------------|------|-------|-------|-----------------|------|-------|-------|-----------------|------|-------|-------|
| Time              | Left             | Thru | Right | Peds  | Left             | Thru | Right | Peds  | Left            | Thru | Right | Peds  | Left            | Thru | Right | Peds  |
| 7:00 AM - 7:15 AM | 0                | 1    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 7:15 AM - 7:30 AM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 1     | 0               | 0    | 0     | 0     |
| 7:30 AM - 7:45 AM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 1     | 0     | 0               | 0    | 0     | 1     |
| 7:45 AM - 8:00 AM | 0                | 0    | 0     | 1     | 0                | 0    | 0     | 0     | 1               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 8:00 AM - 8:15 AM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 1     | 0               | 0    | 0     | 1     |
| 8:15 AM - 8:30 AM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 1     |
| 8:30 AM - 8:45 AM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 8:45 AM - 9:00 AM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 1     |
| TOTAL             | 0                | 1    | 0     | 1     | 0                | 0    | 0     | 0     | 1               | 0    | 1     | 2     | 0               | 0    | 0     | 4     |

|                   | Northbound Bikes |      |       | N.Leg | Southbound Bikes |      |       | S.Leg | Eastbound Bikes |      |       | E.Leg | Westbound Bikes |      |       | W.Leg |
|-------------------|------------------|------|-------|-------|------------------|------|-------|-------|-----------------|------|-------|-------|-----------------|------|-------|-------|
| Time              | Left             | Thru | Right | Peds  | Left             | Thru | Right | Peds  | Left            | Thru | Right | Peds  | Left            | Thru | Right | Peds  |
| 4:00 PM - 4:15 PM | 0                | 1    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 1     |
| 4:15 PM - 4:30 PM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 1     |
| 4:30 PM - 4:45 PM | 0                | 0    | 0     | 0     | 0                | 2    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 4:45 PM - 5:00 PM | 0                | 0    | 0     | 1     | 0                | 2    | 0     | 0     | 0               | 0    | 0     | 2     | 0               | 0    | 0     | 0     |
| 5:00 PM - 5:15 PM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 5:15 PM - 5:30 PM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 5:30 PM - 5:45 PM | 0                | 1    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| 5:45 PM - 6:00 PM | 0                | 0    | 0     | 0     | 0                | 0    | 0     | 0     | 0               | 0    | 0     | 0     | 0               | 0    | 0     | 0     |
| TOTAL             | 0                | 2    | 0     | 1     | 0                | 4    | 0     | 0     | 0               | 0    | 0     | 2     | 0               | 0    | 0     | 2     |

|                   | Northbound Bikes |      |       | N.Leg | Southbound Bikes |      |       | S.Leg | Eastbound Bikes |      |       | E.Leg | Westbound Bikes |      |       | W.Leg |
|-------------------|------------------|------|-------|-------|------------------|------|-------|-------|-----------------|------|-------|-------|-----------------|------|-------|-------|
| PEAK HOUR         | Left             | Thru | Right | Peds  | Left             | Thru | Right | Peds  | Left            | Thru | Right | Peds  | Left            | Thru | Right | Peds  |
| 7:30 AM - 8:30 AM | 0                | 0    | 0     | 1     | 0                | 0    | 0     | 0     | 1               | 0    | 1     | 1     | 0               | 0    | 0     | 3     |
| 4:00 PM - 5:00 PM | 0                | 1    | 0     | 1     | 0                | 4    | 0     | 0     | 0               | 0    | 0     | 2     | 0               | 0    | 0     | 2     |

|               |       |      |
|---------------|-------|------|
|               | Bikes | Peds |
| AM Peak Total | 2     | 5    |
| PM Peak Total | 5     | 5    |





Prepared For: **JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

|                 |                                |
|-----------------|--------------------------------|
| LOCATION        | Hanford Armona Rd @ 10 1/2 Ave |
| COUNTY          | Kings                          |
| COLLECTION DATE | Tuesday, January 25, 2022      |

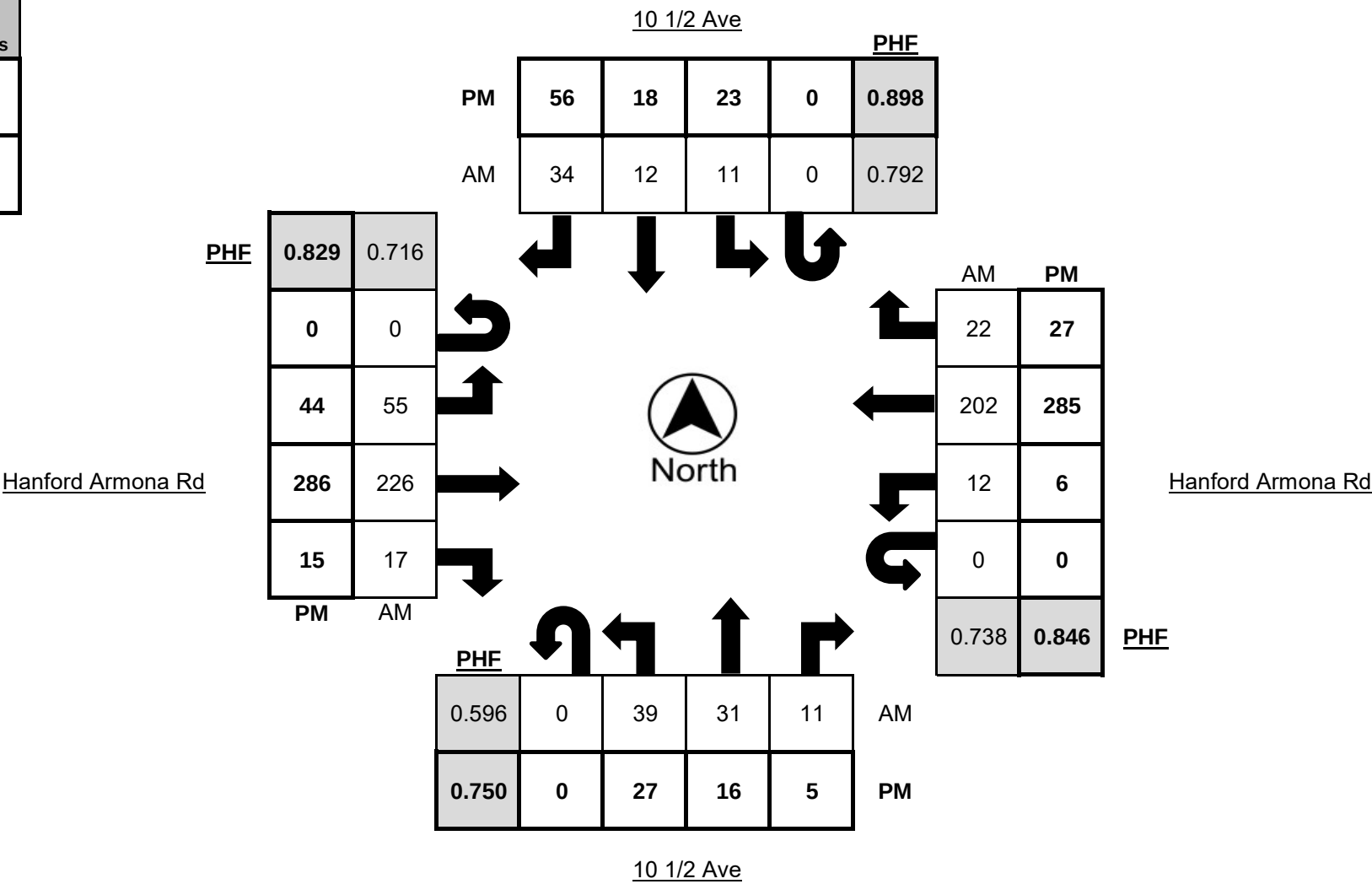
|           |           |
|-----------|-----------|
| LATITUDE  | 36.3134   |
| LONGITUDE | -119.6459 |
| WEATHER   | Clear     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 0    | 5    | 0     | 1      | 0          | 1    | 1    | 5     | 1      | 0         | 3    | 16   | 3     | 4      | 0         | 6    | 25   | 5     | 4      |
| 7:15 AM - 7:30 AM | 0          | 3    | 5    | 0     | 2      | 0          | 1    | 2    | 6     | 1      | 0         | 5    | 37   | 3     | 5      | 0         | 1    | 29   | 6     | 3      |
| 7:30 AM - 7:45 AM | 0          | 9    | 7    | 6     | 6      | 0          | 1    | 4    | 4     | 0      | 0         | 14   | 48   | 3     | 4      | 0         | 4    | 40   | 5     | 3      |
| 7:45 AM - 8:00 AM | 0          | 20   | 10   | 4     | 0      | 0          | 3    | 2    | 9     | 0      | 0         | 19   | 84   | 1     | 2      | 0         | 3    | 67   | 10    | 2      |
| 8:00 AM - 8:15 AM | 0          | 5    | 3    | 0     | 1      | 0          | 3    | 2    | 11    | 0      | 0         | 14   | 54   | 5     | 2      | 0         | 2    | 65   | 5     | 1      |
| 8:15 AM - 8:30 AM | 0          | 5    | 11   | 1     | 1      | 0          | 4    | 4    | 10    | 2      | 0         | 8    | 40   | 8     | 4      | 0         | 3    | 30   | 2     | 2      |
| 8:30 AM - 8:45 AM | 0          | 10   | 1    | 2     | 1      | 0          | 3    | 5    | 6     | 2      | 0         | 7    | 35   | 4     | 1      | 0         | 3    | 38   | 6     | 1      |
| 8:45 AM - 9:00 AM | 0          | 3    | 4    | 2     | 0      | 0          | 6    | 4    | 7     | 0      | 0         | 10   | 21   | 3     | 2      | 0         | 2    | 25   | 8     | 2      |
| TOTAL             | 0          | 55   | 46   | 15    | 12     | 0          | 22   | 24   | 58    | 6      | 0         | 80   | 335  | 30    | 24     | 0         | 24   | 319  | 47    | 18     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 5    | 7    | 3     | 0      | 0          | 9    | 5    | 14    | 1      | 0         | 11   | 62   | 7     | 0      | 0         | 0    | 64   | 8     | 3      |
| 4:15 PM - 4:30 PM | 0          | 2    | 6    | 3     | 1      | 0          | 7    | 3    | 15    | 0      | 0         | 11   | 66   | 6     | 2      | 0         | 0    | 53   | 7     | 1      |
| 4:30 PM - 4:45 PM | 0          | 10   | 5    | 1     | 0      | 0          | 7    | 6    | 14    | 1      | 0         | 13   | 66   | 5     | 2      | 0         | 2    | 63   | 9     | 3      |
| 4:45 PM - 5:00 PM | 0          | 8    | 1    | 0     | 0      | 0          | 8    | 3    | 13    | 0      | 0         | 11   | 91   | 2     | 1      | 0         | 1    | 72   | 9     | 3      |
| 5:00 PM - 5:15 PM | 0          | 2    | 4    | 2     | 0      | 0          | 3    | 2    | 16    | 0      | 0         | 8    | 67   | 5     | 3      | 0         | 2    | 87   | 5     | 0      |
| 5:15 PM - 5:30 PM | 0          | 7    | 6    | 2     | 0      | 0          | 5    | 7    | 13    | 0      | 0         | 12   | 62   | 3     | 2      | 0         | 1    | 63   | 4     | 1      |
| 5:30 PM - 5:45 PM | 0          | 1    | 2    | 0     | 0      | 0          | 4    | 4    | 15    | 0      | 0         | 14   | 65   | 3     | 0      | 0         | 0    | 57   | 11    | 1      |
| 5:45 PM - 6:00 PM | 0          | 4    | 3    | 1     | 0      | 0          | 5    | 6    | 10    | 0      | 0         | 10   | 58   | 1     | 1      | 0         | 0    | 63   | 3     | 2      |
| TOTAL             | 0          | 39   | 34   | 12    | 1      | 0          | 48   | 36   | 110   | 2      | 0         | 90   | 537  | 32    | 11     | 0         | 6    | 522  | 56    | 14     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| PEAK HOUR         | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 39   | 31   | 11    | 8      | 0          | 11   | 12   | 34    | 2      | 0         | 55   | 226  | 17    | 12     | 0         | 12   | 202  | 22    | 8      |
| 4:30 PM - 5:30 PM | 0          | 27   | 16   | 5     | 0      | 0          | 23   | 18   | 56    | 1      | 0         | 44   | 286  | 15    | 8      | 0         | 6    | 285  | 27    | 7      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.724 | 4.5%   |
| PM | 0.922 | 2.0%   |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Hanford Armona Rd @ 10 1/2 Ave

LATITUDE 36.3134

COUNTY Kings

LONGITUDE -119.6459

COLLECTION DATE Tuesday, January 25, 2022

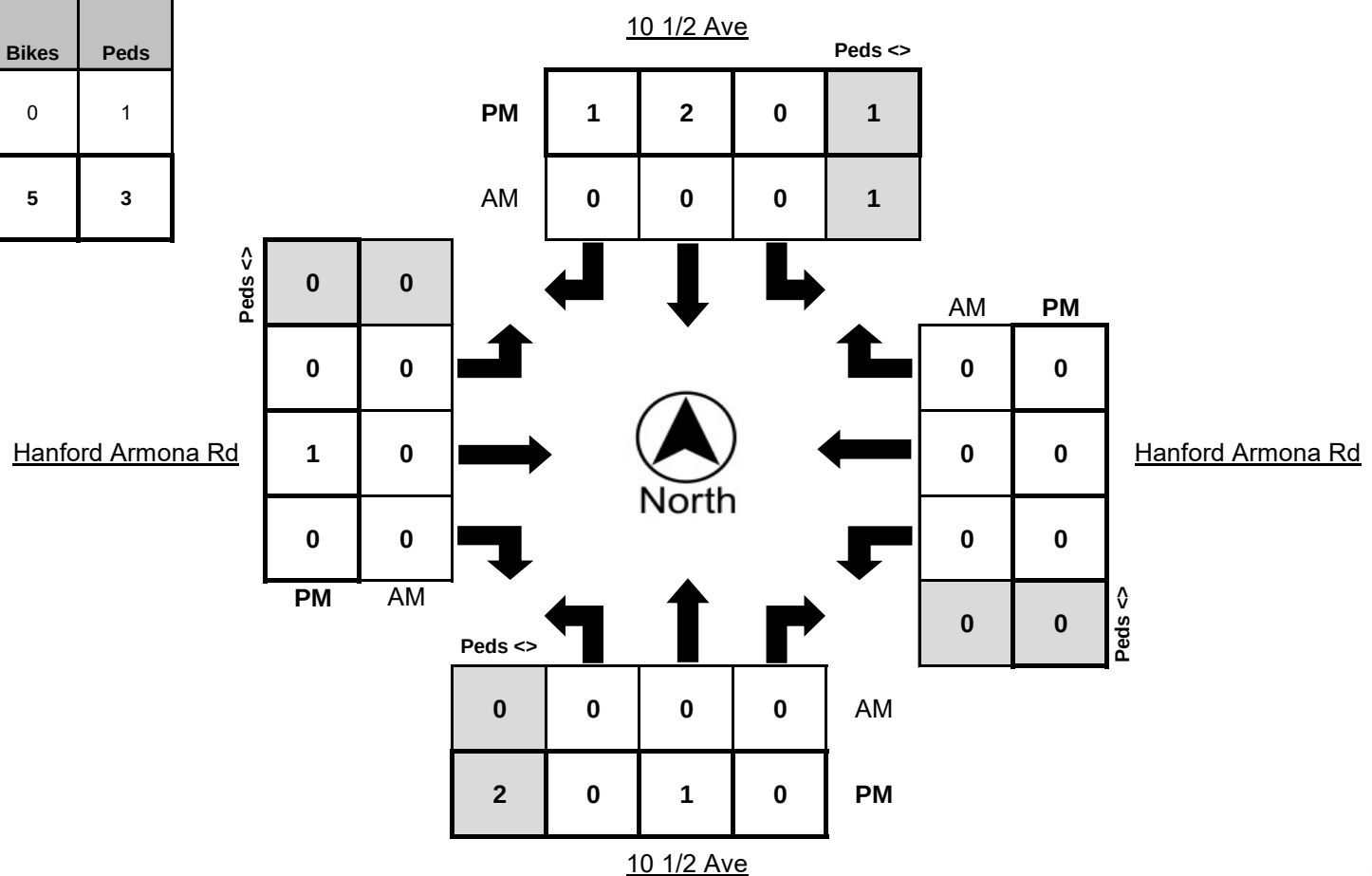
WEATHER Clear

| Time              | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 7:00 AM - 7:15 AM | 0                | 1    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:15 AM - 7:30 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:30 AM - 7:45 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:45 AM - 8:00 AM | 0                | 0    | 0     | 1          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:00 AM - 8:15 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:15 AM - 8:30 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:30 AM - 8:45 AM | 0                | 0    | 0     | 3          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:45 AM - 9:00 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| TOTAL             | 0                | 1    | 0     | 4          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |

| Time              | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 4:00 PM - 4:15 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 4          | 0               | 0    | 0     | 0          |
| 4:15 PM - 4:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:30 PM - 4:45 PM | 0                | 0    | 0     | 1          | 0                | 1    | 0     | 1          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:45 PM - 5:00 PM | 0                | 1    | 0     | 0          | 0                | 1    | 0     | 1          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:00 PM - 5:15 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 1    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:15 PM - 5:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 1     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:30 PM - 5:45 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 1    | 0     | 0          |
| 5:45 PM - 6:00 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 1    | 0     | 0          | 0               | 1    | 0     | 0          |
| TOTAL             | 0                | 1    | 0     | 1          | 0                | 2    | 1     | 2          | 0               | 2    | 0     | 4          | 0               | 2    | 0     | 0          |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 7:30 AM - 8:30 AM | 0                | 0    | 0     | 1          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:30 PM - 5:30 PM | 0                | 1    | 0     | 1          | 0                | 2    | 1     | 2          | 0               | 1    | 0     | 0          | 0               | 0    | 0     | 0          |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0     | 1    |
| PM Peak Total | 5     | 3    |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:  
**JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Hanford Armona Rd @ Jordan Way  
COUNTY Kings  
COLLECTION DATE Wednesday, January 26, 2022

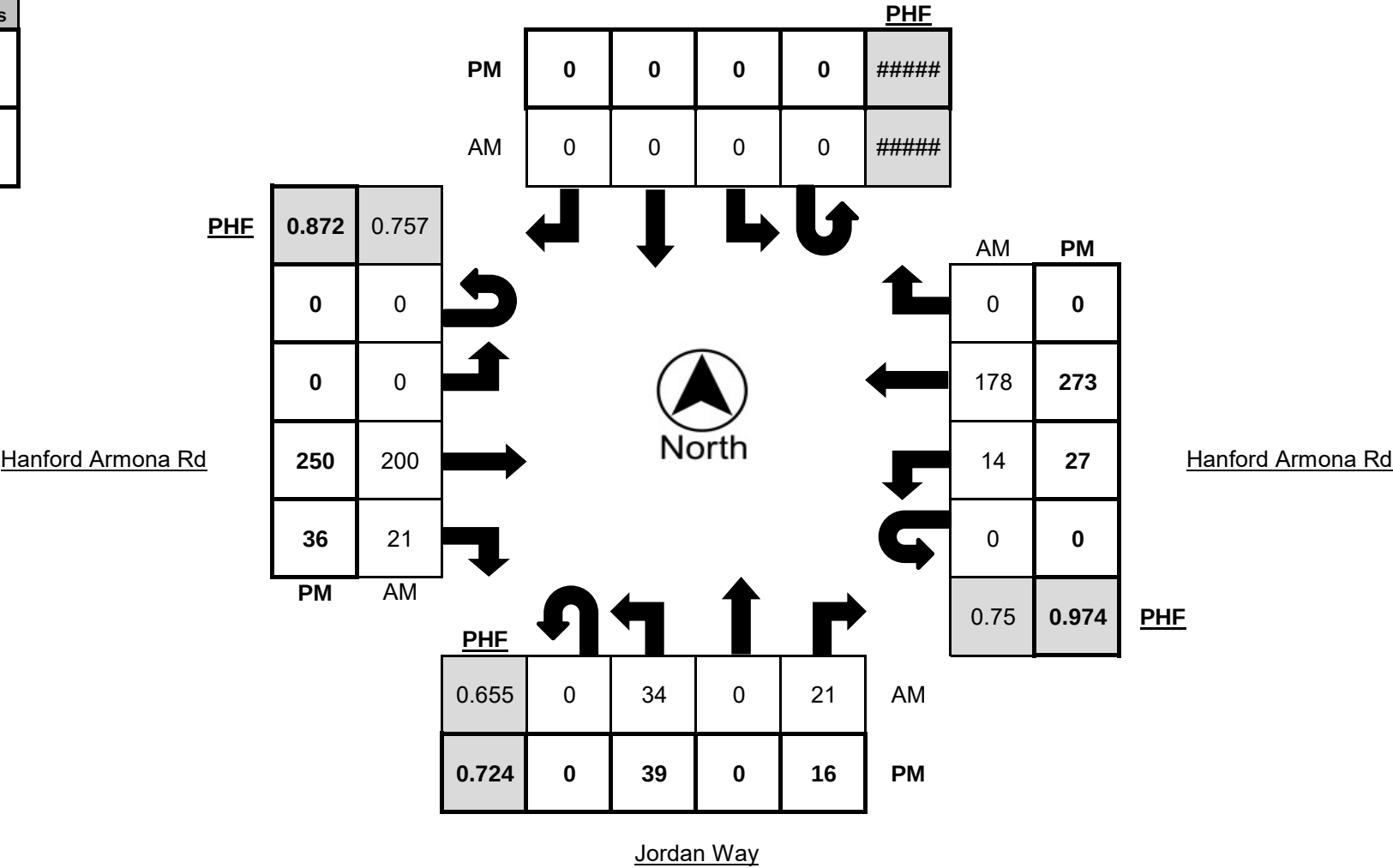
LATITUDE 36.3134  
LONGITUDE -119.6404  
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 4    | 0    | 1     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 13   | 1     | 2      | 0         | 1    | 30   | 0     | 6      |
| 7:15 AM - 7:30 AM | 0          | 1    | 0    | 4     | 1      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 39   | 1     | 4      | 0         | 0    | 33   | 0     | 3      |
| 7:30 AM - 7:45 AM | 0          | 7    | 0    | 5     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 49   | 1     | 5      | 0         | 3    | 40   | 0     | 5      |
| 7:45 AM - 8:00 AM | 0          | 14   | 0    | 7     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 66   | 7     | 4      | 0         | 3    | 61   | 0     | 3      |
| 8:00 AM - 8:15 AM | 0          | 6    | 0    | 2     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 46   | 9     | 2      | 0         | 5    | 51   | 0     | 2      |
| 8:15 AM - 8:30 AM | 0          | 7    | 0    | 7     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 39   | 4     | 5      | 0         | 3    | 26   | 0     | 2      |
| 8:30 AM - 8:45 AM | 0          | 3    | 0    | 4     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 34   | 4     | 3      | 0         | 2    | 34   | 0     | 3      |
| 8:45 AM - 9:00 AM | 0          | 4    | 0    | 0     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 22   | 5     | 2      | 0         | 2    | 29   | 0     | 2      |
| TOTAL             | 0          | 46   | 0    | 30    | 1      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 308  | 32    | 27     | 0         | 19   | 304  | 0     | 26     |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 6    | 0    | 8     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 56   | 12    | 0      | 0         | 4    | 61   | 0     | 2      |
| 4:15 PM - 4:30 PM | 0          | 1    | 0    | 2     | 0      | 0          | 0    | 0    | 0     | 0      | 1         | 0    | 62   | 5     | 3      | 0         | 8    | 50   | 0     | 1      |
| 4:30 PM - 4:45 PM | 0          | 9    | 0    | 3     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 59   | 6     | 2      | 0         | 3    | 72   | 0     | 5      |
| 4:45 PM - 5:00 PM | 0          | 10   | 0    | 3     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 66   | 8     | 2      | 0         | 4    | 68   | 0     | 2      |
| 5:00 PM - 5:15 PM | 0          | 13   | 0    | 6     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 70   | 12    | 3      | 0         | 9    | 68   | 0     | 1      |
| 5:15 PM - 5:30 PM | 0          | 7    | 0    | 4     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 55   | 10    | 1      | 0         | 11   | 65   | 0     | 0      |
| 5:30 PM - 5:45 PM | 0          | 7    | 0    | 7     | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 61   | 7     | 0      | 0         | 5    | 57   | 0     | 2      |
| 5:45 PM - 6:00 PM | 0          | 6    | 0    | 6     | 1      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 49   | 9     | 2      | 0         | 5    | 59   | 0     | 1      |
| TOTAL             | 0          | 59   | 0    | 39    | 1      | 0          | 0    | 0    | 0     | 0      | 1         | 0    | 478  | 69    | 13     | 0         | 49   | 500  | 0     | 14     |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 34   | 0    | 21    | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 200  | 21    | 16     | 0         | 14   | 178  | 0     | 12     |
| 4:30 PM - 5:30 PM | 0          | 39   | 0    | 16    | 0      | 0          | 0    | 0    | 0     | 0      | 0         | 0    | 250  | 36    | 8      | 0         | 27   | 273  | 0     | 8      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.741 | 6.0%   |
| PM | 0.900 | 2.5%   |





Metro Traffic Data Inc.  
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Hanford, CA 93230  
800-975-6938 Phone/Fax  
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# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Hanford Armona Rd @ Jordan Way

LATITUDE 36.3134

COUNTY Kings

LONGITUDE -119.6404

COLLECTION DATE Wednesday, January 26, 2022

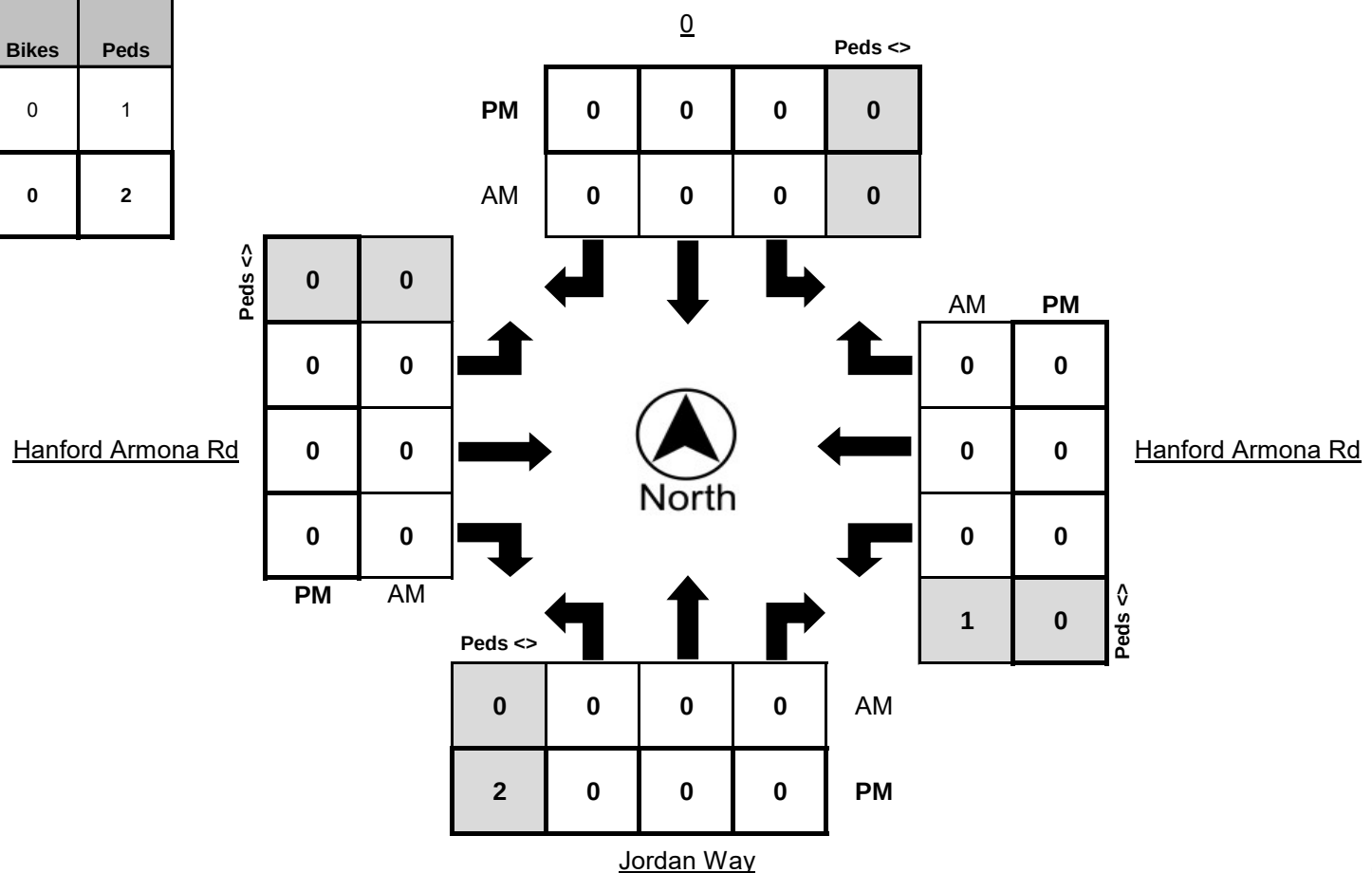
WEATHER Clear

| Time              | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 7:00 AM - 7:15 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:15 AM - 7:30 AM | 1                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:30 AM - 7:45 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:45 AM - 8:00 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:00 AM - 8:15 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:15 AM - 8:30 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 1          | 0               | 0    | 0     | 0          |
| 8:30 AM - 8:45 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:45 AM - 9:00 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| TOTAL             | 1                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 1          | 0               | 0    | 0     | 0          |

| Time              | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 4:00 PM - 4:15 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:15 PM - 4:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 4          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:30 PM - 4:45 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:45 PM - 5:00 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 1          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:00 PM - 5:15 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:15 PM - 5:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 1          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:30 PM - 5:45 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:45 PM - 6:00 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| TOTAL             | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 6          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 7:30 AM - 8:30 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 1          | 0               | 0    | 0     | 0          |
| 4:30 PM - 5:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 2          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0     | 1    |
| PM Peak Total | 0     | 2    |





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# Turning Movement Report

Prepared For:  
**JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Hanford Armona Rd @ 10th Ave  
COUNTY Kings  
COLLECTION DATE Thursday, January 27, 2022

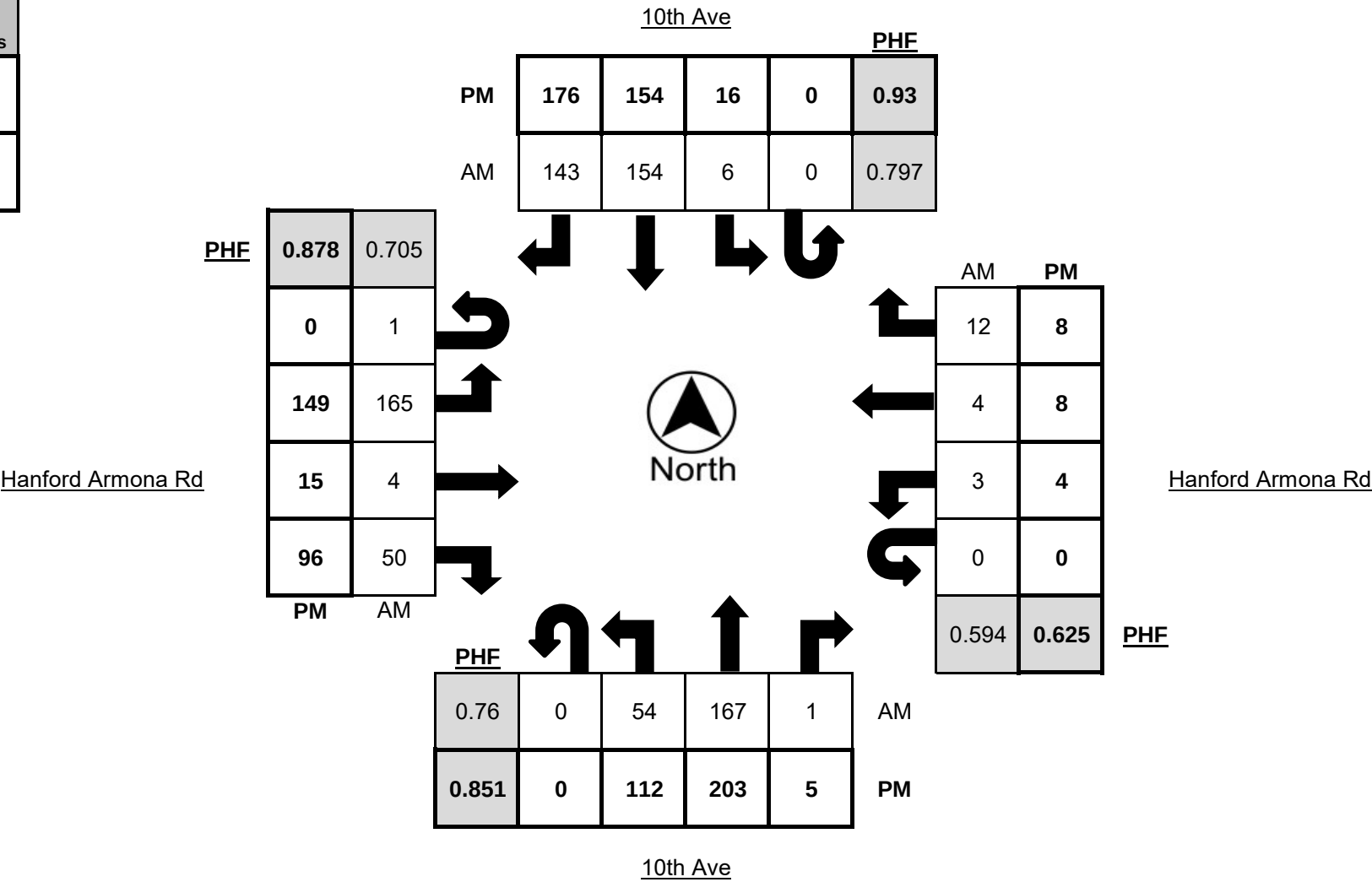
LATITUDE 36.3134  
LONGITUDE -119.6370  
WEATHER Clear

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 8    | 23   | 0     | 4      | 0          | 7    | 31   | 24    | 7      | 0         | 9    | 0    | 3     | 1      | 0         | 0    | 1    | 3     | 0      |
| 7:15 AM - 7:30 AM | 0          | 7    | 30   | 1     | 3      | 0          | 5    | 19   | 24    | 3      | 0         | 33   | 2    | 10    | 6      | 0         | 0    | 1    | 4     | 0      |
| 7:30 AM - 7:45 AM | 0          | 12   | 29   | 1     | 4      | 0          | 1    | 37   | 31    | 8      | 0         | 45   | 1    | 5     | 6      | 0         | 0    | 1    | 3     | 1      |
| 7:45 AM - 8:00 AM | 0          | 20   | 39   | 0     | 4      | 0          | 4    | 44   | 47    | 5      | 0         | 58   | 0    | 20    | 3      | 0         | 0    | 0    | 5     | 1      |
| 8:00 AM - 8:15 AM | 0          | 17   | 56   | 0     | 4      | 0          | 0    | 46   | 38    | 5      | 1         | 29   | 0    | 14    | 2      | 0         | 1    | 3    | 4     | 0      |
| 8:15 AM - 8:30 AM | 0          | 5    | 43   | 0     | 2      | 0          | 1    | 27   | 27    | 3      | 0         | 33   | 3    | 11    | 3      | 0         | 2    | 0    | 0     | 0      |
| 8:30 AM - 8:45 AM | 0          | 11   | 32   | 0     | 6      | 0          | 1    | 30   | 27    | 3      | 0         | 30   | 0    | 9     | 2      | 0         | 0    | 0    | 1     | 0      |
| 8:45 AM - 9:00 AM | 0          | 11   | 39   | 1     | 3      | 0          | 1    | 25   | 17    | 5      | 0         | 12   | 0    | 9     | 2      | 0         | 1    | 1    | 1     | 0      |
| TOTAL             | 0          | 91   | 291  | 3     | 30     | 0          | 20   | 259  | 235   | 39     | 1         | 249  | 6    | 81    | 25     | 0         | 4    | 7    | 21    | 2      |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 18   | 53   | 3     | 2      | 0          | 1    | 52   | 42    | 2      | 0         | 37   | 2    | 22    | 0      | 0         | 0    | 1    | 4     | 0      |
| 4:15 PM - 4:30 PM | 0          | 23   | 53   | 1     | 2      | 0          | 2    | 29   | 31    | 2      | 0         | 37   | 5    | 23    | 2      | 0         | 1    | 3    | 2     | 0      |
| 4:30 PM - 4:45 PM | 0          | 31   | 63   | 0     | 3      | 0          | 2    | 48   | 43    | 6      | 0         | 36   | 5    | 19    | 3      | 0         | 1    | 1    | 1     | 0      |
| 4:45 PM - 5:00 PM | 0          | 27   | 48   | 0     | 1      | 0          | 3    | 33   | 41    | 1      | 0         | 43   | 4    | 19    | 2      | 0         | 1    | 1    | 2     | 0      |
| 5:00 PM - 5:15 PM | 0          | 21   | 40   | 2     | 4      | 0          | 4    | 35   | 51    | 1      | 0         | 42   | 2    | 30    | 3      | 0         | 1    | 4    | 3     | 2      |
| 5:15 PM - 5:30 PM | 0          | 33   | 52   | 3     | 2      | 0          | 7    | 38   | 41    | 0      | 0         | 28   | 4    | 28    | 1      | 0         | 1    | 2    | 2     | 0      |
| 5:30 PM - 5:45 PM | 0          | 19   | 48   | 0     | 1      | 0          | 4    | 44   | 38    | 2      | 0         | 42   | 6    | 19    | 0      | 0         | 1    | 5    | 5     | 0      |
| 5:45 PM - 6:00 PM | 0          | 24   | 31   | 1     | 3      | 0          | 5    | 23   | 35    | 0      | 0         | 27   | 4    | 28    | 1      | 0         | 1    | 8    | 3     | 0      |
| TOTAL             | 0          | 196  | 388  | 10    | 18     | 0          | 28   | 302  | 322   | 14     | 0         | 292  | 32   | 188   | 12     | 0         | 7    | 25   | 22    | 2      |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| PEAK HOUR         | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 54   | 167  | 1     | 14     | 0          | 6    | 154  | 143   | 21     | 1         | 165  | 4    | 50    | 14     | 0         | 3    | 4    | 12    | 2      |
| 4:30 PM - 5:30 PM | 0          | 112  | 203  | 5     | 10     | 0          | 16   | 154  | 176   | 8      | 0         | 149  | 15   | 96    | 9      | 0         | 4    | 8    | 8     | 2      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.806 | 6.7%   |
| PM | 0.946 | 3.1%   |







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# Turning Movement Report

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LOCATION Hanford Armona Rd @ 10th Ave

LATITUDE 36.3134

COUNTY Kings

LONGITUDE -119.6370

COLLECTION DATE Thursday, January 27, 2022

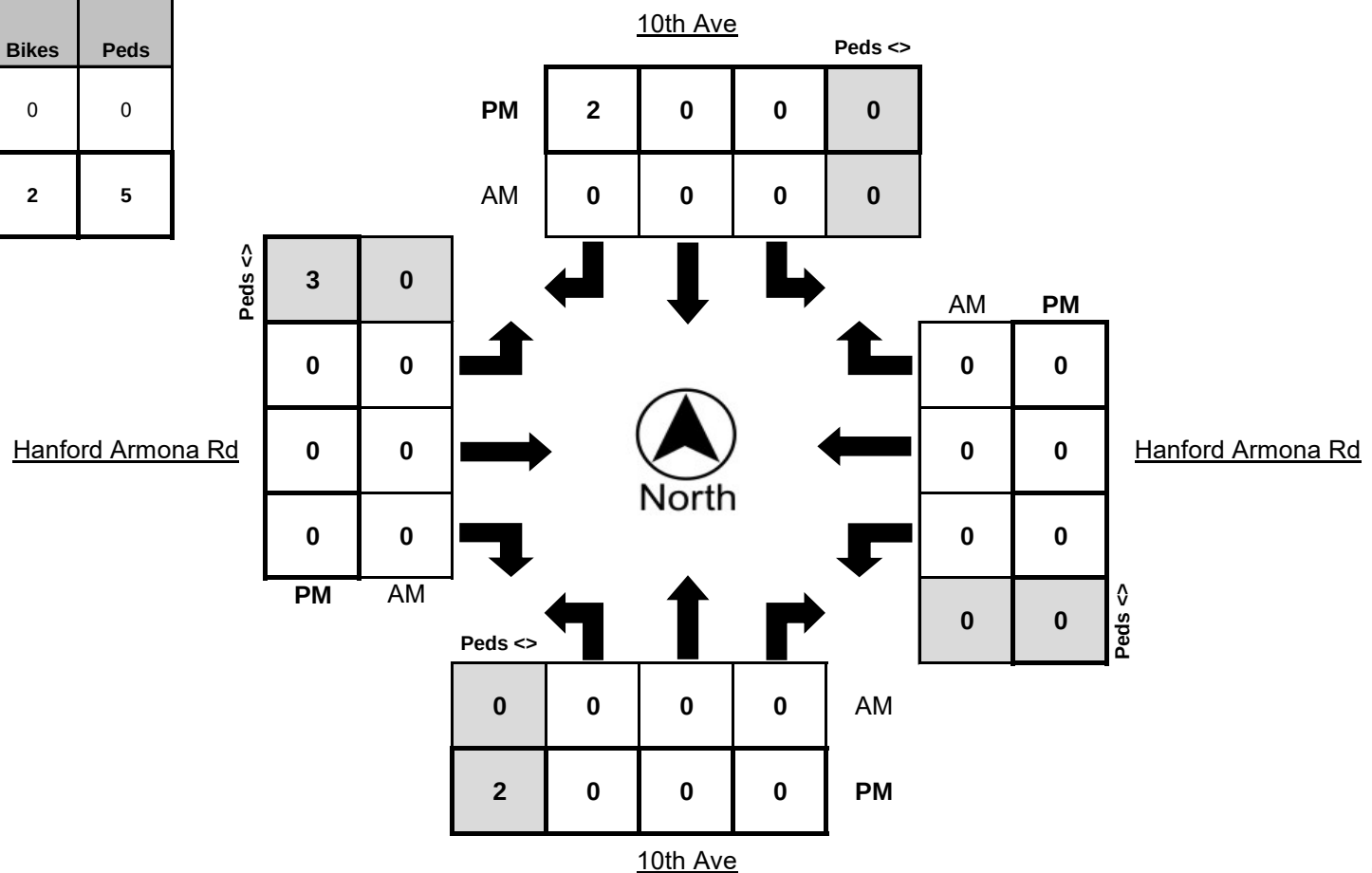
WEATHER Clear

| Time              | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 7:00 AM - 7:15 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 7:15 AM - 7:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 7:30 AM - 7:45 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 7:45 AM - 8:00 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:00 AM - 8:15 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:15 AM - 8:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:30 AM - 8:45 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 1               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:45 AM - 9:00 AM | 1                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| TOTAL             | 1                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 1               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |

| Time              | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 4:00 PM - 4:15 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 1     | 0             | 0               | 0    | 0     | 0             |
| 4:15 PM - 4:30 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 2             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 4:30 PM - 4:45 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 2             |
| 4:45 PM - 5:00 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:00 PM - 5:15 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:15 PM - 5:30 PM | 0                | 0    | 0     | 0             | 0                | 0    | 2     | 2             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 1             |
| 5:30 PM - 5:45 PM | 0                | 0    | 0     | 0             | 0                | 0    | 1     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:45 PM - 6:00 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| TOTAL             | 0                | 0    | 0     | 0             | 0                | 0    | 3     | 4             | 0               | 0    | 1     | 0             | 0               | 0    | 0     | 3             |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 7:30 AM - 8:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 4:30 PM - 5:30 PM | 0                | 0    | 0     | 0             | 0                | 0    | 2     | 2             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 3             |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0     | 0    |
| PM Peak Total | 2     | 5    |







Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Houston Ave @ 11th Ave

LATITUDE 36.2983

COUNTY Kings

LONGITUDE -119.6548

COLLECTION DATE Thursday, March 3, 2022

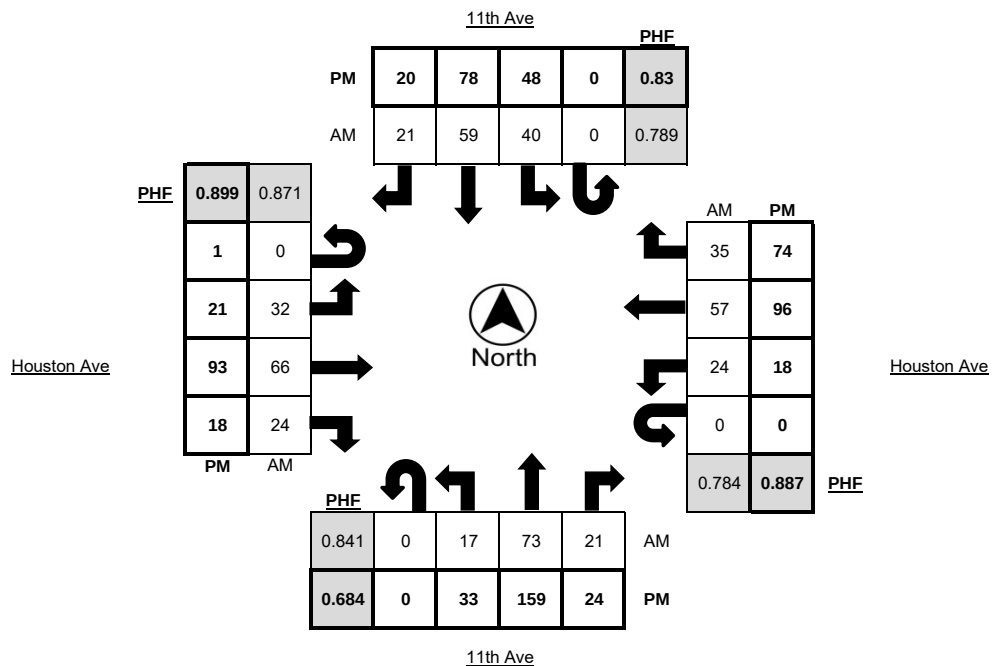
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 2    | 19   | 6     | 2      | 0          | 5    | 14   | 3     | 1      | 0         | 0    | 6    | 6     | 2      | 0         | 6    | 10   | 9     | 7      |
| 7:15 AM - 7:30 AM | 0          | 5    | 12   | 6     | 7      | 0          | 7    | 20   | 1     | 1      | 0         | 6    | 9    | 11    | 5      | 0         | 3    | 14   | 9     | 4      |
| 7:30 AM - 7:45 AM | 0          | 0    | 20   | 5     | 3      | 0          | 12   | 18   | 8     | 1      | 0         | 8    | 18   | 4     | 1      | 0         | 5    | 15   | 7     | 5      |
| 7:45 AM - 8:00 AM | 0          | 7    | 22   | 4     | 8      | 0          | 6    | 15   | 1     | 1      | 0         | 11   | 13   | 11    | 5      | 0         | 7    | 18   | 7     | 2      |
| 8:00 AM - 8:15 AM | 0          | 6    | 16   | 4     | 7      | 0          | 11   | 12   | 5     | 1      | 0         | 6    | 20   | 5     | 2      | 0         | 9    | 12   | 16    | 7      |
| 8:15 AM - 8:30 AM | 0          | 4    | 15   | 8     | 5      | 0          | 11   | 14   | 7     | 6      | 0         | 7    | 15   | 4     | 5      | 0         | 3    | 12   | 5     | 3      |
| 8:30 AM - 8:45 AM | 0          | 7    | 17   | 4     | 6      | 0          | 9    | 14   | 2     | 2      | 0         | 4    | 11   | 6     | 4      | 0         | 4    | 13   | 8     | 8      |
| 8:45 AM - 9:00 AM | 0          | 3    | 15   | 4     | 5      | 0          | 5    | 11   | 7     | 4      | 0         | 6    | 10   | 10    | 10     | 0         | 8    | 12   | 13    | 7      |
| TOTAL             | 0          | 34   | 136  | 41    | 43     | 0          | 66   | 118  | 34    | 17     | 0         | 48   | 102  | 57    | 34     | 0         | 45   | 106  | 74    | 43     |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 9    | 31   | 5     | 3      | 0          | 15   | 12   | 13    | 0      | 0         | 4    | 14   | 4     | 2      | 0         | 3    | 21   | 17    | 3      |
| 4:15 PM - 4:30 PM | 0          | 11   | 27   | 3     | 1      | 0          | 15   | 24   | 1     | 2      | 0         | 7    | 22   | 3     | 1      | 0         | 8    | 22   | 17    | 1      |
| 4:30 PM - 4:45 PM | 0          | 6    | 43   | 2     | 5      | 0          | 10   | 8    | 6     | 0      | 0         | 2    | 28   | 7     | 2      | 0         | 1    | 20   | 26    | 2      |
| 4:45 PM - 5:00 PM | 0          | 7    | 29   | 9     | 5      | 0          | 11   | 26   | 7     | 0      | 1         | 4    | 19   | 6     | 2      | 0         | 3    | 23   | 15    | 3      |
| 5:00 PM - 5:15 PM | 0          | 9    | 60   | 10    | 6      | 0          | 12   | 20   | 6     | 0      | 0         | 8    | 24   | 2     | 0      | 0         | 6    | 31   | 16    | 1      |
| 5:15 PM - 5:30 PM | 0          | 6    | 15   | 1     | 3      | 0          | 9    | 15   | 2     | 0      | 0         | 7    | 11   | 3     | 0      | 0         | 6    | 18   | 13    | 1      |
| 5:30 PM - 5:45 PM | 0          | 5    | 19   | 2     | 1      | 0          | 6    | 14   | 7     | 0      | 0         | 4    | 16   | 4     | 0      | 0         | 1    | 13   | 10    | 1      |
| 5:45 PM - 6:00 PM | 0          | 5    | 14   | 2     | 2      | 0          | 12   | 13   | 6     | 0      | 1         | 10   | 13   | 6     | 1      | 0         | 1    | 9    | 19    | 0      |
| TOTAL             | 0          | 58   | 238  | 34    | 26     | 0          | 90   | 132  | 48    | 2      | 2         | 46   | 147  | 35    | 8      | 0         | 29   | 157  | 133   | 12     |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 17   | 73   | 21    | 23     | 0          | 40   | 59   | 21    | 9      | 0         | 32   | 66   | 24    | 13     | 0         | 24   | 57   | 35    | 17     |
| 4:15 PM - 5:15 PM | 0          | 33   | 159  | 24    | 17     | 0          | 48   | 78   | 20    | 2      | 1         | 21   | 93   | 18    | 5      | 0         | 18   | 96   | 74    | 7      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.961 | 13.2%  |
| PM | 0.837 | 4.5%   |





**Metro Traffic Data Inc.**  
 310 N. Irwin Street - Suite 20  
 Hanford, CA 93230  
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# Turning Movement Report

Prepared For:

**JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** Houston Ave @ 11th Ave

**LATITUDE** 36.2983

**COUNTY** Kings

**LONGITUDE** -119.6548

**COLLECTION DATE** Thursday, March 3, 2022

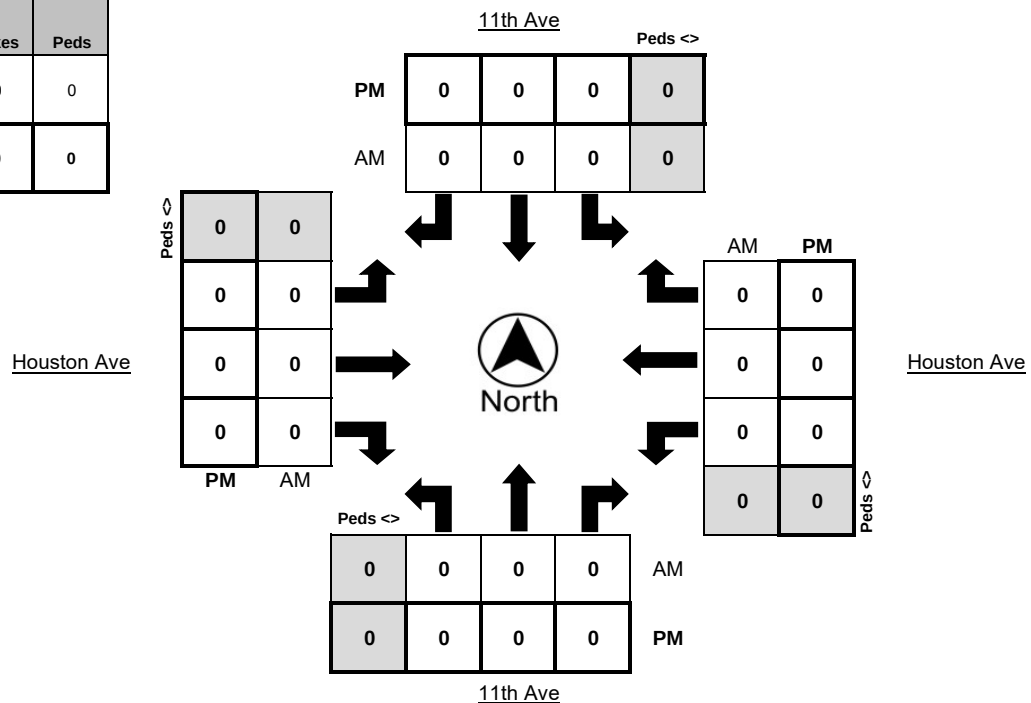
**WEATHER** Clear

| Time              | Northbound Bikes |          |          | N.Leg<br>Peds | Southbound Bikes |          |          | S.Leg<br>Peds | Eastbound Bikes |          |          | E.Leg<br>Peds | Westbound Bikes |          |          | W.Leg<br>Peds |
|-------------------|------------------|----------|----------|---------------|------------------|----------|----------|---------------|-----------------|----------|----------|---------------|-----------------|----------|----------|---------------|
|                   | Left             | Thru     | Right    |               | Left             | Thru     | Right    |               | Left            | Thru     | Right    |               | Left            | Thru     | Right    |               |
| 7:00 AM - 7:15 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 7:15 AM - 7:30 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 7:30 AM - 7:45 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 7:45 AM - 8:00 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:00 AM - 8:15 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:15 AM - 8:30 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:30 AM - 8:45 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 8:45 AM - 9:00 AM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| <b>TOTAL</b>      | <b>0</b>         | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>         | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>0</b>      |

| Time              | Northbound Bikes |          |          | N.Leg<br>Peds | Southbound Bikes |          |          | S.Leg<br>Peds | Eastbound Bikes |          |          | E.Leg<br>Peds | Westbound Bikes |          |          | W.Leg<br>Peds |
|-------------------|------------------|----------|----------|---------------|------------------|----------|----------|---------------|-----------------|----------|----------|---------------|-----------------|----------|----------|---------------|
|                   | Left             | Thru     | Right    |               | Left             | Thru     | Right    |               | Left            | Thru     | Right    |               | Left            | Thru     | Right    |               |
| 4:00 PM - 4:15 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 4:15 PM - 4:30 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 4:30 PM - 4:45 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 4:45 PM - 5:00 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:00 PM - 5:15 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:15 PM - 5:30 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:30 PM - 5:45 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| 5:45 PM - 6:00 PM | 0                | 0        | 0        | 0             | 0                | 0        | 0        | 0             | 0               | 0        | 0        | 0             | 0               | 0        | 0        | 0             |
| <b>TOTAL</b>      | <b>0</b>         | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>         | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b>        | <b>0</b> | <b>0</b> | <b>0</b>      |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 7:30 AM - 8:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 4:15 PM - 5:15 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0     | 0    |
| PM Peak Total | 0     | 0    |





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Hanford, CA 93230  
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# Turning Movement Report

Prepared For:  
**JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Houston Ave @ 10 1/2 Ave  
COUNTY Kings  
COLLECTION DATE Friday, January 28, 2022

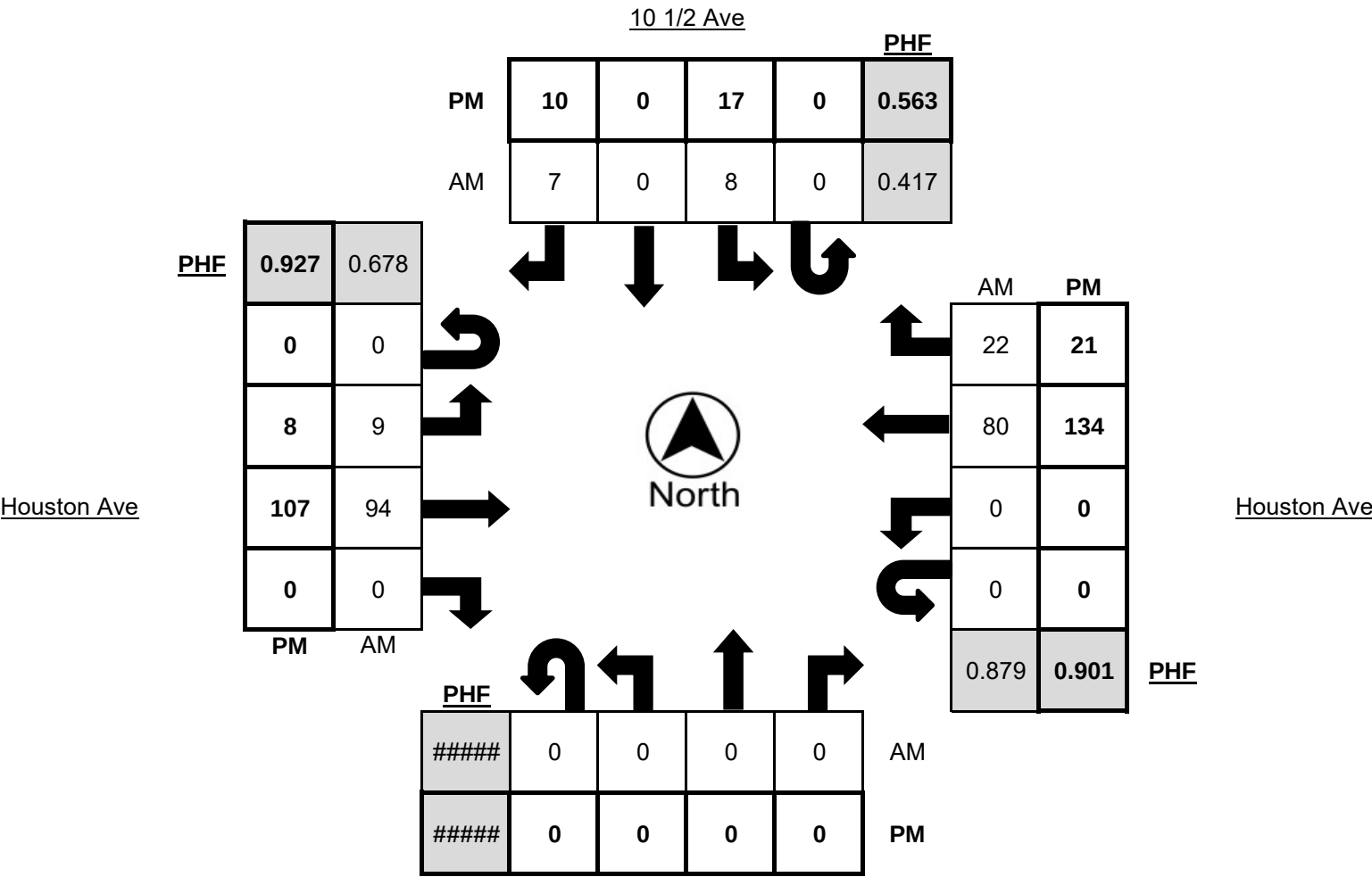
LATITUDE 36.2985  
LONGITUDE -119.6459  
WEATHER Clear

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 0    | 0    | 0     | 0      | 0          | 1    | 0    | 4     | 1      | 0         | 2    | 20   | 0     | 5      | 0         | 0    | 28   | 2     | 5      |
| 7:15 AM - 7:30 AM | 0          | 0    | 0    | 0     | 0      | 0          | 0    | 0    | 1     | 0      | 0         | 2    | 17   | 0     | 5      | 0         | 0    | 25   | 2     | 4      |
| 7:30 AM - 7:45 AM | 0          | 0    | 0    | 0     | 0      | 0          | 1    | 0    | 4     | 0      | 0         | 3    | 6    | 0     | 0      | 0         | 0    | 19   | 6     | 6      |
| 7:45 AM - 8:00 AM | 0          | 0    | 0    | 0     | 0      | 0          | 1    | 0    | 1     | 0      | 0         | 1    | 22   | 0     | 6      | 0         | 0    | 13   | 16    | 2      |
| 8:00 AM - 8:15 AM | 0          | 0    | 0    | 0     | 0      | 0          | 1    | 0    | 1     | 0      | 0         | 1    | 17   | 0     | 5      | 0         | 0    | 26   | 3     | 6      |
| 8:15 AM - 8:30 AM | 0          | 0    | 0    | 0     | 0      | 0          | 2    | 0    | 0     | 0      | 0         | 6    | 32   | 0     | 6      | 0         | 0    | 20   | 2     | 6      |
| 8:30 AM - 8:45 AM | 0          | 0    | 0    | 0     | 0      | 0          | 4    | 0    | 5     | 2      | 0         | 1    | 23   | 0     | 5      | 0         | 0    | 21   | 1     | 4      |
| 8:45 AM - 9:00 AM | 0          | 0    | 0    | 0     | 0      | 0          | 2    | 0    | 1     | 0      | 0         | 0    | 17   | 0     | 2      | 0         | 0    | 19   | 1     | 0      |
| TOTAL             | 0          | 0    | 0    | 0     | 0      | 0          | 12   | 0    | 17    | 3      | 0         | 16   | 154  | 0     | 34     | 0         | 0    | 171  | 33    | 33     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| Time              | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 0    | 0    | 0     | 0      | 0          | 3    | 0    | 4     | 0      | 0         | 4    | 24   | 0     | 1      | 0         | 0    | 37   | 5     | 3      |
| 4:15 PM - 4:30 PM | 0          | 0    | 0    | 0     | 0      | 0          | 7    | 0    | 3     | 0      | 0         | 3    | 29   | 0     | 2      | 0         | 0    | 28   | 7     | 1      |
| 4:30 PM - 4:45 PM | 0          | 0    | 0    | 0     | 0      | 0          | 4    | 0    | 2     | 0      | 0         | 2    | 26   | 0     | 0      | 0         | 0    | 39   | 4     | 2      |
| 4:45 PM - 5:00 PM | 0          | 0    | 0    | 0     | 0      | 0          | 3    | 0    | 2     | 1      | 0         | 1    | 27   | 0     | 2      | 0         | 0    | 31   | 1     | 2      |
| 5:00 PM - 5:15 PM | 0          | 0    | 0    | 0     | 0      | 0          | 3    | 0    | 1     | 0      | 0         | 3    | 28   | 0     | 0      | 0         | 0    | 36   | 4     | 0      |
| 5:15 PM - 5:30 PM | 0          | 0    | 0    | 0     | 0      | 0          | 7    | 0    | 5     | 0      | 0         | 2    | 26   | 0     | 0      | 0         | 0    | 28   | 12    | 0      |
| 5:30 PM - 5:45 PM | 0          | 0    | 0    | 0     | 0      | 0          | 2    | 0    | 3     | 0      | 0         | 1    | 28   | 0     | 0      | 0         | 0    | 25   | 1     | 2      |
| 5:45 PM - 6:00 PM | 0          | 0    | 0    | 0     | 0      | 0          | 2    | 0    | 3     | 0      | 0         | 4    | 21   | 0     | 1      | 0         | 0    | 27   | 1     | 0      |
| TOTAL             | 0          | 0    | 0    | 0     | 0      | 0          | 31   | 0    | 23    | 1      | 0         | 20   | 209  | 0     | 6      | 0         | 0    | 251  | 35    | 10     |

|                   | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
| PEAK HOUR         | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:45 AM - 8:45 AM | 0          | 0    | 0    | 0     | 0      | 0          | 8    | 0    | 7     | 2      | 0         | 9    | 94   | 0     | 22     | 0         | 0    | 80   | 22    | 18     |
| 4:30 PM - 5:30 PM | 0          | 0    | 0    | 0     | 0      | 0          | 17   | 0    | 10    | 1      | 0         | 8    | 107  | 0     | 2      | 0         | 0    | 134  | 21    | 4      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.887 | 19.1%  |
| PM | 0.928 | 2.4%   |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Houston Ave @ 10 1/2 Ave

LATITUDE 36.2985

COUNTY Kings

LONGITUDE -119.6459

COLLECTION DATE Friday, January 28, 2022

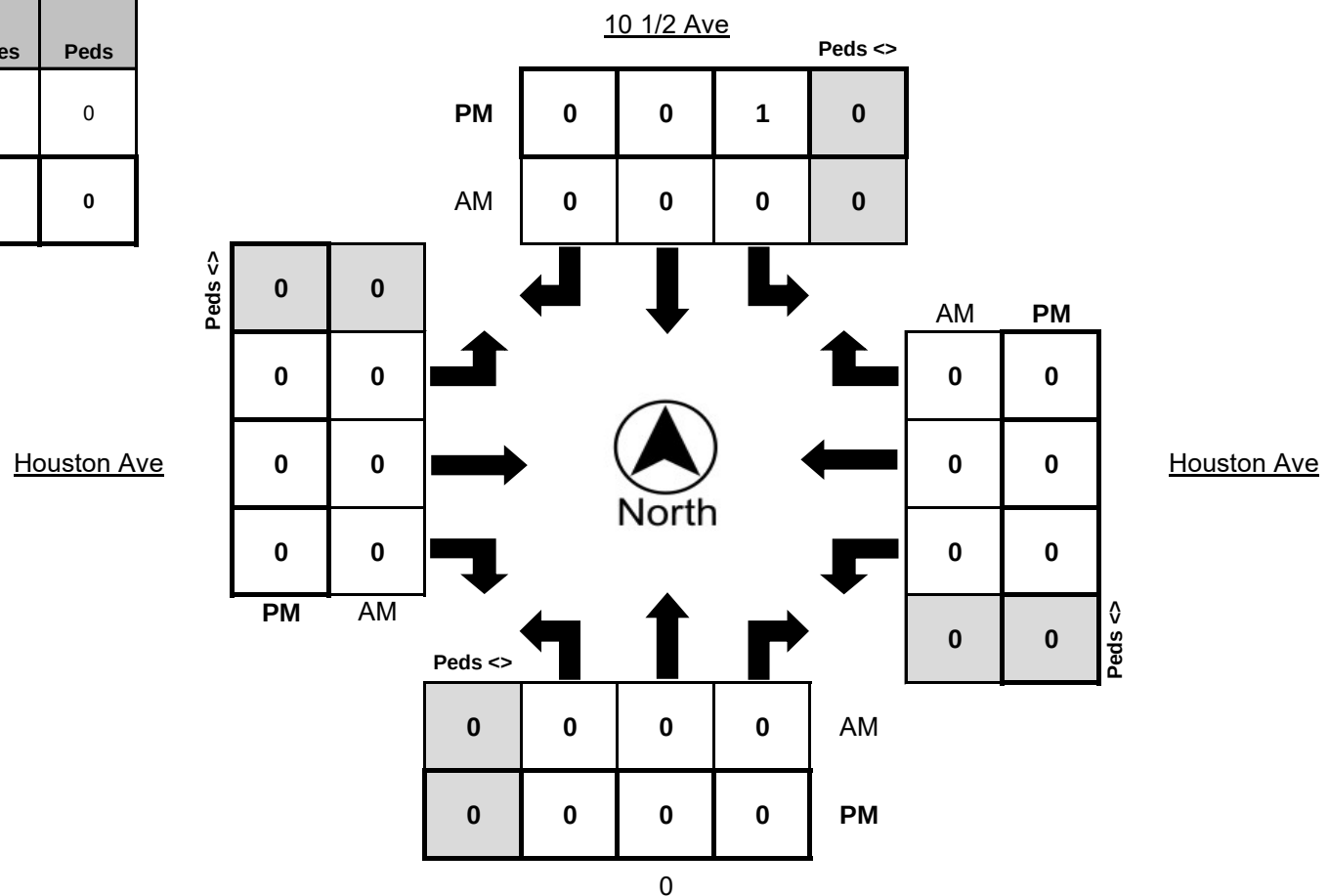
WEATHER Clear

| Time              | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 7:00 AM - 7:15 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:15 AM - 7:30 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:30 AM - 7:45 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 7:45 AM - 8:00 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:00 AM - 8:15 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:15 AM - 8:30 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:30 AM - 8:45 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 8:45 AM - 9:00 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| TOTAL             | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |

| Time              | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 4:00 PM - 4:15 PM | 0                | 0    | 0     | 1          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:15 PM - 4:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:30 PM - 4:45 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:45 PM - 5:00 PM | 0                | 0    | 0     | 0          | 1                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:00 PM - 5:15 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:15 PM - 5:30 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:30 PM - 5:45 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 5:45 PM - 6:00 PM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| TOTAL             | 0                | 0    | 0     | 1          | 1                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg Peds | Southbound Bikes |      |       | S.Leg Peds | Eastbound Bikes |      |       | E.Leg Peds | Westbound Bikes |      |       | W.Leg Peds |
|-------------------|------------------|------|-------|------------|------------------|------|-------|------------|-----------------|------|-------|------------|-----------------|------|-------|------------|
|                   | Left             | Thru | Right |            | Left             | Thru | Right |            | Left            | Thru | Right |            | Left            | Thru | Right |            |
| 7:45 AM - 8:45 AM | 0                | 0    | 0     | 0          | 0                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |
| 4:30 PM - 5:30 PM | 0                | 0    | 0     | 0          | 1                | 0    | 0     | 0          | 0               | 0    | 0     | 0          | 0               | 0    | 0     | 0          |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0     | 0    |
| PM Peak Total | 1     | 0    |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# Turning Movement Report

Prepared For:  
**JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Houston Ave @ 10th Ave  
COUNTY Kings  
COLLECTION DATE Tuesday, February 1, 2022

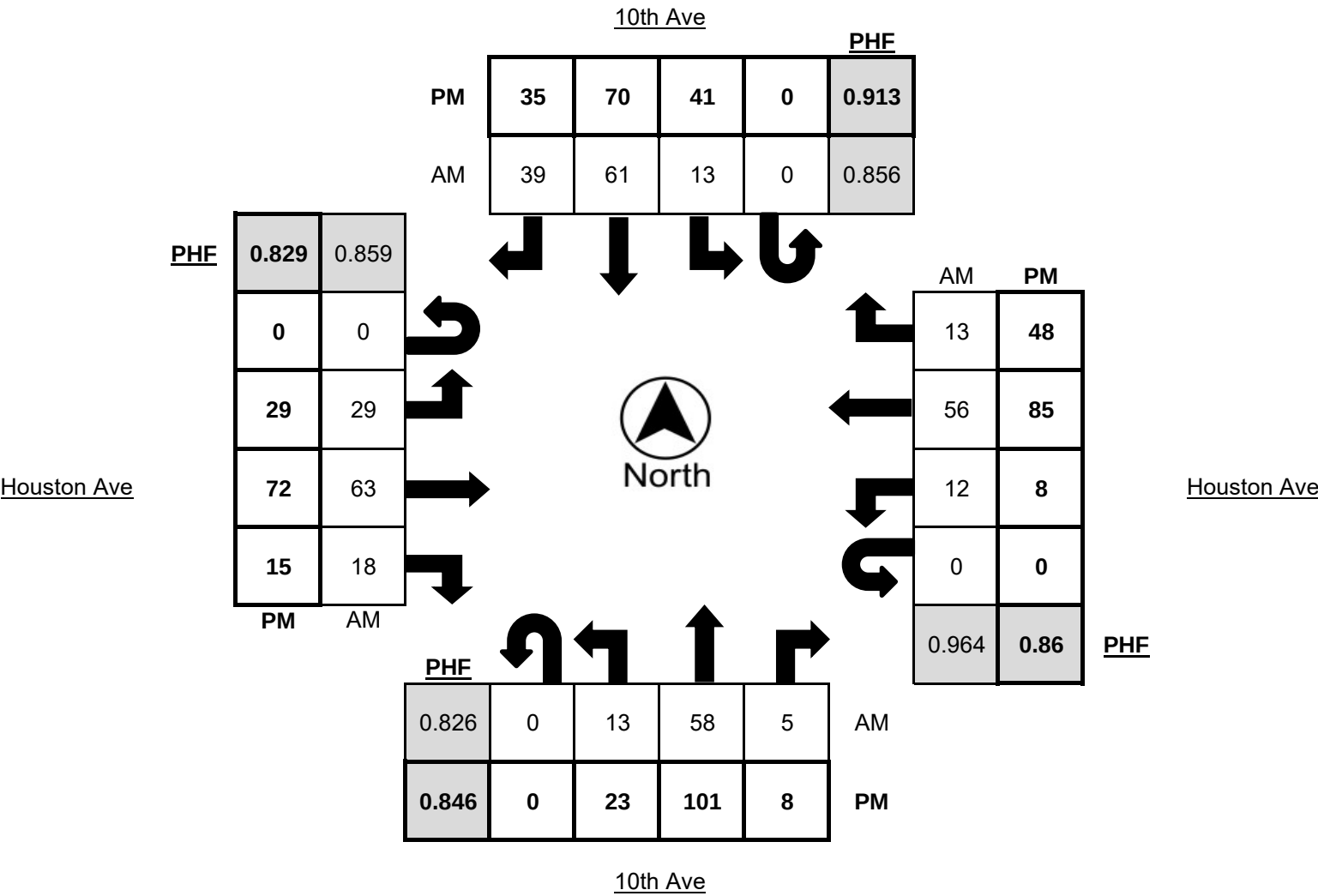
LATITUDE 36.2987  
LONGITUDE -119.6370  
WEATHER Clear

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:00 AM - 7:15 AM | 0          | 0    | 11   | 3     | 1      | 0          | 8    | 14   | 9     | 3      | 0         | 3    | 7    | 2     | 2      | 0         | 2    | 11   | 1     | 4      |
| 7:15 AM - 7:30 AM | 0          | 3    | 7    | 1     | 0      | 0          | 5    | 16   | 4     | 2      | 0         | 6    | 12   | 2     | 6      | 0         | 8    | 15   | 2     | 4      |
| 7:30 AM - 7:45 AM | 0          | 0    | 11   | 1     | 2      | 0          | 0    | 18   | 13    | 7      | 0         | 8    | 18   | 3     | 13     | 0         | 5    | 12   | 2     | 3      |
| 7:45 AM - 8:00 AM | 0          | 4    | 17   | 2     | 4      | 0          | 2    | 18   | 13    | 9      | 0         | 4    | 18   | 6     | 8      | 0         | 4    | 14   | 3     | 3      |
| 8:00 AM - 8:15 AM | 0          | 7    | 15   | 1     | 1      | 0          | 5    | 14   | 7     | 7      | 0         | 10   | 15   | 7     | 12     | 0         | 1    | 18   | 1     | 6      |
| 8:15 AM - 8:30 AM | 0          | 2    | 15   | 1     | 2      | 0          | 6    | 11   | 6     | 7      | 0         | 7    | 12   | 2     | 11     | 0         | 2    | 12   | 7     | 3      |
| 8:30 AM - 8:45 AM | 0          | 1    | 5    | 0     | 0      | 0          | 4    | 15   | 7     | 6      | 0         | 5    | 11   | 4     | 9      | 0         | 3    | 13   | 3     | 8      |
| 8:45 AM - 9:00 AM | 0          | 1    | 13   | 4     | 4      | 0          | 2    | 8    | 3     | 4      | 0         | 3    | 11   | 1     | 6      | 0         | 0    | 11   | 4     | 6      |
| TOTAL             | 0          | 18   | 94   | 13    | 14     | 0          | 32   | 114  | 62    | 45     | 0         | 46   | 104  | 27    | 67     | 0         | 25   | 106  | 23    | 37     |

| Time              | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 4:00 PM - 4:15 PM | 0          | 3    | 27   | 3     | 3      | 0          | 10   | 12   | 11    | 3      | 0         | 10   | 22   | 2     | 5      | 0         | 1    | 19   | 13    | 4      |
| 4:15 PM - 4:30 PM | 0          | 4    | 34   | 1     | 2      | 0          | 9    | 14   | 9     | 2      | 0         | 10   | 20   | 5     | 4      | 0         | 2    | 14   | 13    | 3      |
| 4:30 PM - 4:45 PM | 0          | 12   | 19   | 2     | 2      | 0          | 15   | 15   | 6     | 1      | 0         | 7    | 18   | 3     | 0      | 0         | 3    | 22   | 11    | 4      |
| 4:45 PM - 5:00 PM | 0          | 3    | 20   | 3     | 1      | 0          | 6    | 24   | 10    | 2      | 0         | 7    | 14   | 3     | 1      | 0         | 0    | 27   | 14    | 1      |
| 5:00 PM - 5:15 PM | 0          | 4    | 28   | 2     | 2      | 0          | 11   | 17   | 10    | 0      | 0         | 5    | 20   | 4     | 4      | 0         | 3    | 22   | 10    | 0      |
| 5:15 PM - 5:30 PM | 0          | 6    | 19   | 4     | 3      | 0          | 13   | 13   | 4     | 1      | 0         | 12   | 9    | 1     | 1      | 0         | 3    | 14   | 12    | 2      |
| 5:30 PM - 5:45 PM | 0          | 6    | 20   | 1     | 3      | 0          | 7    | 10   | 6     | 0      | 0         | 4    | 9    | 3     | 1      | 0         | 1    | 17   | 4     | 3      |
| 5:45 PM - 6:00 PM | 0          | 5    | 16   | 4     | 1      | 0          | 5    | 14   | 2     | 1      | 0         | 2    | 10   | 9     | 1      | 0         | 1    | 10   | 4     | 1      |
| TOTAL             | 0          | 43   | 183  | 20    | 17     | 0          | 76   | 119  | 58    | 10     | 0         | 57   | 122  | 30    | 17     | 0         | 14   | 145  | 81    | 18     |

| PEAK HOUR         | Northbound |      |      |       |        | Southbound |      |      |       |        | Eastbound |      |      |       |        | Westbound |      |      |       |        |
|-------------------|------------|------|------|-------|--------|------------|------|------|-------|--------|-----------|------|------|-------|--------|-----------|------|------|-------|--------|
|                   | U-Turn     | Left | Thru | Right | Trucks | U-Turn     | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks | U-Turn    | Left | Thru | Right | Trucks |
| 7:30 AM - 8:30 AM | 0          | 13   | 58   | 5     | 9      | 0          | 13   | 61   | 39    | 30     | 0         | 29   | 63   | 18    | 44     | 0         | 12   | 56   | 13    | 15     |
| 4:15 PM - 5:15 PM | 0          | 23   | 101  | 8     | 7      | 0          | 41   | 70   | 35    | 5      | 0         | 29   | 72   | 15    | 9      | 0         | 8    | 85   | 48    | 8      |

|    | PHF   | Trucks |
|----|-------|--------|
| AM | 0.905 | 25.8%  |
| PM | 0.983 | 5.4%   |





Metro Traffic Data Inc.  
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# Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION Houston Ave @ 10th Ave

LATITUDE 36.2987

COUNTY Kings

LONGITUDE -119.6370

COLLECTION DATE Tuesday, February 1, 2022

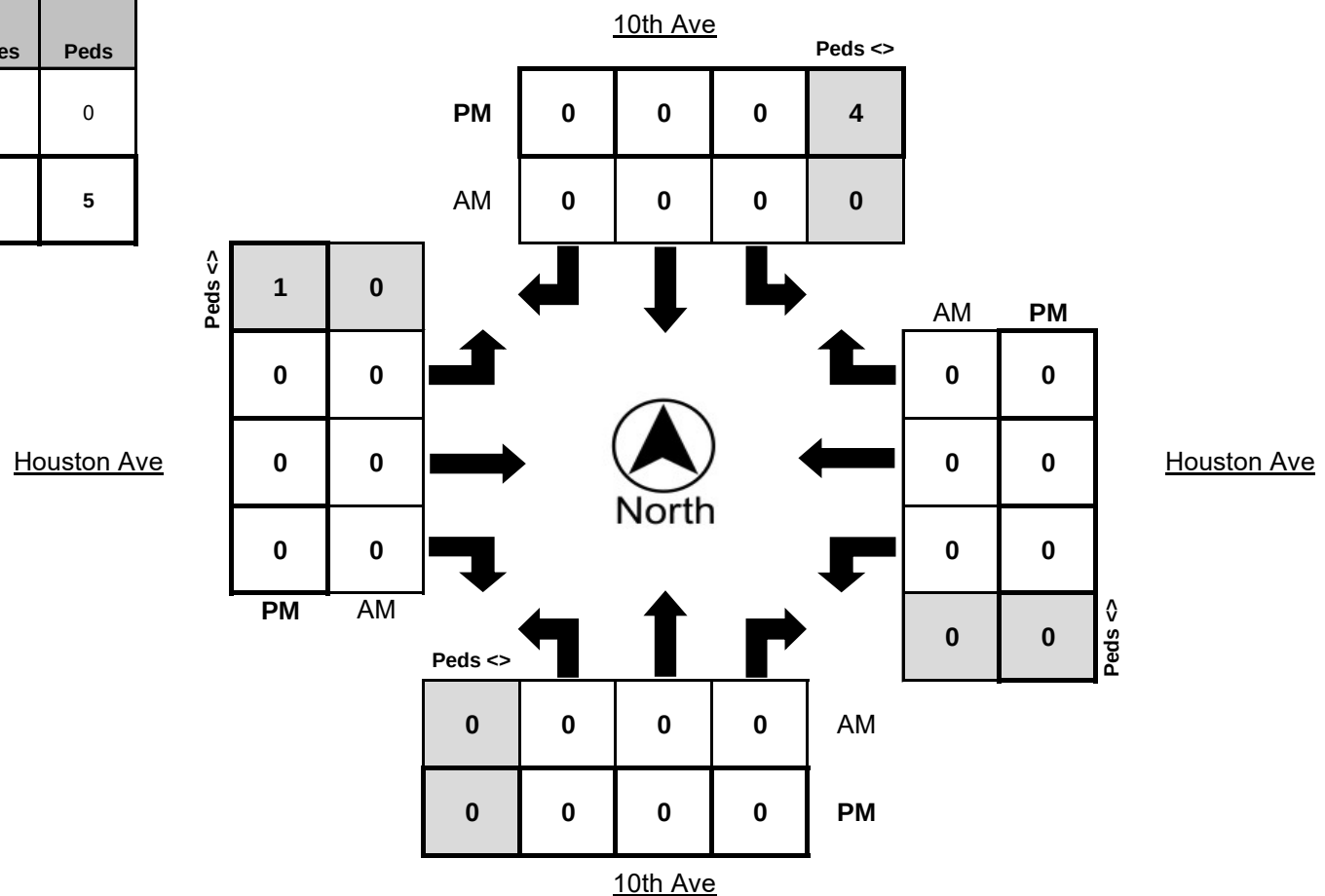
WEATHER Clear

| Time              | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 7:00 AM - 7:15 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 7:15 AM - 7:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 7:30 AM - 7:45 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 7:45 AM - 8:00 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:00 AM - 8:15 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:15 AM - 8:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:30 AM - 8:45 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 8:45 AM - 9:00 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| TOTAL             | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |

| Time              | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 4:00 PM - 4:15 PM | 0                | 0    | 0     | 4             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 1             | 0               | 0    | 0     | 0             |
| 4:15 PM - 4:30 PM | 0                | 0    | 0     | 2             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 4:30 PM - 4:45 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 1             |
| 4:45 PM - 5:00 PM | 0                | 0    | 0     | 2             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:00 PM - 5:15 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:15 PM - 5:30 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:30 PM - 5:45 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 5:45 PM - 6:00 PM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| TOTAL             | 0                | 0    | 0     | 8             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 1             | 0               | 0    | 0     | 1             |

| PEAK HOUR         | Northbound Bikes |      |       | N.Leg<br>Peds | Southbound Bikes |      |       | S.Leg<br>Peds | Eastbound Bikes |      |       | E.Leg<br>Peds | Westbound Bikes |      |       | W.Leg<br>Peds |
|-------------------|------------------|------|-------|---------------|------------------|------|-------|---------------|-----------------|------|-------|---------------|-----------------|------|-------|---------------|
|                   | Left             | Thru | Right |               | Left             | Thru | Right |               | Left            | Thru | Right |               | Left            | Thru | Right |               |
| 7:30 AM - 8:30 AM | 0                | 0    | 0     | 0             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 0             |
| 4:15 PM - 5:15 PM | 0                | 0    | 0     | 4             | 0                | 0    | 0     | 0             | 0               | 0    | 0     | 0             | 0               | 0    | 0     | 1             |

|               | Bikes | Peds |
|---------------|-------|------|
| AM Peak Total | 0     | 0    |
| PM Peak Total | 0     | 5    |





Metro Traffic Data Inc.  
310 N. Irwin Street - Suite 20  
Hanford, CA 93230  
  
800-975-6938 Phone/Fax  
www.metrotrafficdata.com

# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION

10 1/2 Ave approx 400' south of Highland St

COUNTY

Kings

DATE

Tuesday, January 25, 2022

LATITUDE

36.309484

LONGITUDE

-119.6459607

WEATHER

Clear

NUMBER OF LANES

2

|          | Northbound |     |     |     |       | Southbound |     |     |     |       | Hourly Totals |
|----------|------------|-----|-----|-----|-------|------------|-----|-----|-----|-------|---------------|
| Hour     | 1st        | 2nd | 3rd | 4th | Total | 1st        | 2nd | 3rd | 4th | Total |               |
| 12:00 AM | 1          | 0   | 0   | 0   | 1     | 1          | 0   | 0   | 2   | 3     | 4             |
| 1:00 AM  | 1          | 0   | 0   | 1   | 2     | 0          | 0   | 0   | 0   | 0     | 2             |
| 2:00 AM  | 6          | 4   | 1   | 2   | 13    | 4          | 1   | 0   | 1   | 6     | 19            |
| 3:00 AM  | 0          | 0   | 0   | 0   | 0     | 1          | 1   | 0   | 1   | 3     | 3             |
| 4:00 AM  | 0          | 2   | 5   | 1   | 8     | 0          | 0   | 2   | 3   | 5     | 13            |
| 5:00 AM  | 1          | 2   | 0   | 5   | 8     | 1          | 2   | 1   | 2   | 6     | 14            |
| 6:00 AM  | 4          | 1   | 4   | 4   | 13    | 1          | 2   | 11  | 6   | 20    | 33            |
| 7:00 AM  | 5          | 3   | 14  | 25  | 47    | 4          | 2   | 6   | 2   | 14    | 61            |
| 8:00 AM  | 7          | 9   | 4   | 2   | 22    | 4          | 4   | 11  | 6   | 25    | 47            |
| 9:00 AM  | 5          | 8   | 6   | 5   | 24    | 3          | 5   | 4   | 7   | 19    | 43            |
| 10:00 AM | 3          | 7   | 6   | 6   | 22    | 6          | 6   | 6   | 4   | 22    | 44            |
| 11:00 AM | 4          | 7   | 8   | 5   | 24    | 9          | 7   | 15  | 8   | 39    | 63            |
| 12:00 PM | 4          | 6   | 9   | 6   | 25    | 5          | 2   | 9   | 11  | 27    | 52            |
| 1:00 PM  | 7          | 11  | 9   | 10  | 37    | 11         | 5   | 15  | 20  | 51    | 88            |
| 2:00 PM  | 6          | 11  | 13  | 16  | 46    | 3          | 8   | 6   | 9   | 26    | 72            |
| 3:00 PM  | 8          | 5   | 15  | 14  | 42    | 10         | 12  | 16  | 13  | 51    | 93            |
| 4:00 PM  | 11         | 10  | 12  | 6   | 39    | 12         | 8   | 10  | 4   | 34    | 73            |
| 5:00 PM  | 9          | 10  | 4   | 8   | 31    | 8          | 11  | 7   | 7   | 33    | 64            |
| 6:00 PM  | 1          | 6   | 2   | 0   | 9     | 9          | 5   | 5   | 4   | 23    | 32            |
| 7:00 PM  | 2          | 4   | 2   | 3   | 11    | 2          | 4   | 6   | 2   | 14    | 25            |
| 8:00 PM  | 0          | 1   | 0   | 0   | 1     | 4          | 4   | 2   | 4   | 14    | 15            |
| 9:00 PM  | 6          | 1   | 0   | 0   | 7     | 3          | 1   | 2   | 1   | 7     | 14            |
| 10:00 PM | 0          | 0   | 0   | 1   | 1     | 1          | 1   | 2   | 1   | 5     | 6             |
| 11:00 PM | 2          | 1   | 0   | 2   | 5     | 2          | 1   | 0   | 0   | 3     | 8             |
| Total    | 49.3%      |     |     |     | 438   | 50.7%      |     |     |     | 450   |               |
|          | 888        |     |     |     |       |            |     |     |     |       |               |

AM%

39.0%

AM Peak 63

11:00 am to 12:00 pm

AM P.H.F.

0.68

PM%

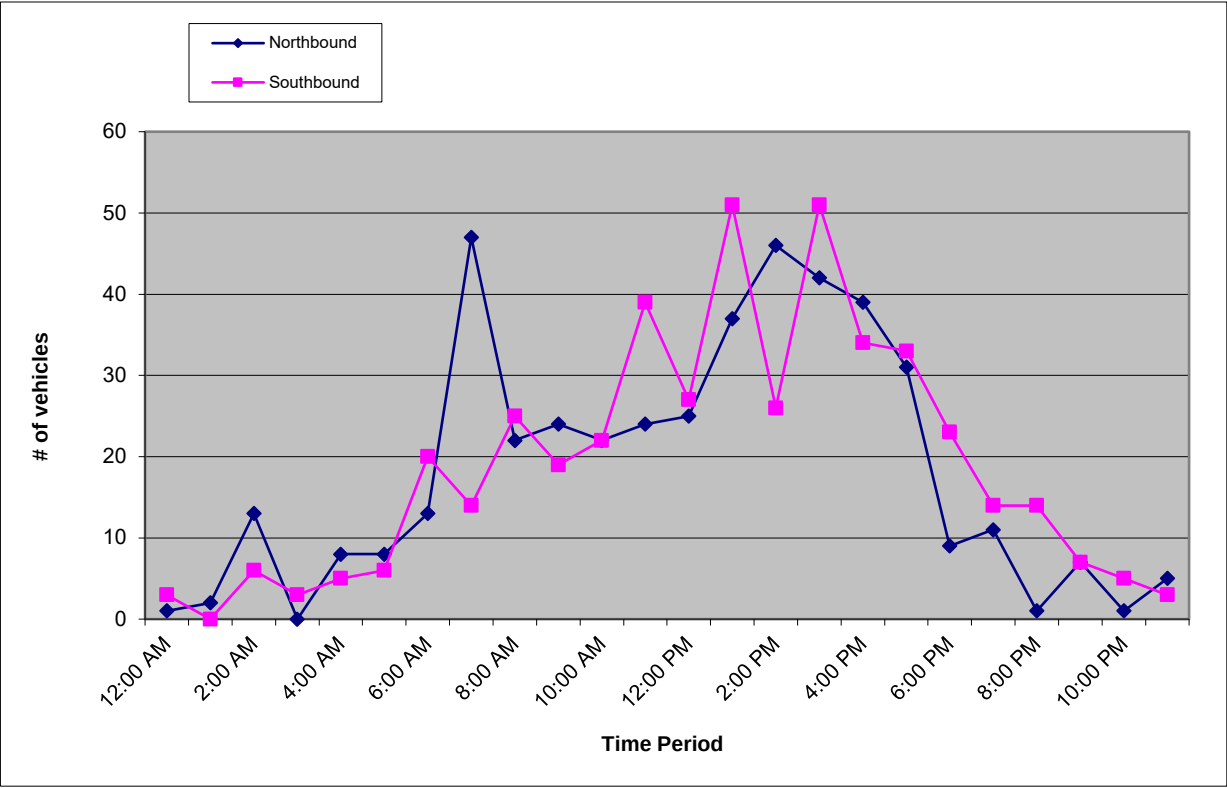
61.0%

PM Peak 99

3:30 pm to 4:30 pm

PM P.H.F.

0.80







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# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
516 W. Shaw Ave, Suite 103  
Fresno, CA 93704

LOCATION 10 1/2 Ave, approx 300' north of Houston Ave

LATITUDE 36.2990968

COUNTY Kings

LONGITUDE -119.6458958

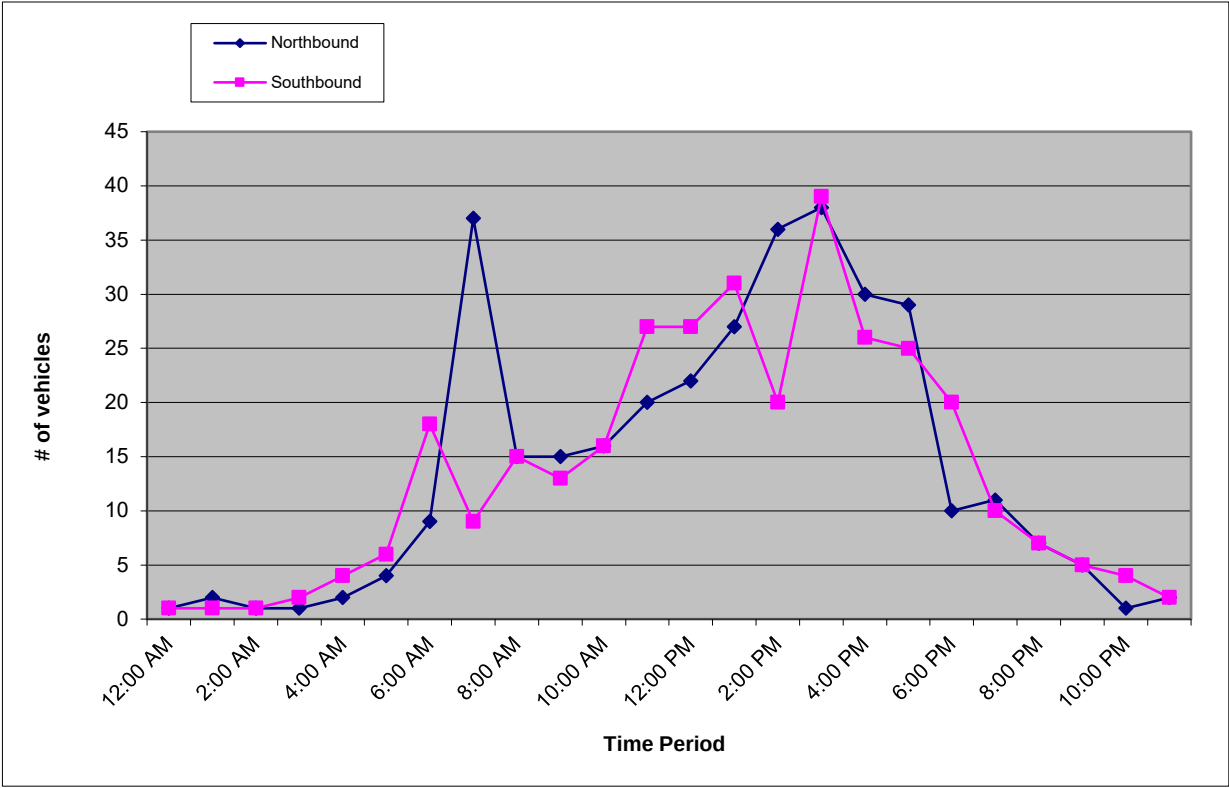
DATE Tuesday, January 25, 2022

WEATHER Clear

NUMBER OF LANES 2

|          | Northbound |     |     |     |       | Southbound |     |     |     |       | Hourly Totals |
|----------|------------|-----|-----|-----|-------|------------|-----|-----|-----|-------|---------------|
| Hour     | 1st        | 2nd | 3rd | 4th | Total | 1st        | 2nd | 3rd | 4th | Total |               |
| 12:00 AM | 1          | 0   | 0   | 0   | 1     | 0          | 0   | 0   | 1   | 1     | 2             |
| 1:00 AM  | 1          | 0   | 0   | 1   | 2     | 1          | 0   | 0   | 0   | 1     | 3             |
| 2:00 AM  | 1          | 0   | 0   | 0   | 1     | 0          | 1   | 0   | 0   | 1     | 2             |
| 3:00 AM  | 0          | 0   | 0   | 1   | 1     | 1          | 0   | 1   | 0   | 2     | 3             |
| 4:00 AM  | 0          | 1   | 1   | 0   | 2     | 2          | 0   | 0   | 2   | 4     | 6             |
| 5:00 AM  | 0          | 0   | 2   | 2   | 4     | 1          | 2   | 2   | 1   | 6     | 10            |
| 6:00 AM  | 3          | 0   | 4   | 2   | 9     | 2          | 3   | 7   | 6   | 18    | 27            |
| 7:00 AM  | 5          | 4   | 10  | 18  | 37    | 4          | 0   | 4   | 1   | 9     | 46            |
| 8:00 AM  | 5          | 7   | 2   | 1   | 15    | 2          | 2   | 9   | 2   | 15    | 30            |
| 9:00 AM  | 2          | 7   | 3   | 3   | 15    | 4          | 2   | 4   | 3   | 13    | 28            |
| 10:00 AM | 1          | 6   | 5   | 4   | 16    | 3          | 6   | 3   | 4   | 16    | 32            |
| 11:00 AM | 6          | 4   | 5   | 5   | 20    | 7          | 5   | 10  | 5   | 27    | 47            |
| 12:00 PM | 0          | 8   | 7   | 7   | 22    | 4          | 2   | 9   | 12  | 27    | 49            |
| 1:00 PM  | 4          | 9   | 9   | 5   | 27    | 7          | 2   | 10  | 12  | 31    | 58            |
| 2:00 PM  | 6          | 5   | 11  | 14  | 36    | 2          | 6   | 5   | 7   | 20    | 56            |
| 3:00 PM  | 7          | 8   | 15  | 8   | 38    | 6          | 8   | 16  | 9   | 39    | 77            |
| 4:00 PM  | 9          | 13  | 5   | 3   | 30    | 7          | 8   | 9   | 2   | 26    | 56            |
| 5:00 PM  | 9          | 14  | 1   | 5   | 29    | 5          | 10  | 5   | 5   | 25    | 54            |
| 6:00 PM  | 1          | 8   | 1   | 0   | 10    | 7          | 4   | 4   | 5   | 20    | 30            |
| 7:00 PM  | 2          | 5   | 1   | 3   | 11    | 4          | 2   | 2   | 2   | 10    | 21            |
| 8:00 PM  | 2          | 0   | 0   | 5   | 7     | 2          | 2   | 1   | 2   | 7     | 14            |
| 9:00 PM  | 3          | 0   | 1   | 1   | 5     | 2          | 1   | 1   | 1   | 5     | 10            |
| 10:00 PM | 0          | 0   | 0   | 1   | 1     | 0          | 1   | 2   | 1   | 4     | 5             |
| 11:00 PM | 0          | 0   | 0   | 2   | 2     | 2          | 0   | 0   | 0   | 2     | 4             |
| Total    | 50.9%      |     |     |     | 341   | 49.1%      |     |     |     | 329   |               |
|          | 670        |     |     |     |       |            |     |     |     |       |               |

AM% 35.2% AM Peak 47 11:00 am to 12:00 pm AM P.H.F. 0.78  
PM% 64.8% PM Peak 85 3:30 pm to 4:30 pm PM P.H.F. 0.69







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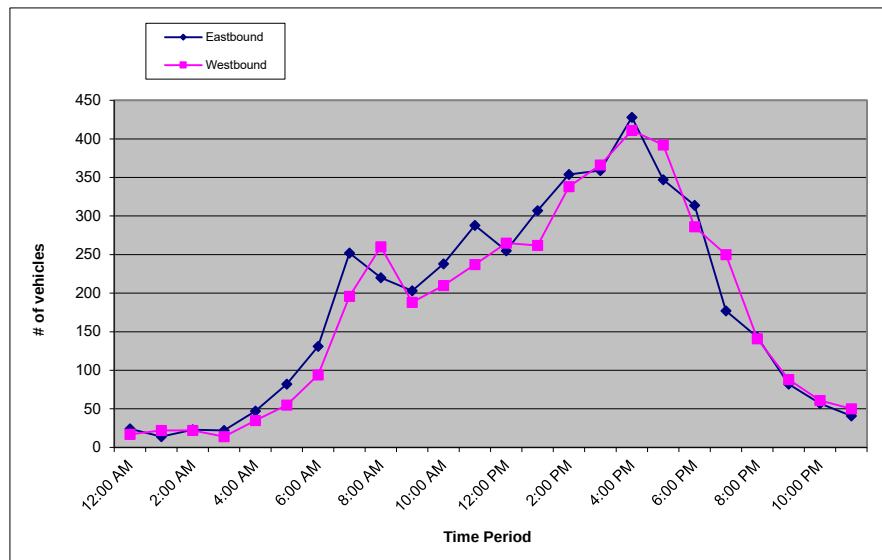
# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** Hanford Armona Rd between BNSF RR and Phillips St  
**COUNTY** Kings  
**COLLECTION DATE** Tuesday, February 1, 2022  
**NUMBER OF LANES** 3  
**LATITUDE** 36.3134175  
**LONGITUDE** -119.6490965  
**WEATHER** Clear

|          | Eastbound |     |     |     |       | Westbound |     |     |     |       | Hourly |
|----------|-----------|-----|-----|-----|-------|-----------|-----|-----|-----|-------|--------|
| Hour     | 1st       | 2nd | 3rd | 4th | Total | 1st       | 2nd | 3rd | 4th | Total | Totals |
| 12:00 AM | 4         | 12  | 4   | 4   | 24    | 7         | 2   | 2   | 6   | 17    | 41     |
| 1:00 AM  | 4         | 3   | 3   | 4   | 14    | 7         | 4   | 5   | 6   | 22    | 36     |
| 2:00 AM  | 1         | 8   | 6   | 8   | 23    | 2         | 4   | 11  | 5   | 22    | 45     |
| 3:00 AM  | 2         | 2   | 14  | 4   | 22    | 4         | 2   | 3   | 5   | 14    | 36     |
| 4:00 AM  | 5         | 9   | 16  | 17  | 47    | 5         | 9   | 9   | 12  | 35    | 82     |
| 5:00 AM  | 18        | 18  | 23  | 23  | 82    | 5         | 13  | 19  | 18  | 55    | 137    |
| 6:00 AM  | 30        | 32  | 27  | 42  | 131   | 16        | 14  | 32  | 32  | 94    | 225    |
| 7:00 AM  | 20        | 49  | 68  | 115 | 252   | 19        | 31  | 57  | 89  | 196   | 448    |
| 8:00 AM  | 60        | 55  | 51  | 54  | 220   | 93        | 54  | 55  | 58  | 260   | 480    |
| 9:00 AM  | 41        | 54  | 46  | 62  | 203   | 54        | 50  | 40  | 44  | 188   | 391    |
| 10:00 AM | 57        | 62  | 60  | 59  | 238   | 47        | 55  | 59  | 49  | 210   | 448    |
| 11:00 AM | 78        | 68  | 59  | 83  | 288   | 64        | 57  | 58  | 58  | 237   | 525    |
| 12:00 PM | 52        | 75  | 50  | 78  | 255   | 73        | 71  | 53  | 68  | 265   | 520    |
| 1:00 PM  | 68        | 66  | 74  | 99  | 307   | 55        | 64  | 70  | 73  | 262   | 569    |
| 2:00 PM  | 74        | 81  | 94  | 105 | 354   | 83        | 85  | 86  | 84  | 338   | 692    |
| 3:00 PM  | 86        | 92  | 99  | 82  | 359   | 107       | 80  | 90  | 89  | 366   | 725    |
| 4:00 PM  | 95        | 118 | 111 | 104 | 428   | 117       | 97  | 94  | 103 | 411   | 839    |
| 5:00 PM  | 96        | 84  | 82  | 85  | 347   | 125       | 105 | 79  | 83  | 392   | 739    |
| 6:00 PM  | 74        | 107 | 68  | 65  | 314   | 84        | 65  | 75  | 62  | 286   | 600    |
| 7:00 PM  | 50        | 53  | 40  | 34  | 177   | 99        | 51  | 57  | 43  | 250   | 427    |
| 8:00 PM  | 41        | 46  | 28  | 28  | 143   | 35        | 35  | 46  | 25  | 141   | 284    |
| 9:00 PM  | 24        | 15  | 24  | 19  | 82    | 27        | 20  | 23  | 18  | 88    | 170    |
| 10:00 PM | 19        | 10  | 14  | 14  | 57    | 20        | 17  | 11  | 13  | 61    | 118    |
| 11:00 PM | 6         | 10  | 17  | 8   | 41    | 11        | 10  | 15  | 14  | 50    | 91     |
| Total    | 50.9%     |     |     |     | 4408  | 49.1%     |     |     |     | 4260  |        |
|          | 8668      |     |     |     |       |           |     |     |     |       |        |

AM% 33.4% AM Peak 525 11:00 am to 12:00 pm AM P.H.F. 0.92  
 PM% 66.6% PM Peak 848 4:15 pm to 5:15 pm PM P.H.F. 0.96





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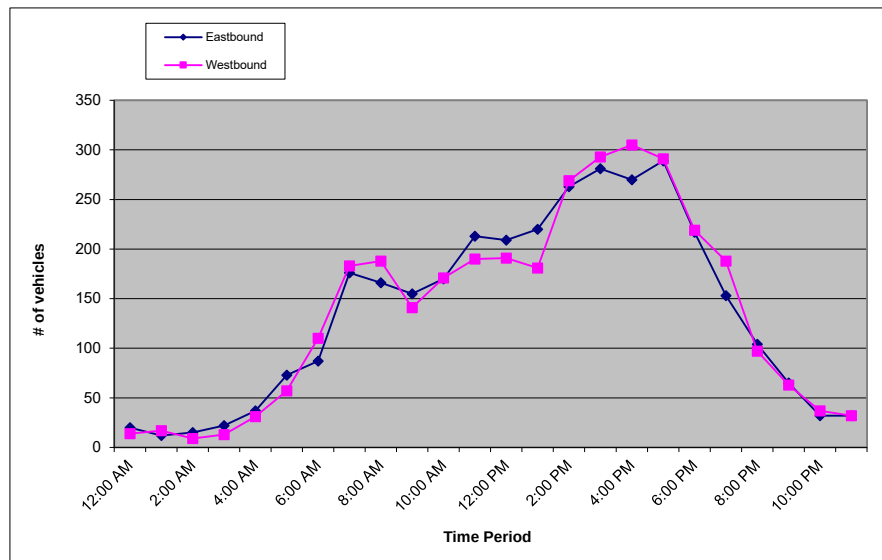
# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** Hanford Armona Rd btwn Harris St / Gilkey Ln **LATITUDE** 36.3133991  
**COUNTY** Kings **LONGITUDE** -119.6418133  
**COLLECTION DATE** Tuesday, February 1, 2022 **WEATHER** Clear  
**NUMBER OF LANES** 3

|          | Eastbound |     |     |     |       | Westbound |     |     |     |       | Hourly |
|----------|-----------|-----|-----|-----|-------|-----------|-----|-----|-----|-------|--------|
| Hour     | 1st       | 2nd | 3rd | 4th | Total | 1st       | 2nd | 3rd | 4th | Total | Totals |
| 12:00 AM | 3         | 11  | 2   | 4   | 20    | 8         | 2   | 3   | 1   | 14    | 34     |
| 1:00 AM  | 2         | 3   | 2   | 5   | 12    | 4         | 2   | 6   | 5   | 17    | 29     |
| 2:00 AM  | 1         | 6   | 2   | 6   | 15    | 1         | 1   | 5   | 2   | 9     | 24     |
| 3:00 AM  | 5         | 2   | 11  | 4   | 22    | 3         | 2   | 3   | 5   | 13    | 35     |
| 4:00 AM  | 6         | 5   | 12  | 14  | 37    | 4         | 9   | 6   | 12  | 31    | 68     |
| 5:00 AM  | 17        | 17  | 17  | 22  | 73    | 8         | 11  | 18  | 20  | 57    | 130    |
| 6:00 AM  | 21        | 19  | 27  | 20  | 87    | 17        | 25  | 34  | 34  | 110   | 197    |
| 7:00 AM  | 18        | 39  | 46  | 73  | 176   | 29        | 27  | 57  | 70  | 183   | 359    |
| 8:00 AM  | 47        | 40  | 43  | 36  | 166   | 70        | 33  | 41  | 44  | 188   | 354    |
| 9:00 AM  | 30        | 41  | 35  | 49  | 155   | 35        | 42  | 34  | 30  | 141   | 296    |
| 10:00 AM | 42        | 46  | 42  | 40  | 170   | 35        | 48  | 50  | 38  | 171   | 341    |
| 11:00 AM | 55        | 51  | 48  | 59  | 213   | 52        | 41  | 50  | 47  | 190   | 403    |
| 12:00 PM | 49        | 58  | 45  | 57  | 209   | 43        | 45  | 41  | 62  | 191   | 400    |
| 1:00 PM  | 48        | 47  | 53  | 72  | 220   | 47        | 41  | 45  | 48  | 181   | 401    |
| 2:00 PM  | 55        | 63  | 70  | 75  | 263   | 73        | 69  | 58  | 69  | 269   | 532    |
| 3:00 PM  | 63        | 76  | 63  | 79  | 281   | 96        | 72  | 62  | 63  | 293   | 574    |
| 4:00 PM  | 67        | 75  | 75  | 53  | 270   | 102       | 60  | 58  | 85  | 305   | 575    |
| 5:00 PM  | 80        | 65  | 74  | 70  | 289   | 78        | 76  | 82  | 55  | 291   | 580    |
| 6:00 PM  | 51        | 57  | 64  | 45  | 217   | 74        | 56  | 41  | 48  | 219   | 436    |
| 7:00 PM  | 43        | 47  | 35  | 28  | 153   | 62        | 44  | 46  | 36  | 188   | 341    |
| 8:00 PM  | 27        | 35  | 17  | 25  | 104   | 24        | 25  | 34  | 14  | 97    | 201    |
| 9:00 PM  | 22        | 15  | 16  | 12  | 65    | 19        | 11  | 18  | 15  | 63    | 128    |
| 10:00 PM | 11        | 4   | 11  | 6   | 32    | 11        | 9   | 6   | 11  | 37    | 69     |
| 11:00 PM | 6         | 7   | 12  | 7   | 32    | 4         | 7   | 11  | 10  | 32    | 64     |
| Total    | 49.9%     |     |     |     | 3281  | 50.1%     |     |     |     | 3290  |        |
|          | 6571      |     |     |     |       |           |     |     |     |       |        |

AM% 34.5% AM Peak 403 11:00 am to 12:00 pm AM P.H.F. 0.94  
 PM% 65.5% PM Peak 593 4:45 pm to 5:45 pm PM P.H.F. 0.94





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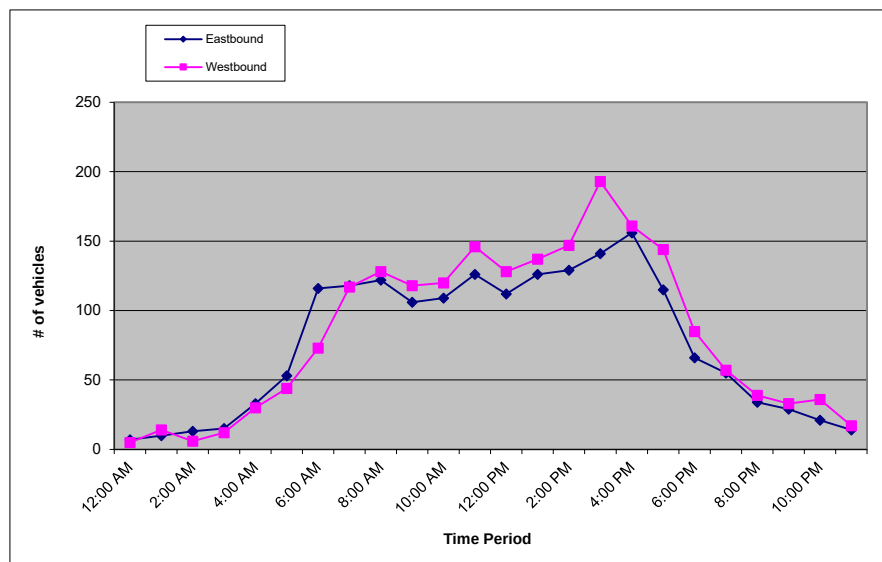
# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** Houston Ave approx. 700' west of BNSF RR **LATITUDE** 36.2984308  
**COUNTY** Kings **LONGITUDE** -119.6494196  
**COLLECTION DATE** Tuesday, February 1, 2022 **WEATHER** Clear  
**NUMBER OF LANES** 2

| Hour         | Eastbound |     |     |     |       | Westbound |     |     |     |       | Hourly Totals |
|--------------|-----------|-----|-----|-----|-------|-----------|-----|-----|-----|-------|---------------|
|              | 1st       | 2nd | 3rd | 4th | Total | 1st       | 2nd | 3rd | 4th | Total |               |
| 12:00 AM     | 2         | 2   | 2   | 1   | 7     | 0         | 0   | 1   | 4   | 5     | 12            |
| 1:00 AM      | 2         | 5   | 0   | 3   | 10    | 5         | 2   | 4   | 3   | 14    | 24            |
| 2:00 AM      | 6         | 3   | 4   | 0   | 13    | 2         | 0   | 4   | 0   | 6     | 19            |
| 3:00 AM      | 1         | 0   | 7   | 7   | 15    | 3         | 1   | 3   | 5   | 12    | 27            |
| 4:00 AM      | 6         | 6   | 13  | 8   | 33    | 9         | 9   | 5   | 7   | 30    | 63            |
| 5:00 AM      | 12        | 13  | 19  | 9   | 53    | 9         | 13  | 10  | 12  | 44    | 97            |
| 6:00 AM      | 20        | 24  | 37  | 35  | 116   | 10        | 17  | 10  | 36  | 73    | 189           |
| 7:00 AM      | 17        | 27  | 33  | 41  | 118   | 29        | 25  | 30  | 33  | 117   | 235           |
| 8:00 AM      | 38        | 31  | 29  | 24  | 122   | 46        | 30  | 32  | 20  | 128   | 250           |
| 9:00 AM      | 27        | 27  | 26  | 26  | 106   | 31        | 29  | 30  | 28  | 118   | 224           |
| 10:00 AM     | 27        | 25  | 28  | 29  | 109   | 22        | 31  | 31  | 36  | 120   | 229           |
| 11:00 AM     | 32        | 30  | 33  | 31  | 126   | 32        | 38  | 46  | 30  | 146   | 272           |
| 12:00 PM     | 25        | 29  | 29  | 29  | 112   | 38        | 25  | 35  | 30  | 128   | 240           |
| 1:00 PM      | 31        | 29  | 33  | 33  | 126   | 35        | 35  | 35  | 32  | 137   | 263           |
| 2:00 PM      | 27        | 32  | 33  | 37  | 129   | 23        | 39  | 47  | 38  | 147   | 276           |
| 3:00 PM      | 33        | 21  | 40  | 47  | 141   | 47        | 47  | 58  | 41  | 193   | 334           |
| 4:00 PM      | 45        | 39  | 37  | 35  | 156   | 35        | 44  | 50  | 32  | 161   | 317           |
| 5:00 PM      | 29        | 23  | 28  | 35  | 115   | 40        | 39  | 37  | 28  | 144   | 259           |
| 6:00 PM      | 21        | 13  | 14  | 18  | 66    | 32        | 19  | 26  | 8   | 85    | 151           |
| 7:00 PM      | 24        | 6   | 15  | 10  | 55    | 18        | 14  | 14  | 11  | 57    | 112           |
| 8:00 PM      | 10        | 7   | 10  | 7   | 34    | 11        | 9   | 10  | 9   | 39    | 73            |
| 9:00 PM      | 10        | 7   | 7   | 5   | 29    | 14        | 8   | 5   | 6   | 33    | 62            |
| 10:00 PM     | 9         | 4   | 5   | 3   | 21    | 9         | 7   | 12  | 8   | 36    | 57            |
| 11:00 PM     | 1         | 5   | 2   | 6   | 14    | 11        | 2   | 4   | 0   | 17    | 31            |
| <b>Total</b> | 47.9%     |     |     |     |       | 52.1%     |     |     |     |       | 1990          |
|              | 1826      |     |     |     |       | 3816      |     |     |     |       |               |

AM% 43.0% AM Peak 276 10:45 am to 11:45 am AM P.H.F. 0.87  
 PM% 57.0% PM Peak 349 3:30 pm to 4:30 pm PM P.H.F. 0.89





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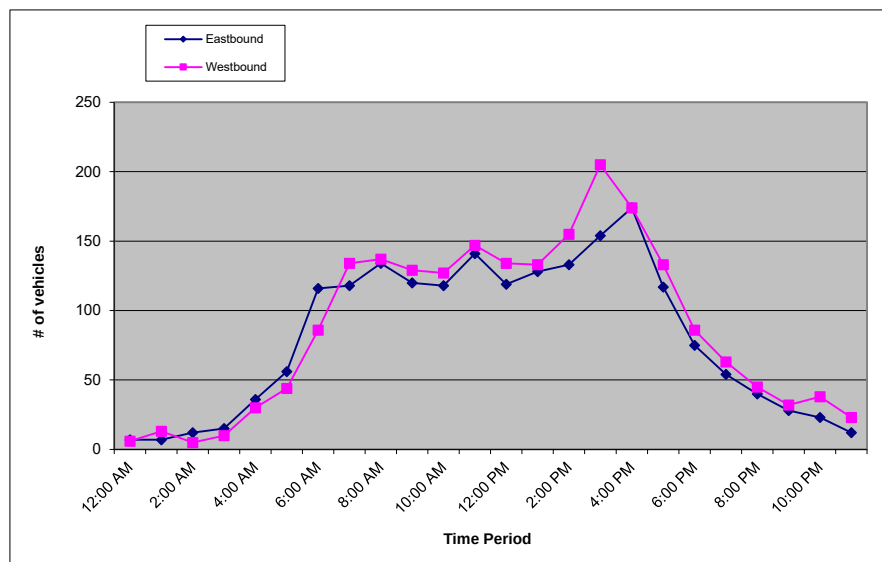
# 24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**  
 516 W. Shaw Ave, Suite 103  
 Fresno, CA 93704

**LOCATION** Houston Ave btwn Superior Soil / Valley Pallet Drives **LATITUDE** 36.2986037  
**COUNTY** Kings **LONGITUDE** -119.6419416  
**COLLECTION DATE** Tuesday, February 1, 2022 **WEATHER** Clear  
**NUMBER OF LANES** 2

|          | Eastbound |     |     |     |       | Westbound |     |     |     |       | Hourly |
|----------|-----------|-----|-----|-----|-------|-----------|-----|-----|-----|-------|--------|
| Hour     | 1st       | 2nd | 3rd | 4th | Total | 1st       | 2nd | 3rd | 4th | Total | Totals |
| 12:00 AM | 2         | 2   | 2   | 1   | 7     | 1         | 0   | 2   | 3   | 6     | 13     |
| 1:00 AM  | 1         | 3   | 0   | 3   | 7     | 3         | 2   | 4   | 4   | 13    | 20     |
| 2:00 AM  | 0         | 5   | 7   | 0   | 12    | 0         | 0   | 4   | 1   | 5     | 17     |
| 3:00 AM  | 1         | 0   | 5   | 9   | 15    | 3         | 1   | 3   | 3   | 10    | 25     |
| 4:00 AM  | 6         | 7   | 15  | 8   | 36    | 9         | 8   | 7   | 6   | 30    | 66     |
| 5:00 AM  | 12        | 13  | 17  | 14  | 56    | 8         | 16  | 11  | 9   | 44    | 100    |
| 6:00 AM  | 20        | 25  | 34  | 37  | 116   | 12        | 15  | 17  | 42  | 86    | 202    |
| 7:00 AM  | 14        | 24  | 37  | 43  | 118   | 29        | 25  | 38  | 42  | 134   | 252    |
| 8:00 AM  | 42        | 34  | 37  | 21  | 134   | 50        | 35  | 28  | 24  | 137   | 271    |
| 9:00 AM  | 26        | 30  | 28  | 36  | 120   | 33        | 32  | 32  | 32  | 129   | 249    |
| 10:00 AM | 29        | 31  | 28  | 30  | 118   | 32        | 29  | 28  | 38  | 127   | 245    |
| 11:00 AM | 30        | 38  | 36  | 37  | 141   | 36        | 38  | 48  | 25  | 147   | 288    |
| 12:00 PM | 30        | 26  | 34  | 29  | 119   | 34        | 34  | 35  | 31  | 134   | 253    |
| 1:00 PM  | 36        | 31  | 32  | 29  | 128   | 36        | 30  | 35  | 32  | 133   | 261    |
| 2:00 PM  | 31        | 31  | 37  | 34  | 133   | 28        | 39  | 51  | 37  | 155   | 288    |
| 3:00 PM  | 43        | 22  | 42  | 47  | 154   | 45        | 61  | 55  | 44  | 205   | 359    |
| 4:00 PM  | 49        | 40  | 41  | 44  | 174   | 37        | 43  | 49  | 45  | 174   | 348    |
| 5:00 PM  | 31        | 31  | 21  | 34  | 117   | 37        | 33  | 38  | 25  | 133   | 250    |
| 6:00 PM  | 26        | 9   | 19  | 21  | 75    | 37        | 17  | 24  | 8   | 86    | 161    |
| 7:00 PM  | 20        | 9   | 14  | 11  | 54    | 18        | 18  | 17  | 10  | 63    | 117    |
| 8:00 PM  | 10        | 9   | 10  | 11  | 40    | 12        | 12  | 11  | 10  | 45    | 85     |
| 9:00 PM  | 10        | 7   | 7   | 4   | 28    | 13        | 8   | 5   | 6   | 32    | 60     |
| 10:00 PM | 7         | 6   | 6   | 4   | 23    | 10        | 7   | 12  | 9   | 38    | 61     |
| 11:00 PM | 1         | 3   | 2   | 6   | 12    | 11        | 6   | 4   | 2   | 23    | 35     |
| Total    | 48.1%     |     |     |     | 1937  | 51.9%     |     |     |     | 2089  |        |
|          | 4026      |     |     |     |       |           |     |     |     |       |        |

AM% 43.4% AM Peak 294 10:45 am to 11:45 am AM P.H.F. 0.88  
 PM% 56.6% PM Peak 359 3:00 pm to 4:00 pm PM P.H.F. 0.93



## Appendix C: Traffic Modeling



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info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

*A p p | C*

January 18, 2022

Mike Aronson, P.E.  
Kittle son & Associates, Inc.  
155 Grand Avenue, Suite 505  
Oakland, CA 94612

Via Email Only: [maronson@kittelson.com](mailto:maronson@kittelson.com)

**Subject: Traffic Modeling Request for the Preparation of a Traffic Impact Analysis and Vehicle Miles Traveled Analysis for the Lunaria Project Located on the Southeast quadrant of Hanford-Armona Road and Avenue 10 ½ in the City of Hanford (JLB Project 047-002)**

Dear Mr. Aronson,

JLB Traffic Engineering, Inc. (JLB) hereby requests traffic modeling for the preparation of a Traffic Impact Analysis (TIA) and Vehicle Miles Traveled (VMT) Analysis for the proposed Lunaria Project (Project) located on the southeast quadrant of Hanford-Armona Road and Avenue 10 ½ in the City of Hanford. The Project proposes to develop the site with 443 single family residential units and a 4.9-acre public park. Based on information provided to JLB, the Project is consistent with the City of Hanford General Plan. An aerial of the Project vicinity is shown in Exhibit A. The latest Project Site Plan is presented in Exhibit B.

The purpose of the TIA and VMT Analysis is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process.

**Scenarios:**

The following scenarios are requested:

1. Base Year 2021 (with Link and TAZ modifications)
2. Cumulative Year 2042 plus Project Select Zone (with Link and TAZ modifications)
3. Differences between model runs 2 and 1 above

**Changes and/or additions to the Model Network or TAZ's**

JLB reviewed the Kings CAG model network for the Base Year 2021 and Cumulative Year 2042. Based on this review, JLB requests the following link and TAZ network modifications. Details on the requested Link and TAZ modifications for Base Year 2021 and Cumulative Year 2042 are illustrated in Exhibit C.

**LINK and TAZ MODIFICATIONS (Base Year 2021 Scenario Only):**

1. Modify 10<sup>th</sup> Street as follows:
  - a. Between Hanford-Armona Avenue and 3<sup>rd</sup> Street
    - i. Decrease the number of lanes to 1 in each direction



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

Page | 1

***LINK and TAZ MODIFICATIONS (Base Year 2021 and Cumulative Year 2042 plus Project Select Zone Scenarios):***

1. Eliminate existing TAZ connector between Node 752 and 10 ½ Avenue
2. Modify Hanford-Armona Avenue as follows:
  - a. Between Node 13557 and Node 10865
    - i. Decrease the speed limit to 40 MPH in both directions
  - b. Between Node 11294 and Node 11686
    - i. Decrease the speed limit to 40 MPH in both directions
3. Modify Houston Avenue as follows:
  - a. Between 12<sup>th</sup> Avenue and Node 11940
    - i. Increase the speed limit to 55 MPH in both directions
  - b. Between Node 11940 and Node 13572
    - i. Decrease the speed limit to 45 MPH in both directions
4. Modify 11<sup>th</sup> Avenue as follows:
  - a. Between Hume Avenue and Hanford-Armona Avenue
    - i. Decrease the speed limit to 40 MPH in both directions
5. Modify 10 ½ Avenue as follows:
  - a. Between Hanford-Armona Avenue and Node 10566
    - i. Decrease the speed limit to 35 MPH in both directions
6. Modify Irwin Avenue as follows:
  - a. Between Node 10566 and 3<sup>rd</sup> Street
    - i. Decrease the speed limit to 25 MPH in both directions
7. Modify Harris Street as follows:
  - a. Between Hanford-Armona Avenue and 3<sup>rd</sup> Street
    - i. Decrease the speed limit to 25 MPH in both directions
8. Modify 10<sup>th</sup> Street as follows:
  - a. Between Houston Avenue and Hanford-Armona Avenue
    - i. Increase the speed limit to 50 MPH in both directions
  - b. Between Hanford-Armona Avenue and 3<sup>rd</sup> Street
    - i. Increase the speed limit to 45 MPH in both directions

***LINK and Project MODIFICATIONS (Cumulative Year 2042 plus Project Select Zone Scenario Only):***

1. Modify Houston Avenue as follows:
  - a. Between 12<sup>th</sup> Avenue and 10<sup>th</sup> Avenue
    - i. Decrease the number of lanes to 1 in each direction
2. Create Orchard Avenue between 10 ½ Avenue and 10<sup>th</sup> Avenue.
  - a. Classification: Collector Roadway
  - b. Lanes: One lane in each direction
  - c. Speed: 35 mph

3. Create TAZ A (Northern Project) generally located on the southeast quadrant of Hanford-Armona Avenue and 10 ½ Avenue. Taz A shall have TAZ connectors to 10 ½ Avenue, Orchard Avenue and Hanford Armona Road.
4. Create TAZ B (Southern Project) generally located on the southeast quadrant of Hanford-Armona Avenue and 10 ½ Avenue. Taz B shall have TAZ connectors to 10 ½ Avenue and Orchard Avenue.

### TAZ A (Northern Project) Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for TAZ A of the proposed Project with trip generation rates for 341 Single-Family Detached Housing units and a 4.9-acre public park. At buildout, TAZ A of proposed Project is estimated to generate 3,220 daily trips, 239 AM peak hour trips and 322 PM peak hour trips.

**Table I: TAZ A (Northern Project) Trip Generation**

| Land Use (ITE Code)                  | Size | Unit  | Daily |       | AM (7-9) Peak Hour |    |     |    |     |       | PM (4-6) Peak Hour |    |     |     |     |       |
|--------------------------------------|------|-------|-------|-------|--------------------|----|-----|----|-----|-------|--------------------|----|-----|-----|-----|-------|
|                                      |      |       | Rate  | Total | Trip Rate          | In | Out | In | Out | Total | Trip Rate          | In | Out | In  | Out | Total |
|                                      |      |       |       |       |                    | %  |     |    |     |       |                    | %  |     |     |     |       |
| Single-Family Detached Housing (210) | 341  | d.u.  | 9.43  | 3,216 | 0.70               | 26 | 74  | 62 | 177 | 239   | 0.94               | 63 | 37  | 202 | 119 | 321   |
| Public Park (411)                    | 4.9  | Acres | 0.78  | 4     | 0.02               | 59 | 41  | 0  | 0   | 0     | 0.11               | 55 | 54  | 1   | 0   | 1     |
| Total Project Trips                  |      |       |       | 3,220 |                    |    |     | 62 | 177 | 239   |                    |    |     | 203 | 119 | 322   |

Note: d.u. = Dwelling Units

### TAZ B (Southern Project) Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table II presents the trip generation for TAZ B of the proposed Project with trip generation rates for 102 Single-Family Detached Housing units. At buildout, TAZ B of the proposed Project is estimated to generate 961 daily trips, 71 AM peak hour trips and 96 PM peak hour trips.

**Table II: TAZ B (Southern Project) Trip Generation**

| Land Use (ITE Code)                  | Size | Unit | Daily |       | AM (7-9) Peak Hour |    |     |    |     |       | PM (4-6) Peak Hour |    |     |    |     |       |
|--------------------------------------|------|------|-------|-------|--------------------|----|-----|----|-----|-------|--------------------|----|-----|----|-----|-------|
|                                      |      |      | Rate  | Total | Trip Rate          | In | Out | In | Out | Total | Trip Rate          | In | Out | In | Out | Total |
|                                      |      |      |       |       |                    | %  |     |    |     |       |                    | %  |     |    |     |       |
| Single-Family Detached Housing (210) | 102  | d.u. | 9.43  | 961   | 0.70               | 26 | 74  | 18 | 53  | 71    | 0.94               | 63 | 37  | 60 | 36  | 96    |
| Total Project Trips                  |      |      |       | 961   |                    |    |     | 18 | 53  | 71    |                    |    |     | 60 | 36  | 96    |

Note: d.u. = Dwelling Units

### Vehicle Miles Traveled

It is requested that Kings CAG modeling consultant prepare a detailed VMT analysis for the Project. The proposed Project land use classification is Low Density Residential. Please report total regional VMT with the project and without the project in Word or Excel format.



Mr. Aronson – Kittelson & Associates, Inc.  
Traffic Modeling Request (JLB Project No. 047-002)  
January 18, 2022

Please feel welcome to contact me if you have any questions or require additional information. I can be reached by phone at (559) 869-4514, or via email at [cayala@jlbtraffic.com](mailto:cayala@jlbtraffic.com).

Sincerely,



Carlos Ayala-Magana, EIT  
JLB Traffic Engineering, Inc.

cc: Jose Luis Benavides, JLB Traffic Engineering, Inc.

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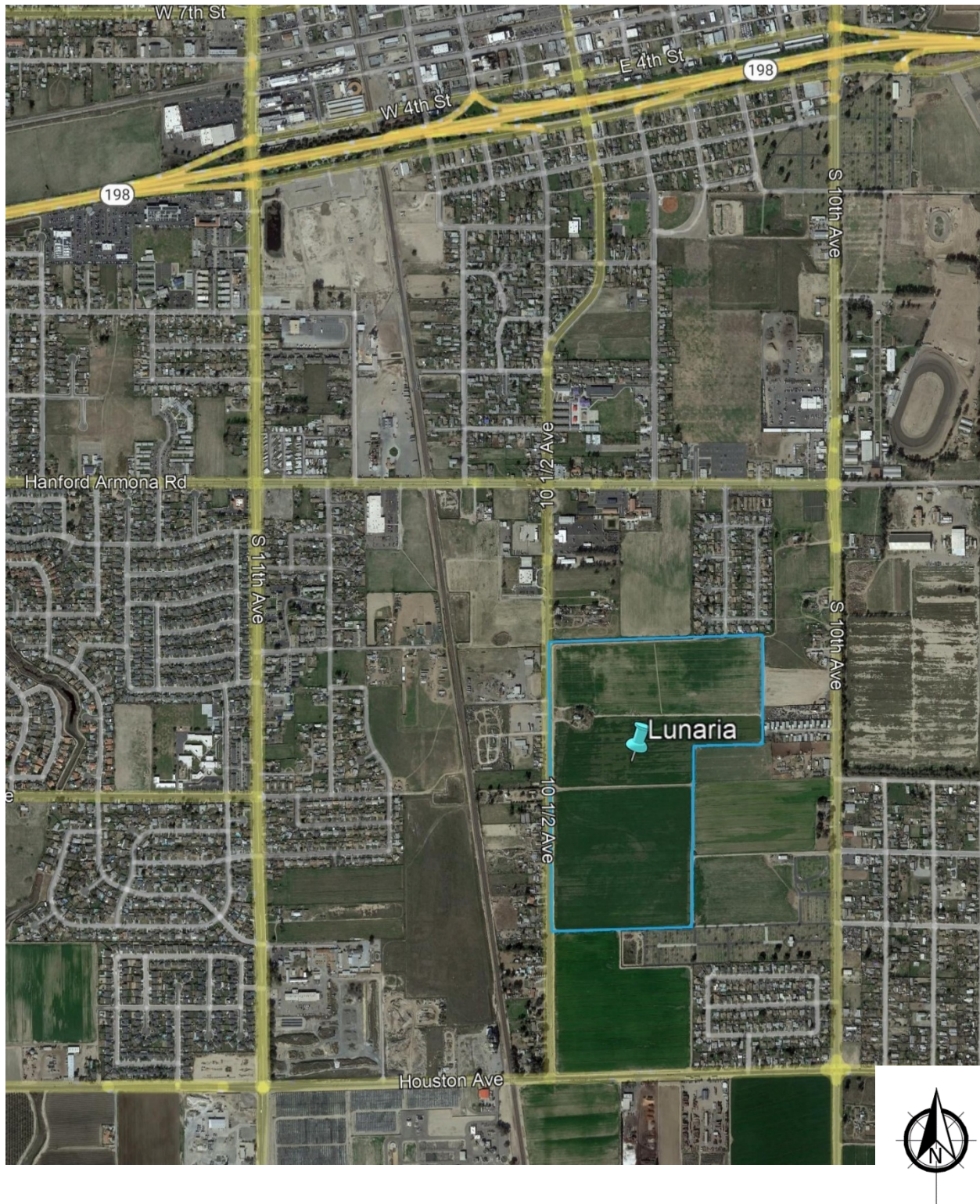


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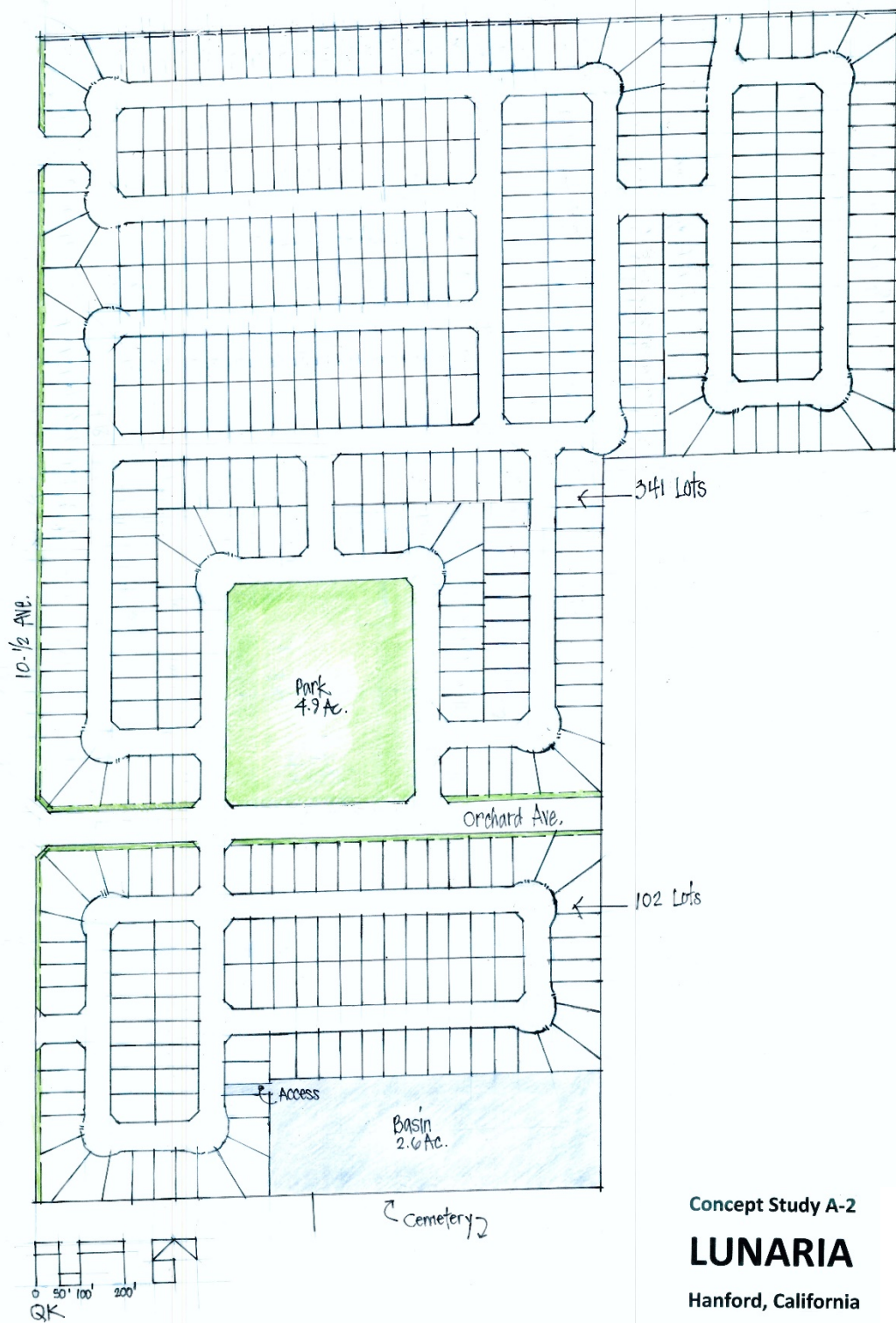
Page | 4

## Exhibit A – Project Site Aerial





## Exhibit B – Project Site Plan



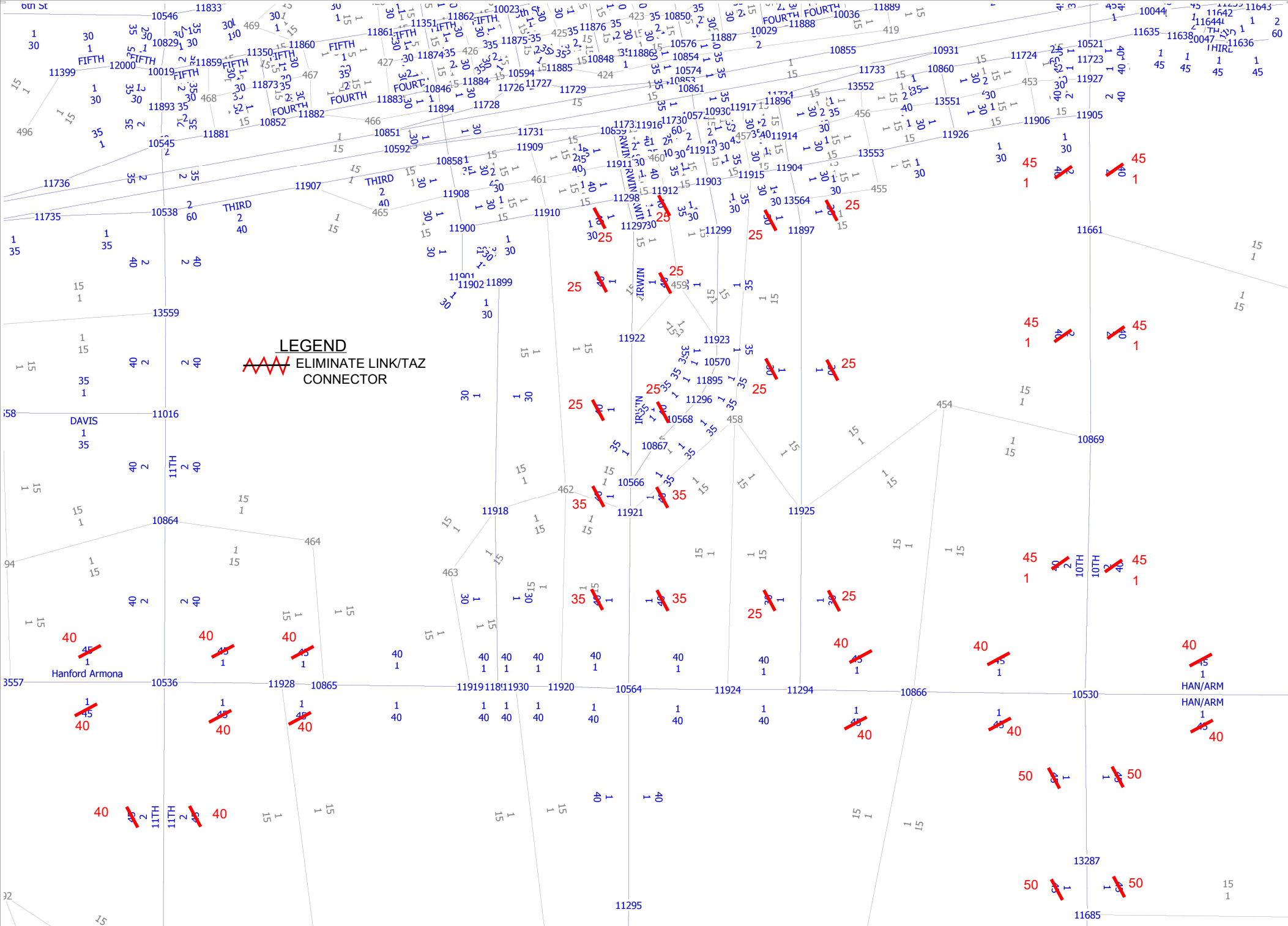
## Exhibit C – Link and TAZ Modifications



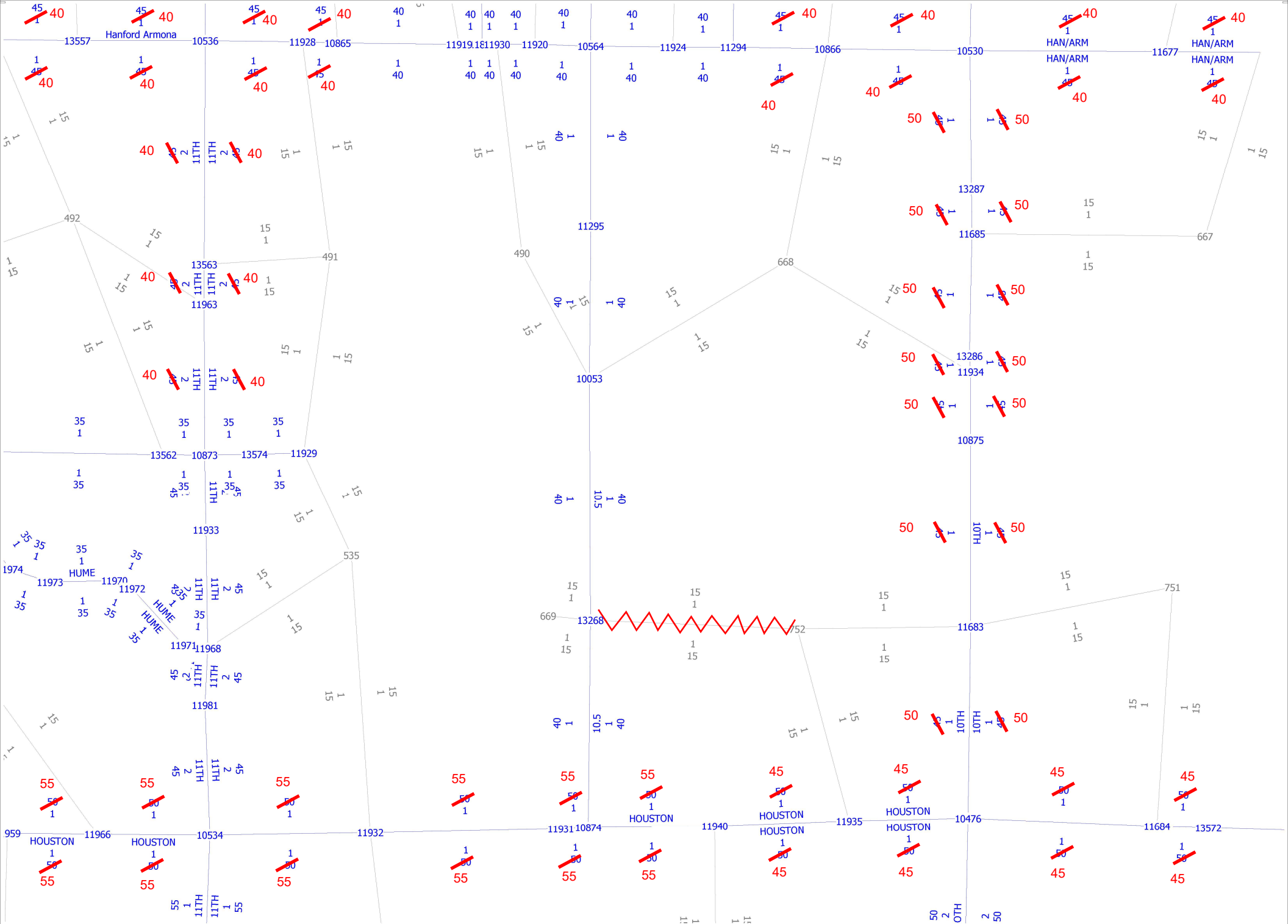
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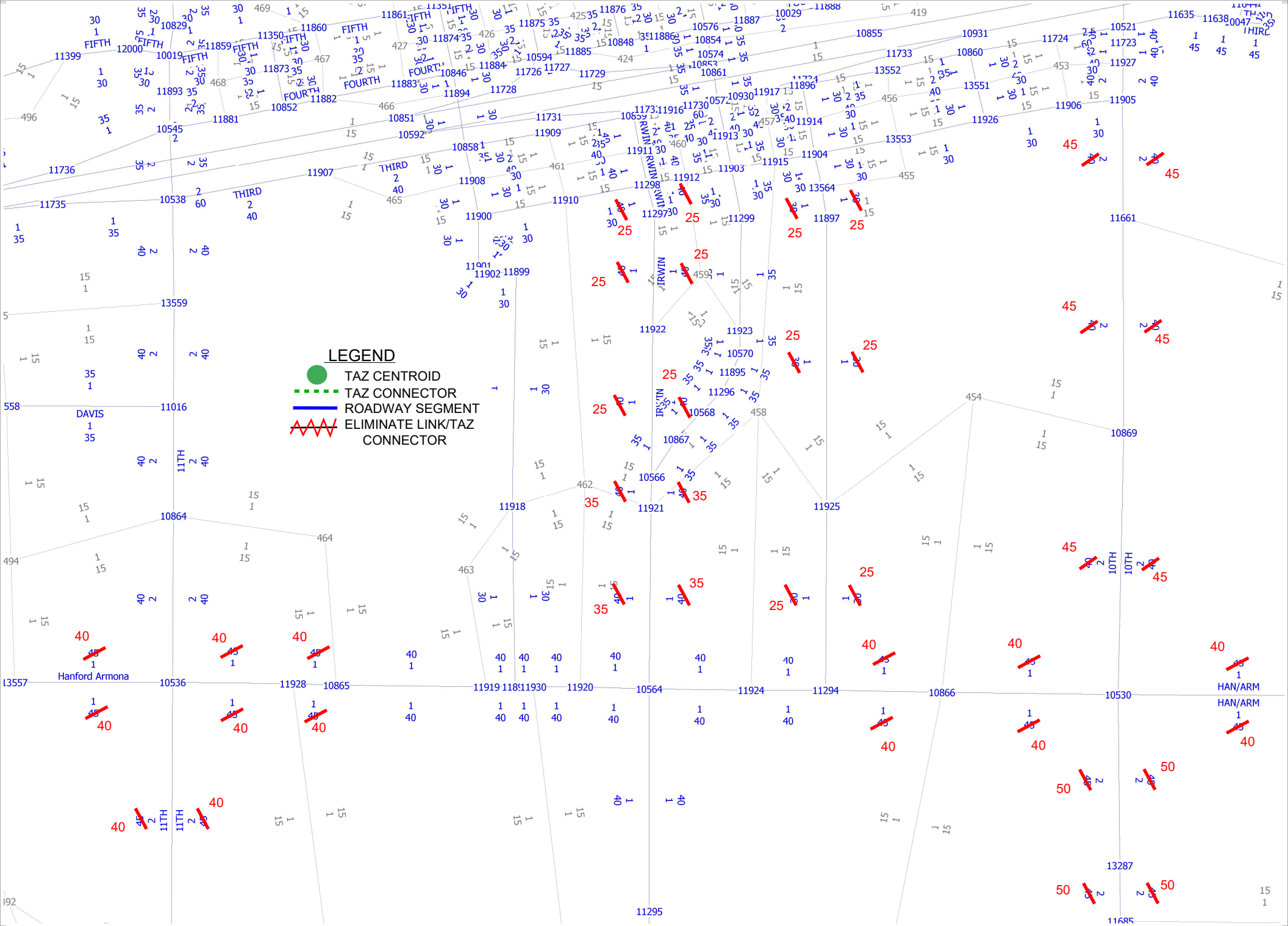
Page | 7



| Base Year 2021     |
|--------------------|
| Name, Lanes, Speed |

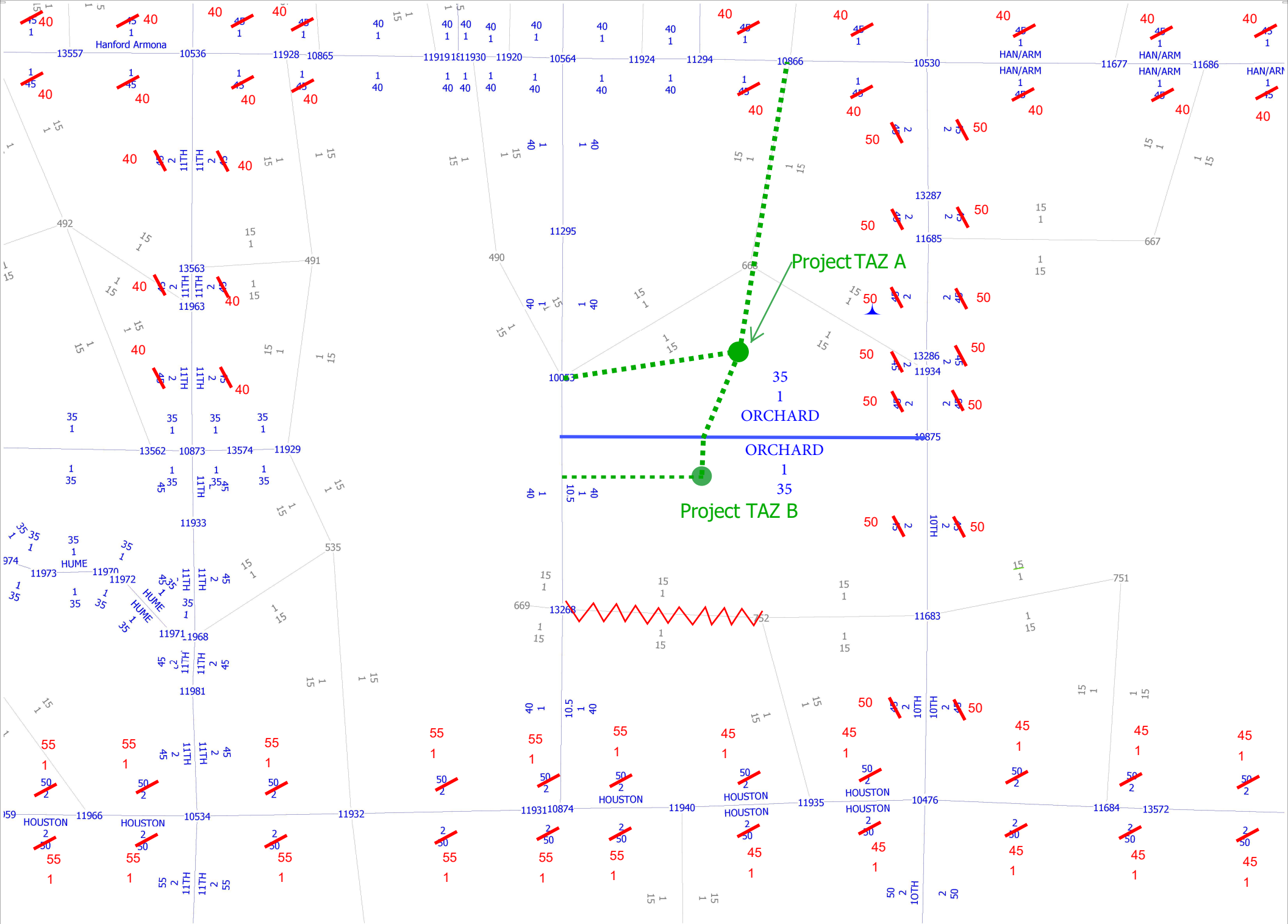


Base Year 2021  
Name, Lanes, Speed



Cumulative Year 2042  
Name, Lanes, Speed

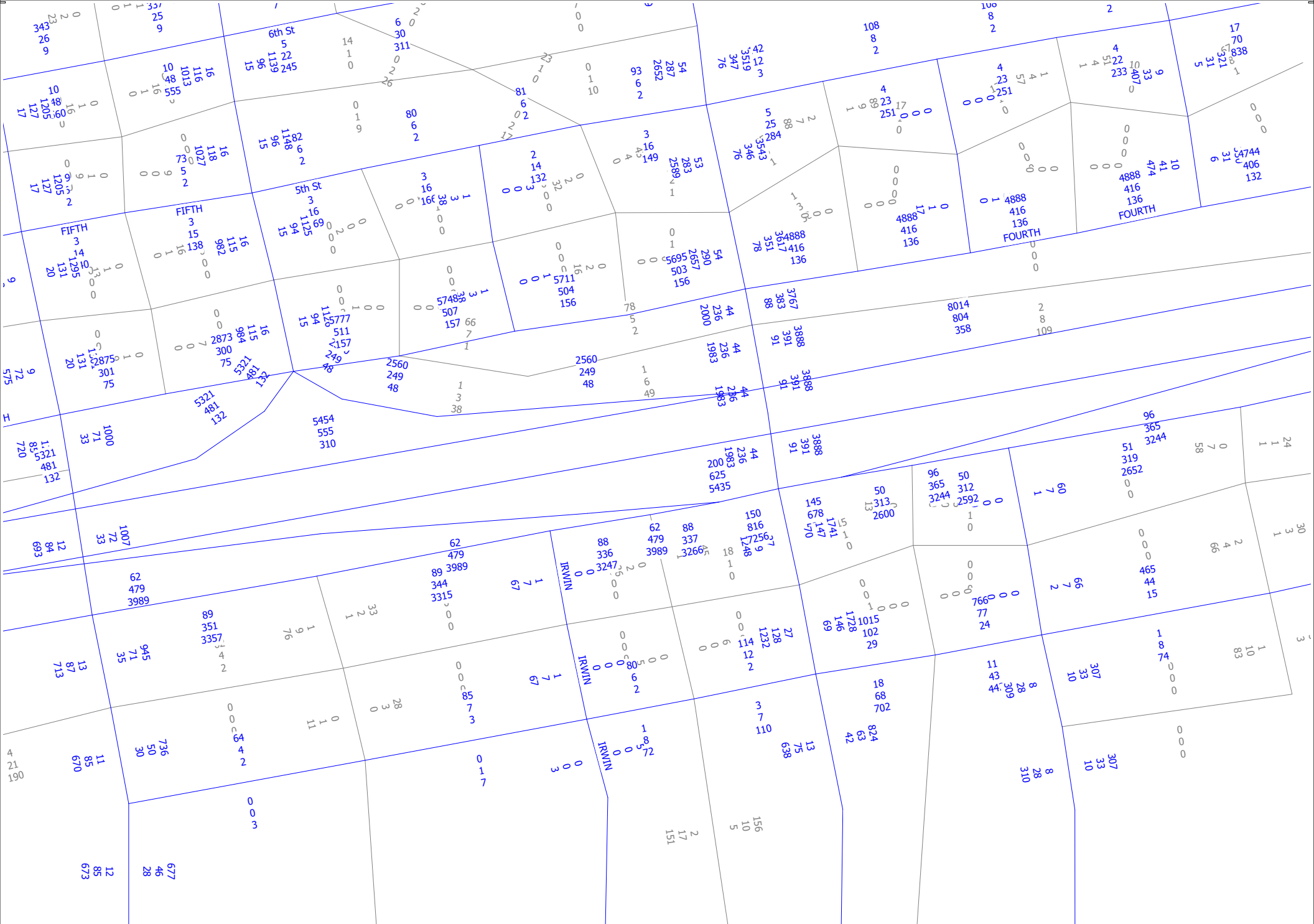




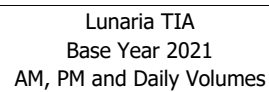
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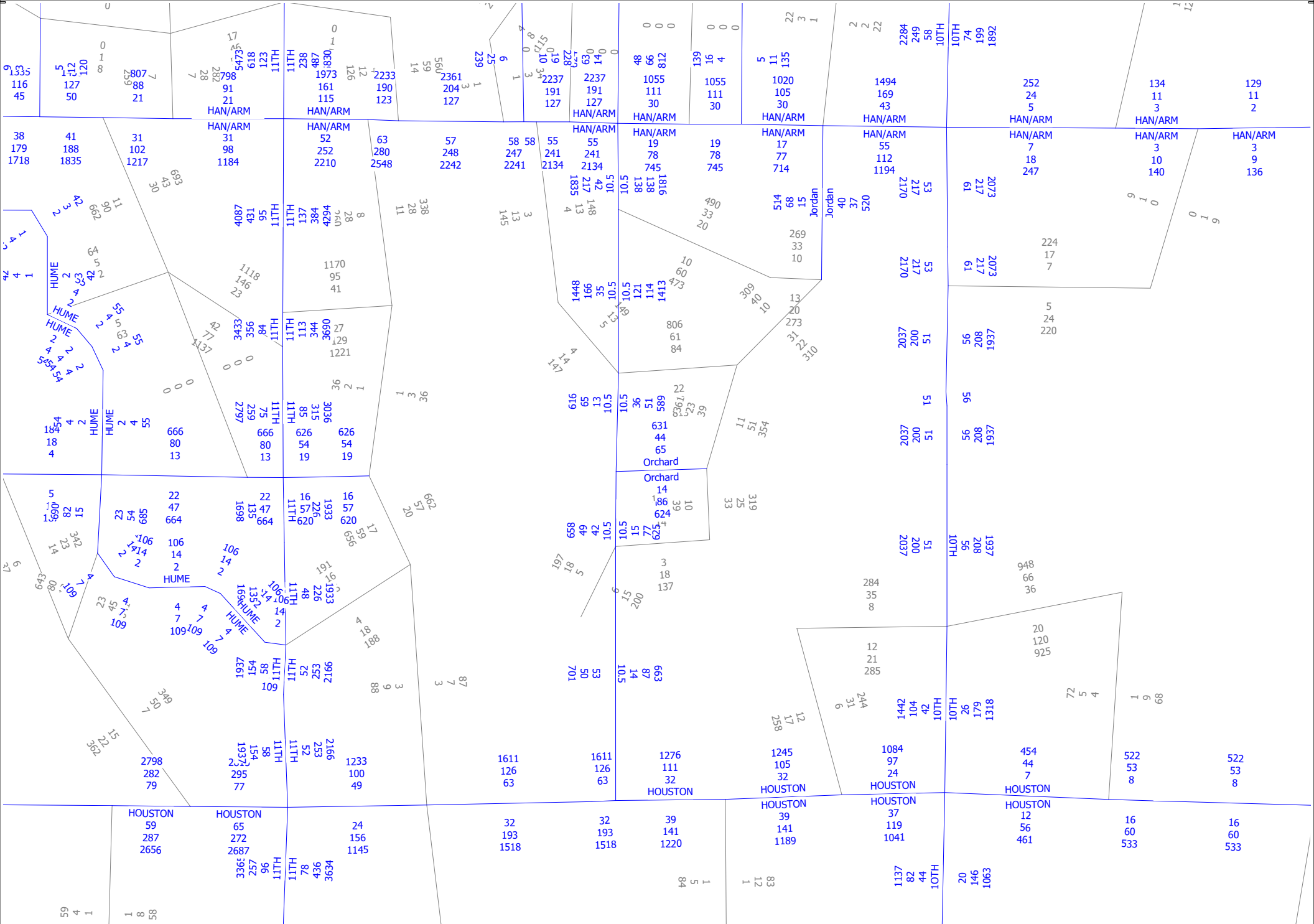






Lunaria TIA  
Base Year 2021  
AM, PM and Daily Volumes





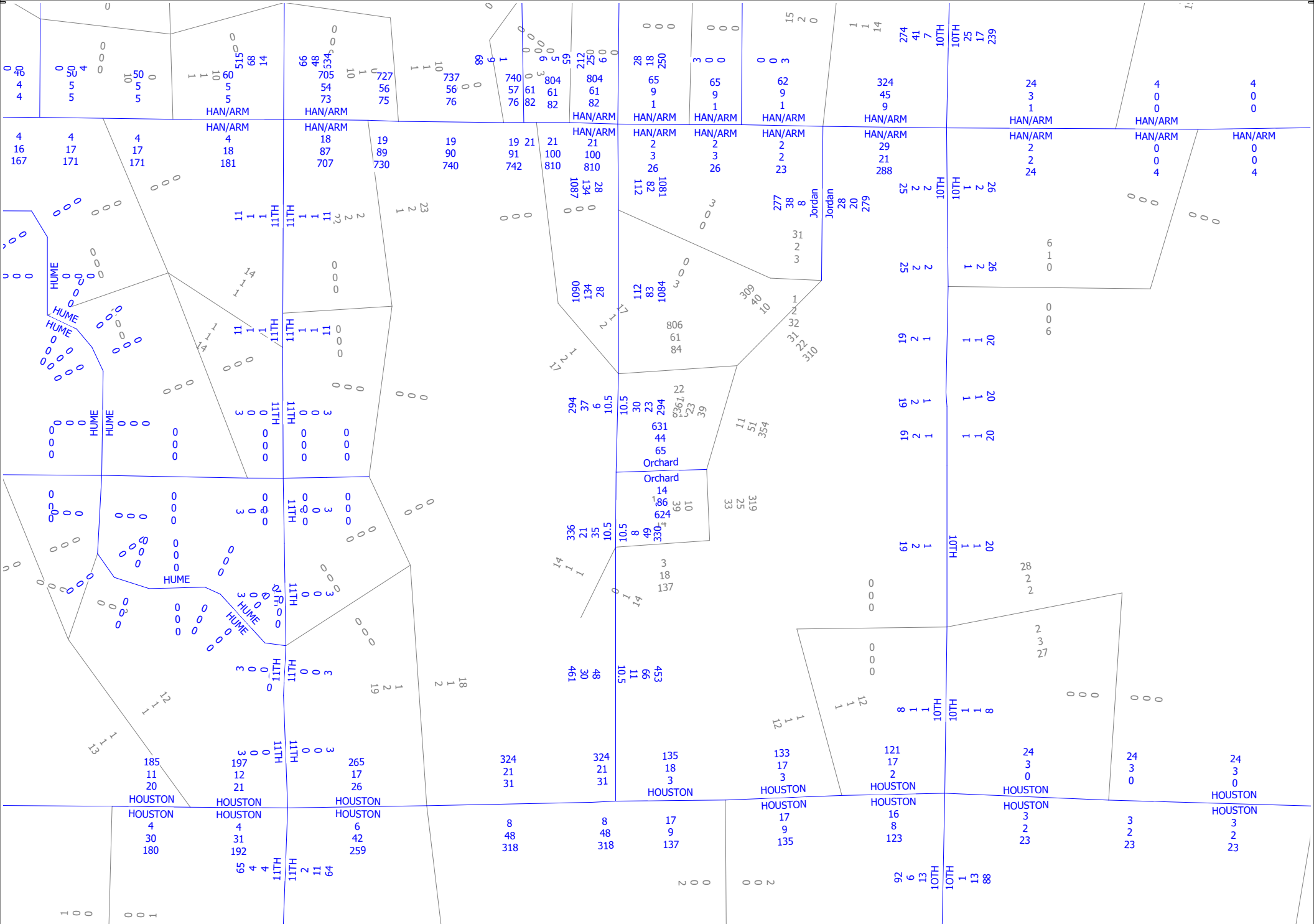
Lunaria TIA  
Base Year 2021  
AM, PM and Daily Volumes





Lunaria TIA  
Project Only Trips (2021)  
AM, PM and Daily Volumes

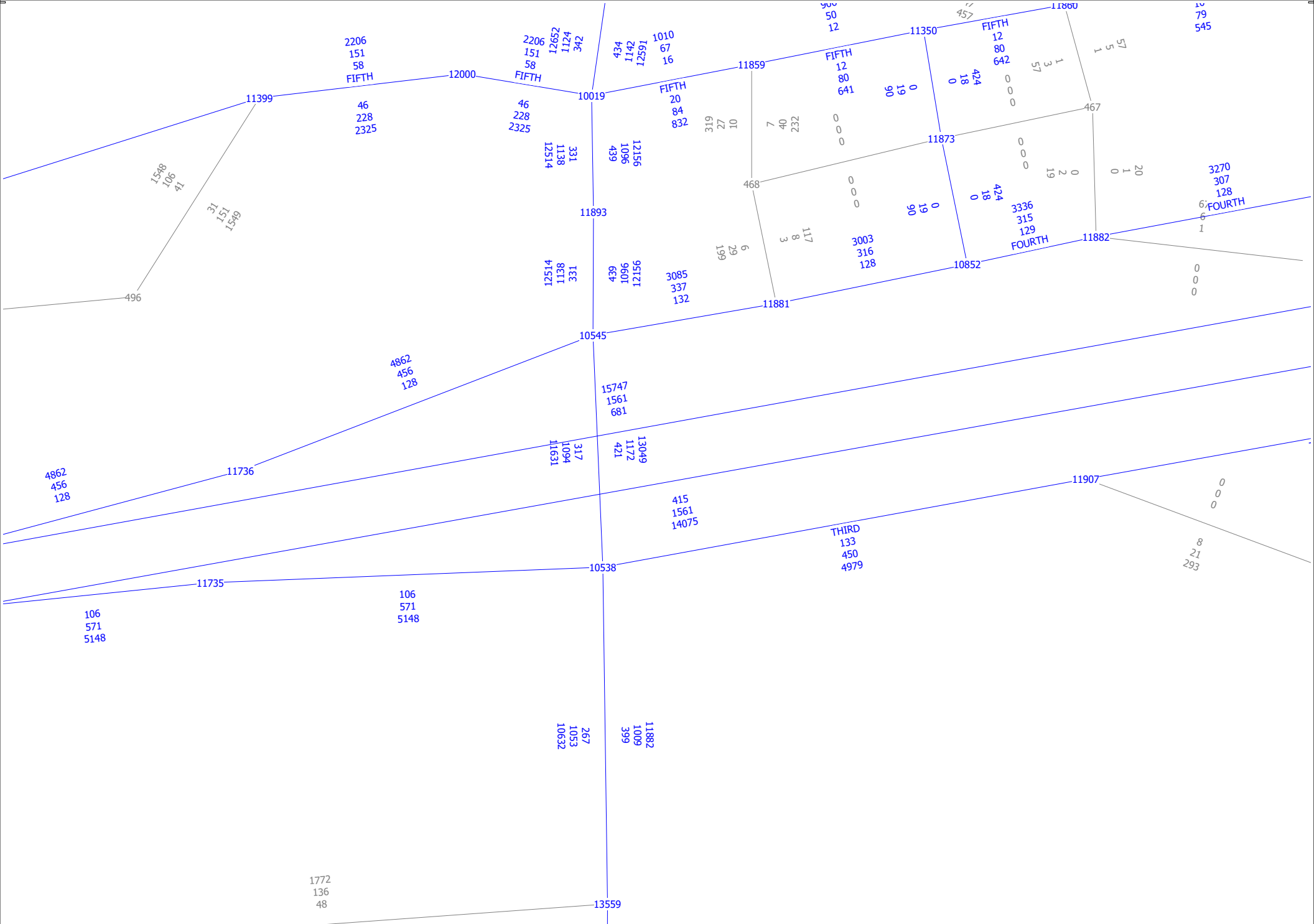




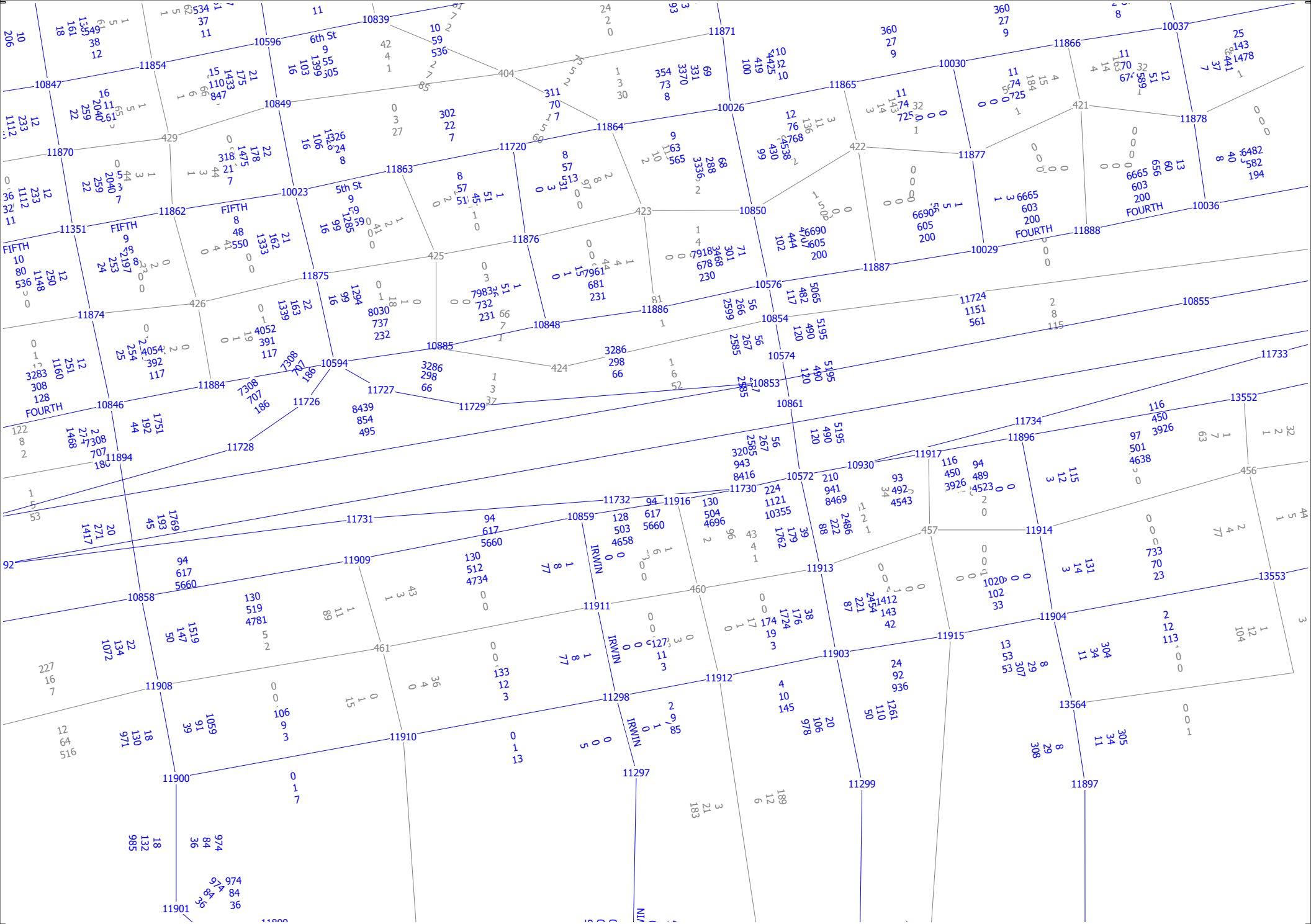
Lunaria TIA  
Project Only Trips (2021)  
AM, PM and Daily Volumes



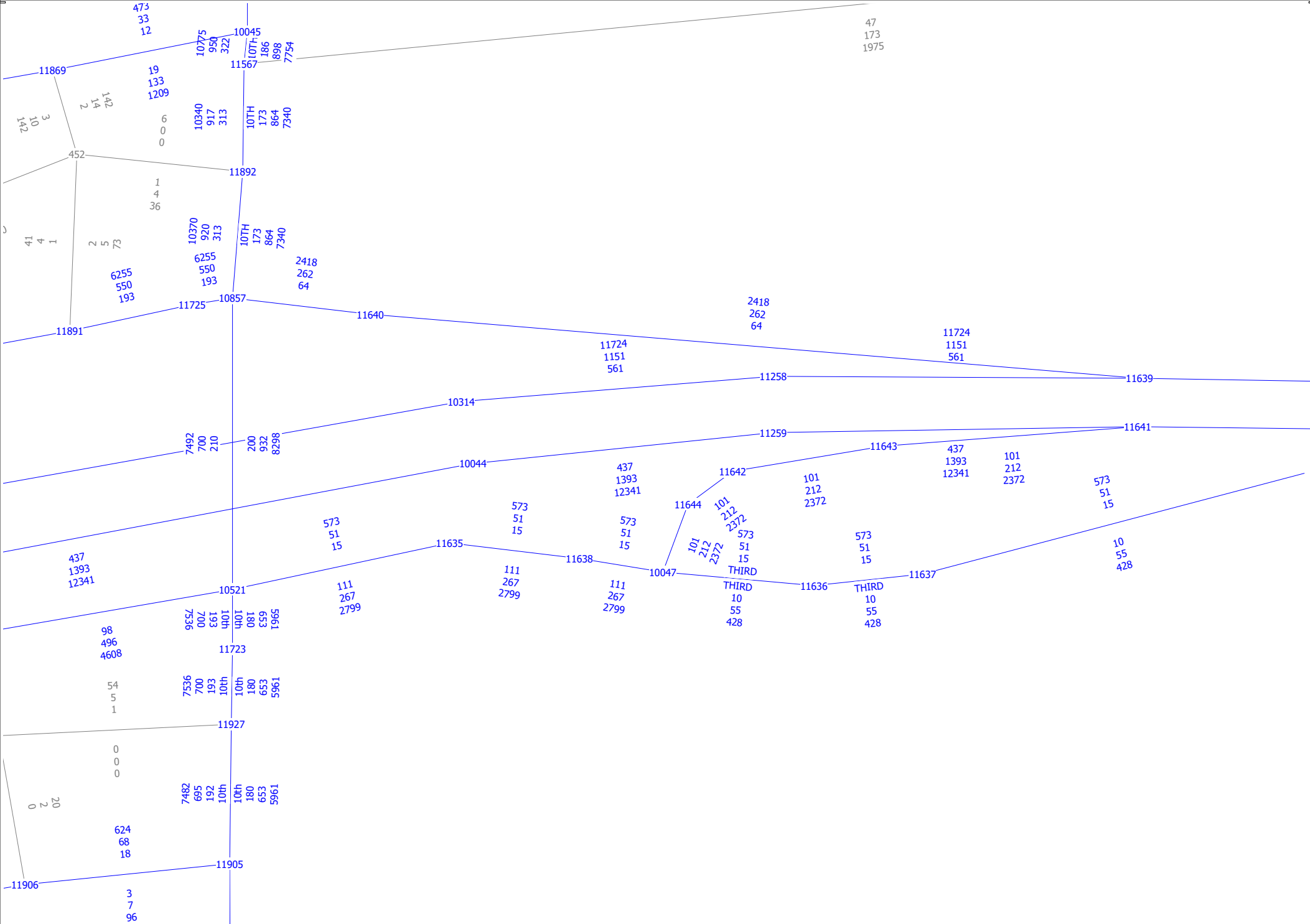


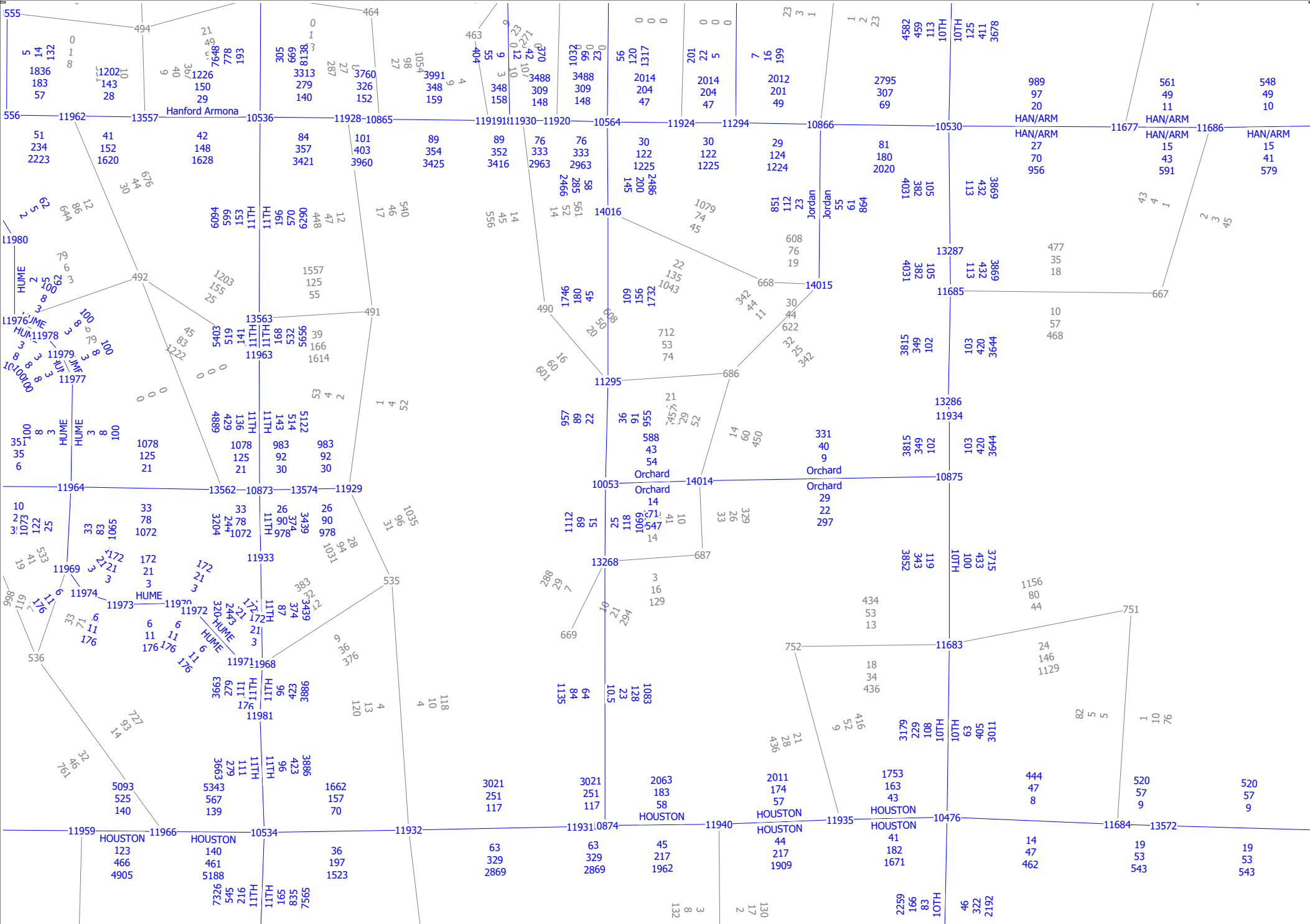


Lunaria TIA  
Cumulative Year 2042  
AM, PM and Daily Volumes



Lunaria TIA  
Cumulative Year 2042  
AM, PM and Daily Volumes



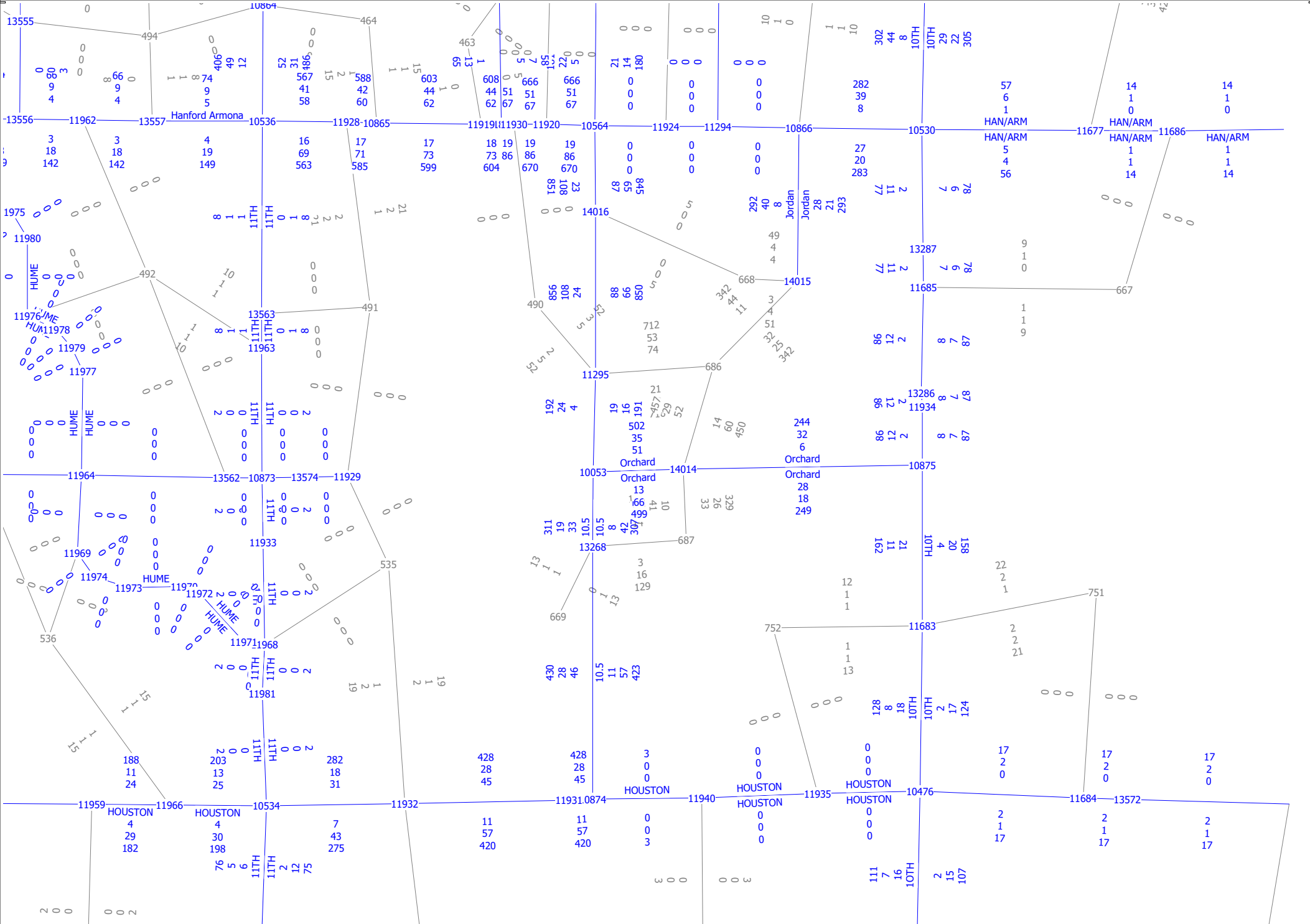




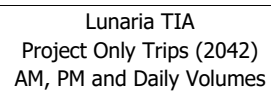


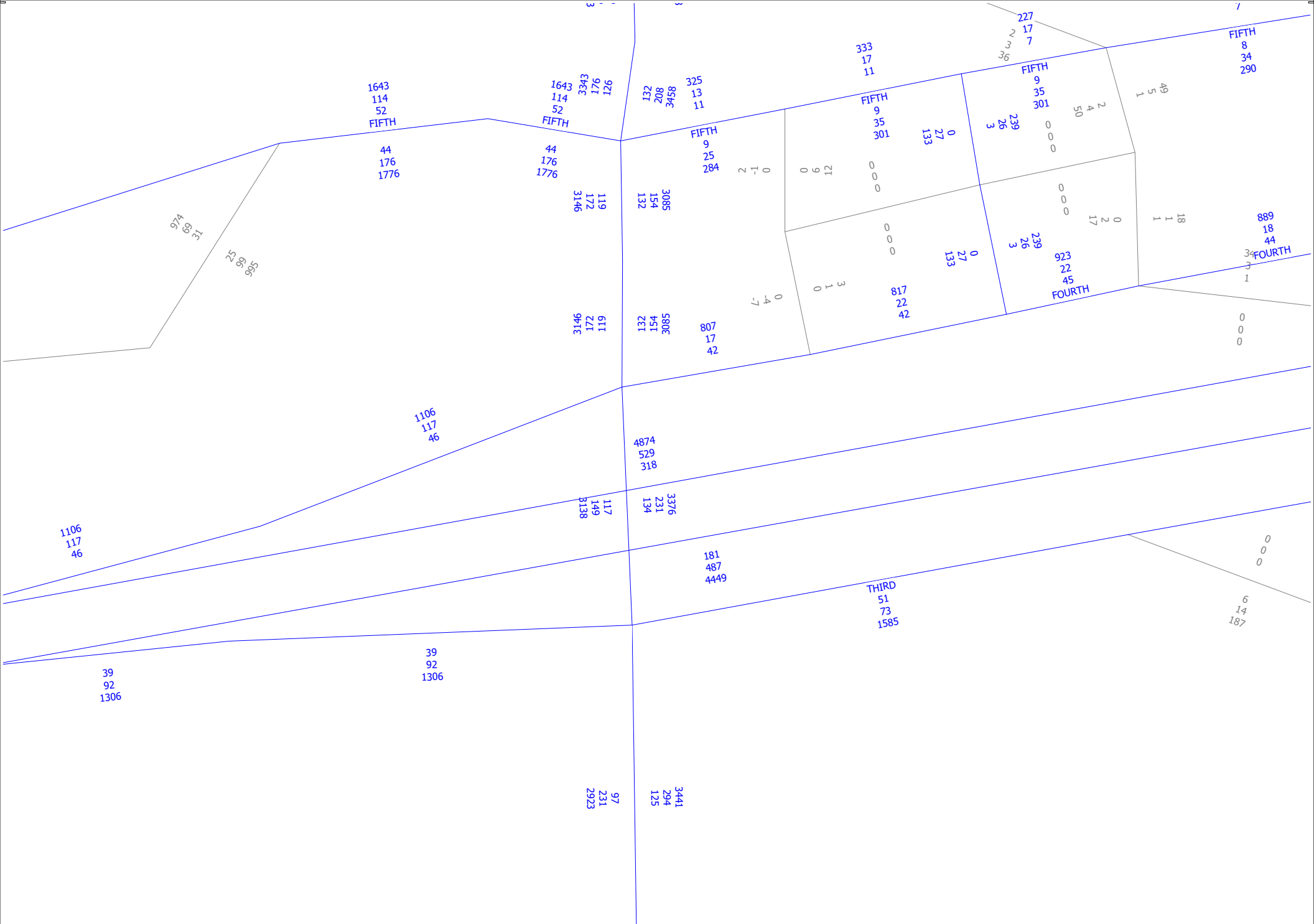




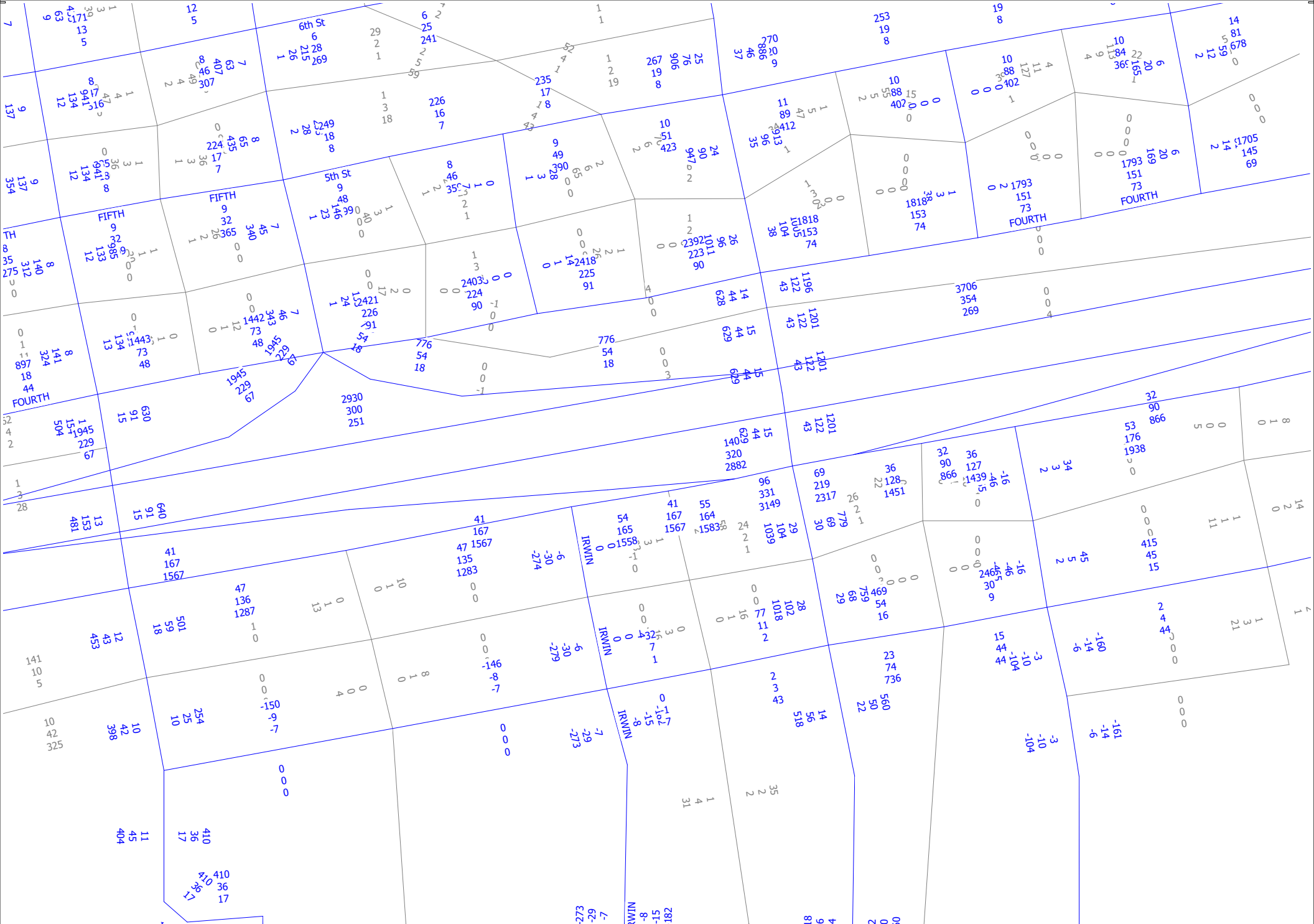


Lunaria TIA  
Project Only Trips (2042)  
AM, PM and Daily Volumes

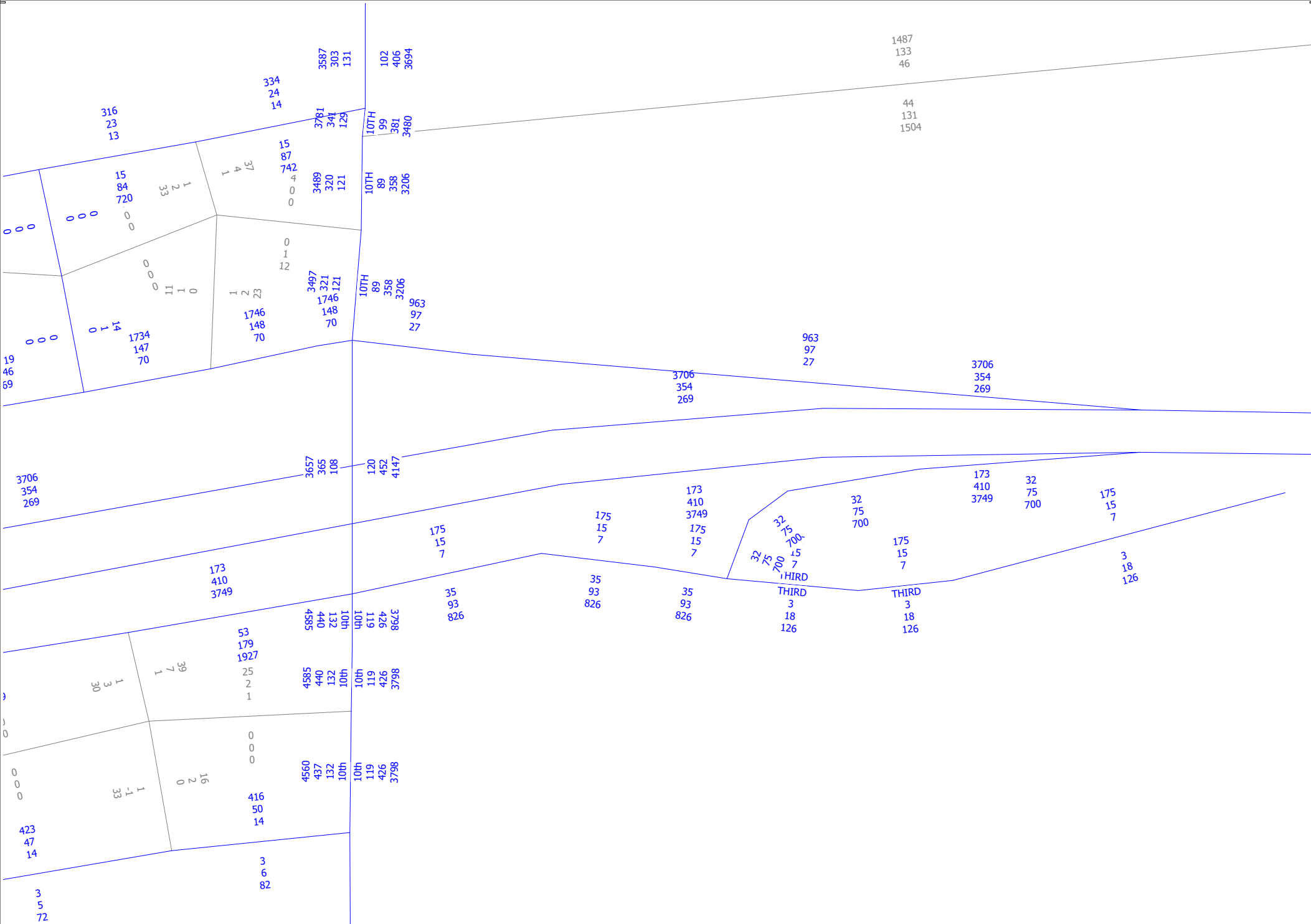


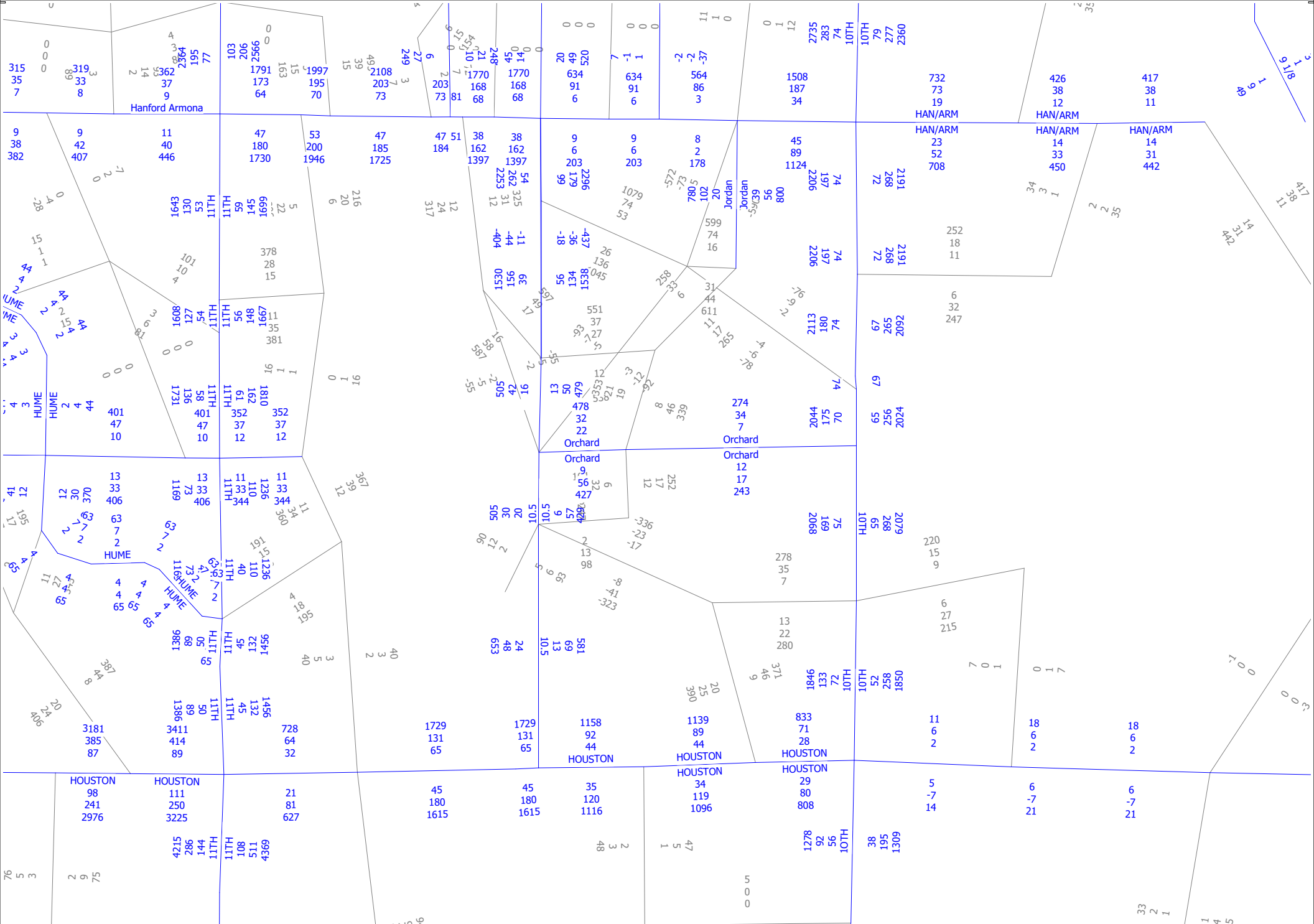


Lunaria TIA  
2042 Increment  
AM, PM and Daily Volumes



Lunaria TIA  
2042 Increment  
AM, PM and Daily Volumes





## Appendix D: Methodology



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## Levels of Service Methodology

The description and procedures for calculating capacity and level of service (LOS) are found in the Transportation Research Board, Highway Capacity Manual (HCM). The HCM 6th Edition represents the research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level of service (LOS), from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish an LOS.

## Intersection Levels of Service

One of the more important elements limiting and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop signs and yield signs.

### *Signalized Intersections – Performance Measures*

For signalized intersections, the performance measures include automobile volume-to-capacity ratio, automobile delay, queue storage length, ratio of pedestrian delay, pedestrian circulation area, pedestrian perception score, bicycle delay and bicycle perception score. LOS is also considered a performance measure. For the automobile mode, the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. An LOS designation is given to the weighted average control delay to better describe the level of operation. A description of LOS for signalized intersections is found in Table A-1.



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**Table A-1: Signalized Intersection Levels of Service Description (Automobile Mode)**

| <b>Level of Service</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Average Control Delay (Seconds per Vehicle)</b> |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| A                       | Operations with a control delay of 10 seconds/vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is really low and either progression is exceptionally favorable or the cycle length is very short. If it's due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.                                                                                                                                                             | ≤10                                                |
| B                       | Operations with control delay between 10.1 to 20.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.                                                                                                                                                                                                                                                                                    | >10.0 to 20.0                                      |
| C                       | Operations with average control delays between 20.1 to 35.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio no greater than 1.0, the progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping. | >20 to 35                                          |
| D                       | Operations with control delay between 35.1 to 55.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.                                                                                                                                                                                                                                                            | >35 to 55                                          |
| E                       | Operations with control delay between 55.1 to 80.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable and the cycle length is long. Individual cycle failures are frequent.                                                                                                                                                                                                                                                                                              | >55 to 80                                          |
| F                       | Operations with unacceptable control delay exceeding 80.0 seconds/vehicle and a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor and the cycle length is long. Most cycles fail to clear the queue.                                                                                                                                                                                                                                                                                          | >80                                                |

Note: Source: Highway Capacity Manual 6th Edition

### *Unsignalized Intersections*

The HCM 6th Edition procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, i.e., in the absence of traffic control, geometric delay, any incidents and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.



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### *All-Way Stop Controlled Intersections*

All-way stop controlled intersections are a form of traffic controls in which all approaches to an intersection are required to stop. Similar to signalized intersections, at all-way stop controlled intersections the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection as a whole. In other words, the delay measured for all-way stop controlled intersections is a measure of the average delay for all vehicles passing through the intersection during the peak hour. An LOS designation is given to the weighted average control delay to better describe the level of operation.

### *Two-Way Stop Controlled Intersections*

Two-way stop controlled (TWSC) intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At TWSC intersections the stop-controlled approaches are referred to as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. An LOS for a TWSC intersection is determined by the computed or measured control delay for each minor movement. LOS is not defined for the intersection as a whole for three main reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at the typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay from all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. Table A-2 provides a description of LOS at unsignalized intersections.

**Table A-2: Unsignalized Intersection Levels of Service Description (Automobile Mode)**

| <i>Control Delay (Seconds per Vehicle)</i> | <i>LOS by Volume-to-Capacity Ratio</i> |                                  |
|--------------------------------------------|----------------------------------------|----------------------------------|
|                                            | <i><math>v/c \leq 1.0</math></i>       | <i><math>v/c &gt; 1.0</math></i> |
| $\leq 10$                                  | A                                      | F                                |
| >10 to 15                                  | B                                      | F                                |
| >15 to 25                                  | C                                      | F                                |
| >25 to 35                                  | D                                      | F                                |
| >35 to 50                                  | E                                      | F                                |
| >50                                        | F                                      | F                                |

Note: Source: HCM 6th Edition, Exhibit 20-2.

### *Roundabout Controlled Intersections*

Roundabouts are intersections with a generally circular shape, characterized by yield on entry and circulation around a central island. Roundabouts have been used successfully throughout the world and are being used increasingly in the United States, especially since 1990. The procedure used to calculate LOS incorporates a combination of lane-based regression models and gap acceptance models for both single-lane and multi-lane roundabouts. As a result, the capacity models focus on one entry of a roundabout at a time. Table A-3 provides a description of LOS at roundabout intersections.

**Table A-3: Roundabout Intersection Level of Service Description (Automobile Mode)**

| <i>Control Delay (Seconds per Vehicle)</i> | <i>LOS by Volume-to-Capacity Ratio</i> |                                  |
|--------------------------------------------|----------------------------------------|----------------------------------|
|                                            | <i><math>v/c \leq 1.0</math></i>       | <i><math>v/c &gt; 1.0</math></i> |
| $\leq 10$                                  | A                                      | F                                |
| >10 to 15                                  | B                                      | F                                |
| >15 to 25                                  | C                                      | F                                |
| >25 to 35                                  | D                                      | F                                |
| >35 to 50                                  | E                                      | F                                |
| >50                                        | F                                      | F                                |

Note: Source: HCM 6th Edition, Exhibit 22-8.

## Segment Levels of Service

Segments are portions of roads without any interruption of flow. These are typically studied as urban streets, basic freeways, multilane highways or two-lane highways. Each of these categories has further classification and the level of service analysis can differ between them.

### *Basic Freeway and Multilane Highway Segments*

For segments of multilane highways and basic freeways outside the influence of merging, diverging and weaving maneuvers, LOS is defined by density. Density describes a motorist's proximity to other vehicles and is related to a motorist's freedom to maneuver within the traffic stream. Chapter 12 of the Highway Capacity Manual categorizes each LOS as follows:

**LOS A** describes free-flow operations. FFS prevails on the freeway or multilane highway, and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.

**LOS B** represents reasonably free-flow operations, and FFS on the freeway or multilane highway is maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents are still easily absorbed.

**LOS C** provides for flow with speeds near the FFS of the freeway or multilane highway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.

**LOS D** is the level at which speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited, and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.

**LOS E** describes operation at or near capacity. Operations on the freeway or multilane highway at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream, such as vehicles entering from a ramp or an access point or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic stream. Toward the upper boundary of LOS E, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown and substantial queuing. The physical and psychological comfort afforded to drivers is poor.

**LOS F** describes unstable flow. Such conditions exist within queues forming behind bottlenecks. Breakdowns occur for a number of reasons:

- Traffic incidents can temporarily reduce the capacity of a short segment so that the number of vehicles arriving at a point is greater than the number of vehicles that can move through it.
- Points of recurring congestion, such as merge or weaving segments and lane drops, experience very high demand in which the number of vehicles arriving is greater than the number of vehicles that can be discharged.
- In analyses using forecast volumes, the projected flow rate can exceed the estimated capacity of a given location.

### **Basic Freeway**

Basic Freeway segments generally have four to eight lanes and posted speed limits between 50 and 75 mi/hr. The performance measures include capacity, free flow speed, demand and volume-to-capacity ratio, space mean speed, average density and LOS. The LOS is dependent on the number of lanes, base free-flow speed, lane width, right side lateral clearance, total ramp density, hourly demand volume, peak hour factor and total truck percentage. Table A-4 provides a description of LOS for Basic Freeway Segments.

### **Multilane Highway**

Multilane Highway segments generally have four to six lanes and posted speed limits between 40 and 55 mi/hr. The performance measures include capacity, free flow speed, demand and volume-to-capacity ratio, space mean speed, average density and LOS. The LOS is dependent on the number of lanes, base free-flow speed, lane width, right side lateral clearance, left side lateral clearance, access point density, terrain type, median type, hourly demand volume, peak hour factor and total truck percentage. Table A-4 provides a description of LOS for Multilane Highway Segments.

**Table A-4: Basic Freeway and Multilane Highway Segment Level of Service Description**

| <b><i>Level of Service</i></b> | <b><i>Density (Passenger Cars per Mile per Lane)</i></b> |
|--------------------------------|----------------------------------------------------------|
| A                              | ≤11                                                      |
| B                              | >11 to 18                                                |
| C                              | >18 to 26                                                |
| D                              | >26 to 35                                                |
| E                              | >35 to 45                                                |
| F                              | >45 or Demand Exceeds Capacity                           |

Note: Source: HCM 6th Edition, Exhibit 12-15.

### *Two-Lane Highway Segments*

Two-Lane Highways generally have one lane per direction and only allow passing maneuvers to take place in the opposing lane of traffic. If allowed, passing maneuvers are limited by the availability of gaps in the opposing traffic stream and by the availability of sufficient sight distance for a driver to discern the approach of an opposing vehicle safely. A principal measure of LOS is percent time spent following and follower density. This is the average percent of time that vehicles must travel in platoons behind slower vehicles due to the inability to pass. Chapter 15 of the Highway Capacity Manual categorizes each LOS as follows:

At **LOS A**, motorists experience high operating speeds on Class I highways and little difficulty in passing. Platoons of three or more vehicles are rare. On Class II highways, speed is controlled primarily by roadway conditions, but a small amount of platooning would be expected. On Class III highways, motorists can maintain operating speeds at or near the facility's FFS.

At **LOS B**, passing demand and passing capacity are balanced. On both Class I and Class II highways, the degree of platooning becomes noticeable. Some speed reductions are present on Class I highways. On Class III highways, maintenance of FFS operation becomes difficult, but the speed reduction is still relatively small.

At **LOS C**, most vehicles travel in platoons. Speeds are noticeably curtailed on all three classes of highways.

At **LOS D**, platooning increases significantly. Passing demand is high on both Class I and Class II facilities, but passing capacity approaches zero. A high percentage of vehicles travels in platoons, and PTSF is noticeable. On Class III highways, the fall-off from FFS is significant.

At **LOS E**, demand is approaching capacity. Passing on Class I and II highways is virtually impossible, and PTSF is more than 80%. Speeds are seriously curtailed. On Class III highways, speed is less than two-thirds of the FFS. The lower limit of LOSE represents capacity.

**LOS F** exists whenever demand flow in one or both directions exceeds the segment's capacity. Operating conditions are unstable and heavy congestion exists on all classes of two-lane highways.

### **Two-Lane Highway**

The performance measures include average travel speed, segment travel time, percent followers, volume to capacity ratio, follower density and LOS. The LOS is dependent on Highway Class (I, II, or III), lane width, shoulder width, access point density, terrain type, free flow speed, passing lane length, demand flow rate, opposing demand flow rate peak hour factor and total truck percentage. Tables A-5 and A-6 provide a description of LOS for Two-Lane Highway Segments.

**Table A-5: Two-Lane Highway Segment Level of Service Description**

| <b>LOS</b> | <b>Class I Highways</b>    |                 | <b>Class II Highways</b> | <b>Class III Highways</b> |
|------------|----------------------------|-----------------|--------------------------|---------------------------|
|            | <b>ATS (Mile per Hour)</b> | <b>PTSF (%)</b> | <b>PTSF (%)</b>          | <b>PFFS (%)</b>           |
| A          | >55                        | ≤35             | ≤40                      | >91.7                     |
| B          | >50 to 55                  | >35 to 50       | >40 to 55                | >83.3 to 91.7             |
| C          | >45 to 50                  | >50 to 65       | >55 to 70                | >75.0 to 83.3             |
| D          | >40 to 45                  | >65 to 80       | >70 to 85                | >66.7 to 75.0             |
| E          | ≤40                        | >80             | >85                      | ≤66.7                     |
| F          | Demand exceeds capacity    |                 |                          |                           |

Note:     ATS = Average Travel Speed  
          PTSF = Percent Time Spent Following  
          PFFS = Percent of Free Flow Speed  
          Source: HCM 6th Edition, Exhibit 15-3.

**Table A-6: Two-Lane Highway Segment Level of Service Description**

| <b>LOS</b> | <b>Follower Density (Followers per Mile per Lane)</b> |                                                  |
|------------|-------------------------------------------------------|--------------------------------------------------|
|            | <b>High Speed Highways</b>                            | <b>High Speed Highways</b>                       |
|            | <b>Posted Speed Limit ≥ 50 miles per hour</b>         | <b>Posted Speed Limit &lt; 50 miles per hour</b> |
| A          | ≤2.0                                                  | ≤2.0                                             |
| B          | >2.0 to 4.0                                           | >2.5 to 5.0                                      |
| C          | >4.0 to 8.0                                           | >5.0 to 10.0                                     |
| D          | >8.0 to 12.0                                          | >10.0 to 15.0                                    |
| E          | >12.0                                                 | >15.0                                            |

Note:     Source: NCHRP 'Improved Analysis of Two-Lane Highway Capacity and Operational Performance, Table 3-23.

### *Urban Streets (Automobile Mode)*

The term “urban streets” refers to urban arterials and collectors, including those in downtown areas. Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials. Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials and unlike arterials their operation is not always dominated by traffic signals. Downtown streets are signalized facilities that often resemble arterials.

They not only move through traffic but also provide access to local businesses for passenger cars, transit buses and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing taxicabs, buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

### **Flow Characteristics**

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control.

The street environment includes the geometric characteristics of the facility, the character of roadside activity and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway/access point density, spacing between signalized intersections, existence of parking, level of pedestrian and bicyclist activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic controls (including signals and signs) force a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds; however, such controls are needed to establish right-of-way.



www.JLBtraffic.com  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

*A p p | D-9*



### **Urban Street Segments LOS**

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service (LOS). The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections. Table A-7 provides a description of LOS for Urban Street Segments.

**LOS A** describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal. Travel speeds exceed 80 percent of the base free flow speed (FFS).

**LOS B** describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67 and 80 percent of the base FFS.

**LOS C** describes stable operations. The ability to maneuver and change lanes in midblock location may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50 and 67 percent of the base FFS.

**LOS D** indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volumes or inappropriate signal timing at the boundary intersections. The travel speed is between 40 and 50 percent of the base FFS.

**LOS E** is characterized as an unstable operation and has significant delay. Such operations may be due to some combination of adverse progression, high volume and inappropriate signal timing at the boundary intersections. The travel speed is between 30 and 40 percent of the base FFS.

**LOS F** is characterized by street flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30 percent or less of the base FFS.

**Table A-7: Urban Street Levels of Service (Automobile Mode)**

| <b>LOS</b> | <b>Travel Speed Threshold by Base Free-Flow Speed (miles/hour)</b> |           |           |           |           |           |           | <b>Volume-to-Capacity Ratio</b> |
|------------|--------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------------------|
|            | <b>55</b>                                                          | <b>50</b> | <b>45</b> | <b>40</b> | <b>35</b> | <b>30</b> | <b>25</b> |                                 |
| A          | >44                                                                | >40       | >36       | >32       | >28       | >24       | >20       | ≤ 1.0                           |
| B          | >37                                                                | >34       | >30       | >27       | >23       | >20       | >17       |                                 |
| C          | >28                                                                | >25       | >23       | >20       | >18       | >15       | >13       |                                 |
| D          | >22                                                                | >20       | >18       | >16       | >14       | >12       | >10       |                                 |
| E          | >17                                                                | >15       | >14       | >12       | >11       | >9        | >8        |                                 |
| F          | ≤17                                                                | ≤15       | ≤14       | ≤12       | ≤11       | ≤9        | ≤8        |                                 |
| F          | Any                                                                |           |           |           |           |           |           | > 1.0                           |

Note: a = The Critical volume-to-capacity ratio is based on consideration of the through movement-to-capacity ratio at each boundary intersection in the subject direction of travel. The critical volume-to-capacity ratio is the largest ratio of those considered.  
Source: Highway Capacity Manual 6th Edition, Exhibit 16-3.

## Appendix E: Existing Traffic Conditions



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

*A p p | E*

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Existing AM Peak

04/26/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 55                                                                                | 226                                                                               | 17    | 12                                                                                | 202                                                                               | 22    | 39                                                                                | 31                                                                                | 11                                                                                | 11                                                                                  | 12                                                                                  | 34                                                                                  |
| Future Volume (veh/h)        | 55                                                                                | 226                                                                               | 17    | 12                                                                                | 202                                                                               | 22    | 39                                                                                | 31                                                                                | 11                                                                                | 11                                                                                  | 12                                                                                  | 34                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                                | 1826                                                                                | 1826                                                                                |
| Adj Flow Rate, veh/h         | 76                                                                                | 314                                                                               | 24    | 17                                                                                | 281                                                                               | 31    | 54                                                                                | 43                                                                                | 15                                                                                | 15                                                                                  | 17                                                                                  | 47                                                                                  |
| Peak Hour Factor             | 0.72                                                                              | 0.72                                                                              | 0.72  | 0.72                                                                              | 0.72                                                                              | 0.72  | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                                | 0.72                                                                                | 0.72                                                                                |
| Percent Heavy Veh, %         | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                   | 128                                                                               | 523                                                                               | 40    | 38                                                                                | 420                                                                               | 46    | 101                                                                               | 259                                                                               | 220                                                                               | 34                                                                                  | 189                                                                                 | 160                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.31                                                                              | 0.31  | 0.02                                                                              | 0.26                                                                              | 0.26  | 0.06                                                                              | 0.14                                                                              | 0.14                                                                              | 0.02                                                                                | 0.10                                                                                | 0.10                                                                                |
| Sat Flow, veh/h              | 1739                                                                              | 1675                                                                              | 128   | 1739                                                                              | 1615                                                                              | 178   | 1739                                                                              | 1826                                                                              | 1547                                                                              | 1739                                                                                | 1826                                                                                | 1547                                                                                |
| Grp Volume(v), veh/h         | 76                                                                                | 0                                                                                 | 338   | 17                                                                                | 0                                                                                 | 312   | 54                                                                                | 43                                                                                | 15                                                                                | 15                                                                                  | 17                                                                                  | 47                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1739                                                                              | 0                                                                                 | 1803  | 1739                                                                              | 0                                                                                 | 1793  | 1739                                                                              | 1826                                                                              | 1547                                                                              | 1739                                                                                | 1826                                                                                | 1547                                                                                |
| Q Serve(g_s), s              | 1.5                                                                               | 0.0                                                                               | 5.7   | 0.3                                                                               | 0.0                                                                               | 5.6   | 1.1                                                                               | 0.7                                                                               | 0.3                                                                               | 0.3                                                                                 | 0.3                                                                                 | 1.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 0.0                                                                               | 5.7   | 0.3                                                                               | 0.0                                                                               | 5.6   | 1.1                                                                               | 0.7                                                                               | 0.3                                                                               | 0.3                                                                                 | 0.3                                                                                 | 1.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07  | 1.00                                                                              |                                                                                   | 0.10  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 128                                                                               | 0                                                                                 | 563   | 38                                                                                | 0                                                                                 | 467   | 101                                                                               | 259                                                                               | 220                                                                               | 34                                                                                  | 189                                                                                 | 160                                                                                 |
| V/C Ratio(X)                 | 0.59                                                                              | 0.00                                                                              | 0.60  | 0.45                                                                              | 0.00                                                                              | 0.67  | 0.54                                                                              | 0.17                                                                              | 0.07                                                                              | 0.45                                                                                | 0.09                                                                                | 0.29                                                                                |
| Avail Cap(c_a), veh/h        | 376                                                                               | 0                                                                                 | 1464  | 241                                                                               | 0                                                                                 | 1317  | 280                                                                               | 1392                                                                              | 1179                                                                              | 241                                                                                 | 1366                                                                                | 1158                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.2                                                                              | 0.0                                                                               | 10.5  | 17.4                                                                              | 0.0                                                                               | 11.9  | 16.5                                                                              | 13.6                                                                              | 13.4                                                                              | 17.5                                                                                | 14.6                                                                                | 15.0                                                                                |
| Incr Delay (d2), s/veh       | 4.3                                                                               | 0.0                                                                               | 1.0   | 8.2                                                                               | 0.0                                                                               | 1.7   | 4.4                                                                               | 0.3                                                                               | 0.1                                                                               | 9.0                                                                                 | 0.2                                                                                 | 1.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 0.0                                                                               | 1.6   | 0.2                                                                               | 0.0                                                                               | 1.7   | 0.5                                                                               | 0.3                                                                               | 0.1                                                                               | 0.2                                                                                 | 0.1                                                                                 | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 20.5                                                                              | 0.0                                                                               | 11.5  | 25.6                                                                              | 0.0                                                                               | 13.6  | 20.9                                                                              | 13.9                                                                              | 13.5                                                                              | 26.5                                                                                | 14.8                                                                                | 16.0                                                                                |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 414                                                                               |                                                                                   | 329   |                                                                                   |                                                                                   |       | 112                                                                               |                                                                                   |                                                                                   | 79                                                                                  |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 13.2                                                                              |                                                                                   | 14.2  |                                                                                   |                                                                                   |       | 17.2                                                                              |                                                                                   |                                                                                   | 17.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   |       | B                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.9                                                                               | 10.0                                                                              | 5.0   | 16.2                                                                              | 6.3                                                                               | 8.6   | 6.9                                                                               | 14.3                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 27.5                                                                              | * 5   | 29.3                                                                              | * 5.8                                                                             | * 27  | * 7.8                                                                             | 26.5                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.3                                                                               | 2.7                                                                               | 2.3   | 7.7                                                                               | 3.1                                                                               | 3.0   | 3.5                                                                               | 7.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.2                                                                               | 0.0   | 1.8                                                                               | 0.0                                                                               | 0.2   | 0.0                                                                               | 1.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 6th Ctrl Delay 14.4

HCM 6th LOS B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Jordan Way & Hanford Armona Road

Existing AM Peak  
04/26/2022

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.6                                                                               |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                                |
| Lane Configurations      |  |        |  |  |  |  |
| Traffic Vol, veh/h       | 200                                                                               | 21     | 14                                                                                | 178                                                                               | 34                                                                                | 21                                                                                 |
| Future Vol, veh/h        | 200                                                                               | 21     | 14                                                                                | 178                                                                               | 34                                                                                | 21                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                  |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop                                                                               |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None                                                                               |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -                                                                                  |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Peak Hour Factor         | 74                                                                                | 74     | 74                                                                                | 74                                                                                | 74                                                                                | 74                                                                                 |
| Heavy Vehicles, %        | 6                                                                                 | 6      | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6                                                                                  |
| Mvmt Flow                | 270                                                                               | 28     | 19                                                                                | 241                                                                               | 46                                                                                | 28                                                                                 |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Major/Minor              | Major1                                                                            | Major2 |                                                                                   | Minor1                                                                            |                                                                                   |                                                                                    |
| Conflicting Flow All     | 0                                                                                 | 0      | 298                                                                               | 0                                                                                 | 563                                                                               | 285                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 284                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 279                                                                               | -                                                                                  |
| Critical Hdwy            | -                                                                                 | -      | 4.16                                                                              | -                                                                                 | 6.46                                                                              | 6.26                                                                               |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.46                                                                              | -                                                                                  |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.46                                                                              | -                                                                                  |
| Follow-up Hdwy           | -                                                                                 | -      | 2.254                                                                             | -                                                                                 | 3.554                                                                             | 3.354                                                                              |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1241                                                                              | -                                                                                 | 481                                                                               | 745                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 755                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 759                                                                               | -                                                                                  |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |                                                                                    |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1241                                                                              | -                                                                                 | 474                                                                               | 744                                                                                |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 559                                                                               | -                                                                                  |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 755                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 748                                                                               | -                                                                                  |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Approach                 | EB                                                                                | WB     |                                                                                   | NB                                                                                |                                                                                   |                                                                                    |
| HCM Control Delay, s     | 0                                                                                 | 0.6    |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                    |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |                                                                                    |
| Capacity (veh/h)         | 618                                                                               | -      | -                                                                                 | 1241                                                                              | -                                                                                 |                                                                                    |
| HCM Lane V/C Ratio       | 0.12                                                                              | -      | -                                                                                 | 0.015                                                                             | -                                                                                 |                                                                                    |
| HCM Control Delay (s)    | 11.6                                                                              | -      | -                                                                                 | 7.9                                                                               | -                                                                                 |                                                                                    |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |                                                                                    |
| HCM 95th %tile O(veh)    | 0.4                                                                               | -      | -                                                                                 | 0                                                                                 | -                                                                                 |                                                                                    |

# HCM 6th Signalized Intersection Summary

## 5: 10th Avenue & Hanford Armona Road

Existing AM Peak

04/26/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |  |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 166                                                                               | 4                                                                                 | 50                                                                                | 3                                                                                 | 4                                                                                 | 12    | 54                                                                                | 167                                                                               | 1                                                                                 | 6                                                                                 | 154                                                                               | 144                                                                               |
| Future Volume (veh/h)        | 166                                                                               | 4                                                                                 | 50                                                                                | 3                                                                                 | 4                                                                                 | 12    | 54                                                                                | 167                                                                               | 1                                                                                 | 6                                                                                 | 154                                                                               | 144                                                                               |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796  | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              |
| Adj Flow Rate, veh/h         | 205                                                                               | 5                                                                                 | 62                                                                                | 4                                                                                 | 5                                                                                 | 15    | 67                                                                                | 206                                                                               | 1                                                                                 | 7                                                                                 | 190                                                                               | 178                                                                               |
| Peak Hour Factor             | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81  | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              |
| Percent Heavy Veh, %         | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7     | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 |
| Cap, veh/h                   | 256                                                                               | 404                                                                               | 342                                                                               | 9                                                                                 | 32                                                                                | 96    | 114                                                                               | 457                                                                               | 388                                                                               | 16                                                                                | 355                                                                               | 301                                                                               |
| Arrive On Green              | 0.15                                                                              | 0.22                                                                              | 0.22                                                                              | 0.01                                                                              | 0.08                                                                              | 0.08  | 0.07                                                                              | 0.25                                                                              | 0.25                                                                              | 0.01                                                                              | 0.20                                                                              | 0.20                                                                              |
| Sat Flow, veh/h              | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 396                                                                               | 1187  | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 1796                                                                              | 1522                                                                              |
| Grp Volume(v), veh/h         | 205                                                                               | 5                                                                                 | 62                                                                                | 4                                                                                 | 0                                                                                 | 20    | 67                                                                                | 206                                                                               | 1                                                                                 | 7                                                                                 | 190                                                                               | 178                                                                               |
| Grp Sat Flow(s),veh/h/ln     | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 0                                                                                 | 1583  | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 1796                                                                              | 1522                                                                              |
| Q Serve(g_s), s              | 4.4                                                                               | 0.1                                                                               | 1.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5   | 1.5                                                                               | 3.7                                                                               | 0.0                                                                               | 0.2                                                                               | 3.6                                                                               | 4.1                                                                               |
| Cycle Q Clear(g_c), s        | 4.4                                                                               | 0.1                                                                               | 1.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5   | 1.5                                                                               | 3.7                                                                               | 0.0                                                                               | 0.2                                                                               | 3.6                                                                               | 4.1                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.75  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 256                                                                               | 404                                                                               | 342                                                                               | 9                                                                                 | 0                                                                                 | 128   | 114                                                                               | 457                                                                               | 388                                                                               | 16                                                                                | 355                                                                               | 301                                                                               |
| V/C Ratio(X)                 | 0.80                                                                              | 0.01                                                                              | 0.18                                                                              | 0.43                                                                              | 0.00                                                                              | 0.16  | 0.59                                                                              | 0.45                                                                              | 0.00                                                                              | 0.44                                                                              | 0.54                                                                              | 0.59                                                                              |
| Avail Cap(c_a), veh/h        | 303                                                                               | 1741                                                                              | 1476                                                                              | 223                                                                               | 0                                                                                 | 1443  | 223                                                                               | 1348                                                                              | 1142                                                                              | 223                                                                               | 1367                                                                              | 1158                                                                              |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 15.8                                                                              | 11.6                                                                              | 12.0                                                                              | 19.0                                                                              | 0.0                                                                               | 16.4  | 17.4                                                                              | 12.0                                                                              | 10.7                                                                              | 18.9                                                                              | 13.8                                                                              | 14.0                                                                              |
| Incr Delay (d2), s/veh       | 12.3                                                                              | 0.0                                                                               | 0.3                                                                               | 28.4                                                                              | 0.0                                                                               | 0.6   | 4.8                                                                               | 0.7                                                                               | 0.0                                                                               | 17.6                                                                              | 1.3                                                                               | 1.9                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 2.2                                                                               | 0.0                                                                               | 0.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.1   | 0.6                                                                               | 1.1                                                                               | 0.0                                                                               | 0.1                                                                               | 1.2                                                                               | 1.2                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 28.1                                                                              | 11.6                                                                              | 12.3                                                                              | 47.4                                                                              | 0.0                                                                               | 17.0  | 22.2                                                                              | 12.7                                                                              | 10.7                                                                              | 36.5                                                                              | 15.1                                                                              | 15.8                                                                              |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 272                                                                               |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |       | 274                                                                               |                                                                                   | 375                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 24.2                                                                              |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                   |       | 15.0                                                                              |                                                                                   | 15.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |       | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 4.6                                                                               | 15.5                                                                              | 4.4                                                                               | 13.9                                                                              | 6.8                                                                               | 13.3  | 9.9                                                                               | 8.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7 | * 4.2                                                                             | 5.3                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5                                                                               | * 29  | * 6.8                                                                             | 35.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.2                                                                               | 5.7                                                                               | 2.1                                                                               | 3.3                                                                               | 3.5                                                                               | 6.1   | 6.4                                                                               | 2.5                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.9                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 1.5   | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 18.2 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Existing AM Peak

04/26/2022

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (vph)              | 32                                                                                | 66                                                                                | 24                                                                                | 24                                                                                | 57                                                                                | 35                                                                                | 17                                                                                 | 73                                                                                  | 21                                                                                  | 40                                                                                  | 59                                                                                  | 21                                                                                  |
| Future Volume (vph)               | 32                                                                                | 66                                                                                | 24                                                                                | 24                                                                                | 57                                                                                | 35                                                                                | 17                                                                                 | 73                                                                                  | 21                                                                                  | 40                                                                                  | 59                                                                                  | 21                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                               | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                               | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                               | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Peak-hour factor, PHF             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)                   | 33                                                                                | 69                                                                                | 25                                                                                | 25                                                                                | 59                                                                                | 36                                                                                | 18                                                                                 | 76                                                                                  | 22                                                                                  | 42                                                                                  | 61                                                                                  | 22                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 21                                                                                | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                  | 0                                                                                   | 13                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  |
| Lane Group Flow (vph)             | 33                                                                                | 69                                                                                | 4                                                                                 | 25                                                                                | 59                                                                                | 5                                                                                 | 18                                                                                 | 76                                                                                  | 9                                                                                   | 42                                                                                  | 61                                                                                  | 10                                                                                  |
| Heavy Vehicles (%)                | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                                | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 3.0                                                                               | 9.9                                                                               | 9.9                                                                               | 1.0                                                                               | 8.2                                                                               | 8.2                                                                               | 1.0                                                                                | 22.3                                                                                | 22.3                                                                                | 3.0                                                                                 | 24.7                                                                                | 24.7                                                                                |
| Effective Green, g (s)            | 3.0                                                                               | 9.9                                                                               | 9.9                                                                               | 1.0                                                                               | 8.2                                                                               | 8.2                                                                               | 1.0                                                                                | 22.3                                                                                | 22.3                                                                                | 3.0                                                                                 | 24.7                                                                                | 24.7                                                                                |
| Actuated g/C Ratio                | 0.05                                                                              | 0.18                                                                              | 0.18                                                                              | 0.02                                                                              | 0.15                                                                              | 0.15                                                                              | 0.02                                                                               | 0.40                                                                                | 0.40                                                                                | 0.05                                                                                | 0.44                                                                                | 0.44                                                                                |
| Clearance Time (s)                | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 85                                                                                | 295                                                                               | 251                                                                               | 28                                                                                | 244                                                                               | 208                                                                               | 28                                                                                 | 1265                                                                                | 566                                                                                 | 85                                                                                  | 737                                                                                 | 626                                                                                 |
| v/s Ratio Prot                    | c0.02                                                                             | c0.04                                                                             |                                                                                   | 0.02                                                                              | 0.04                                                                              |                                                                                   | 0.01                                                                               | 0.02                                                                                |                                                                                     | c0.03                                                                               | c0.04                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |
| v/c Ratio                         | 0.39                                                                              | 0.23                                                                              | 0.02                                                                              | 0.89                                                                              | 0.24                                                                              | 0.03                                                                              | 0.64                                                                               | 0.06                                                                                | 0.02                                                                                | 0.49                                                                                | 0.08                                                                                | 0.02                                                                                |
| Uniform Delay, d1                 | 25.8                                                                              | 19.9                                                                              | 19.2                                                                              | 27.6                                                                              | 21.3                                                                              | 20.6                                                                              | 27.5                                                                               | 10.5                                                                                | 10.3                                                                                | 25.9                                                                                | 9.2                                                                                 | 8.9                                                                                 |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 2.9                                                                               | 0.4                                                                               | 0.0                                                                               | 123.8                                                                             | 0.5                                                                               | 0.0                                                                               | 40.9                                                                               | 0.0                                                                                 | 0.0                                                                                 | 4.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Delay (s)                         | 28.7                                                                              | 20.3                                                                              | 19.2                                                                              | 151.4                                                                             | 21.8                                                                              | 20.7                                                                              | 68.4                                                                               | 10.5                                                                                | 10.3                                                                                | 30.4                                                                                | 9.3                                                                                 | 8.9                                                                                 |
| Level of Service                  | C                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | E                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | A                                                                                   | A                                                                                   |
| Approach Delay (s)                |                                                                                   | 22.3                                                                              |                                                                                   |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                    | 19.5                                                                                |                                                                                     |                                                                                     | 16.3                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 26.5                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                          |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 56.3                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                               |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 30.9%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                               |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |      |                                                                                   |                                                                                   |      |                                                                                   |      |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 1    |                                                                                   |                                                                                   |      |                                                                                   |      |
| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 9    | 94                                                                                | 80                                                                                | 22   | 8                                                                                 | 7    |
| Future Vol, veh/h        | 9    | 94                                                                                | 80                                                                                | 22   | 8                                                                                 | 7    |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 89   | 89                                                                                | 89                                                                                | 89   | 89                                                                                | 89   |
| Heavy Vehicles, %        | 19   | 19                                                                                | 19                                                                                | 19   | 19                                                                                | 19   |
| Mvmt Flow                | 10   | 106                                                                               | 90                                                                                | 25   | 9                                                                                 | 8    |

| Major/Minor          | Major1 | Major2 | Minor2        |
|----------------------|--------|--------|---------------|
| Conflicting Flow All | 115    | 0      | 0 229 103     |
| Stage 1              | -      | -      | - 103 -       |
| Stage 2              | -      | -      | - 126 -       |
| Critical Hdwy        | 4.29   | -      | - 6.59 6.39   |
| Critical Hdwy Stg 1  | -      | -      | - 5.59 -      |
| Critical Hdwy Stg 2  | -      | -      | - 5.59 -      |
| Follow-up Hdwy       | 2.371  | -      | - 3.671 3.471 |
| Pot Cap-1 Maneuver   | 1375   | -      | - 723 907     |
| Stage 1              | -      | -      | - 880 -       |
| Stage 2              | -      | -      | - 859 -       |
| Platoon blocked, %   | -      | -      | -             |
| Mov Cap-1 Maneuver   | 1375   | -      | - 717 907     |
| Mov Cap-2 Maneuver   | -      | -      | - 717 -       |
| Stage 1              | -      | -      | - 873 -       |
| Stage 2              | -      | -      | - 859 -       |

| Approach             | EB  | WB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 0.7 | 0  | 9.6 |
| HCM LOS              |     |    | A   |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 1375  | -   | -   | -   | 795   |
| HCM Lane V/C Ratio    | 0.007 | -   | -   | -   | 0.021 |
| HCM Control Delay (s) | 7.6   | 0   | -   | -   | 9.6   |
| HCM Lane LOS          | A     | A   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   | 0.1   |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.8 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 29   | 63   | 18   | 12   | 56   | 13   | 13   | 58   | 5    | 13   | 61   | 39   |
| Future Vol, veh/h   | 29   | 63   | 18   | 12   | 56   | 13   | 13   | 58   | 5    | 13   | 61   | 39   |
| Peak Hour Factor    | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Heavy Vehicles, %   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   |
| Mvmt Flow           | 32   | 69   | 20   | 13   | 62   | 14   | 14   | 64   | 5    | 14   | 67   | 43   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  | SB  |
|----------------------------|-----|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  | NB  |
| Opposing Lanes             | 1   | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1   |
| HCM Control Delay          | 8.9 | 8.7 | 8.7 | 8.8 |
| HCM LOS                    | A   | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 17%   | 26%   | 15%   | 12%   |
| Vol Thru, %            | 76%   | 57%   | 69%   | 54%   |
| Vol Right, %           | 7%    | 16%   | 16%   | 35%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 76    | 110   | 81    | 113   |
| LT Vol                 | 13    | 29    | 12    | 13    |
| Through Vol            | 58    | 63    | 56    | 61    |
| RT Vol                 | 5     | 18    | 13    | 39    |
| Lane Flow Rate         | 84    | 121   | 89    | 124   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.116 | 0.165 | 0.122 | 0.165 |
| Departure Headway (Hd) | 5.021 | 4.927 | 4.947 | 4.795 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 714   | 729   | 725   | 749   |
| Service Time           | 3.049 | 2.955 | 2.976 | 2.821 |
| HCM Lane V/C Ratio     | 0.118 | 0.166 | 0.123 | 0.166 |
| HCM Control Delay      | 8.7   | 8.9   | 8.7   | 8.8   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.4   | 0.6   | 0.4   | 0.6   |



# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Existing PM Peak

04/25/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 44                                                                                | 286                                                                               | 15    | 6                                                                                 | 285                                                                               | 27    | 27                                                                                | 16                                                                                | 5                                                                                 | 23                                                                                | 18                                                                                | 56                                                                                |
| Future Volume (veh/h)        | 44                                                                                | 286                                                                               | 15    | 6                                                                                 | 285                                                                               | 27    | 27                                                                                | 16                                                                                | 5                                                                                 | 23                                                                                | 18                                                                                | 56                                                                                |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              |
| Adj Flow Rate, veh/h         | 48                                                                                | 311                                                                               | 16    | 7                                                                                 | 310                                                                               | 29    | 29                                                                                | 17                                                                                | 5                                                                                 | 25                                                                                | 20                                                                                | 61                                                                                |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                   | 94                                                                                | 571                                                                               | 29    | 17                                                                                | 472                                                                               | 44    | 62                                                                                | 198                                                                               | 168                                                                               | 55                                                                                | 190                                                                               | 161                                                                               |
| Arrive On Green              | 0.05                                                                              | 0.33                                                                              | 0.33  | 0.01                                                                              | 0.28                                                                              | 0.28  | 0.04                                                                              | 0.11                                                                              | 0.11                                                                              | 0.03                                                                              | 0.10                                                                              | 0.10                                                                              |
| Sat Flow, veh/h              | 1767                                                                              | 1749                                                                              | 90    | 1767                                                                              | 1670                                                                              | 156   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                              | 1856                                                                              | 1572                                                                              |
| Grp Volume(v), veh/h         | 48                                                                                | 0                                                                                 | 327   | 7                                                                                 | 0                                                                                 | 339   | 29                                                                                | 17                                                                                | 5                                                                                 | 25                                                                                | 20                                                                                | 61                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 0                                                                                 | 1839  | 1767                                                                              | 0                                                                                 | 1827  | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                              | 1856                                                                              | 1572                                                                              |
| Q Serve(g_s), s              | 0.9                                                                               | 0.0                                                                               | 5.0   | 0.1                                                                               | 0.0                                                                               | 5.7   | 0.6                                                                               | 0.3                                                                               | 0.1                                                                               | 0.5                                                                               | 0.3                                                                               | 1.3                                                                               |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 0.0                                                                               | 5.0   | 0.1                                                                               | 0.0                                                                               | 5.7   | 0.6                                                                               | 0.3                                                                               | 0.1                                                                               | 0.5                                                                               | 0.3                                                                               | 1.3                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.05  | 1.00                                                                              |                                                                                   | 0.09  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 94                                                                                | 0                                                                                 | 600   | 17                                                                                | 0                                                                                 | 516   | 62                                                                                | 198                                                                               | 168                                                                               | 55                                                                                | 190                                                                               | 161                                                                               |
| V/C Ratio(X)                 | 0.51                                                                              | 0.00                                                                              | 0.54  | 0.42                                                                              | 0.00                                                                              | 0.66  | 0.47                                                                              | 0.09                                                                              | 0.03                                                                              | 0.46                                                                              | 0.11                                                                              | 0.38                                                                              |
| Avail Cap(c_a), veh/h        | 348                                                                               | 0                                                                                 | 1549  | 256                                                                               | 0                                                                                 | 1443  | 297                                                                               | 1455                                                                              | 1233                                                                              | 286                                                                               | 1461                                                                              | 1238                                                                              |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 15.9                                                                              | 0.0                                                                               | 9.5   | 17.0                                                                              | 0.0                                                                               | 10.9  | 16.4                                                                              | 13.9                                                                              | 13.8                                                                              | 16.5                                                                              | 14.1                                                                              | 14.5                                                                              |
| Incr Delay (d2), s/veh       | 4.2                                                                               | 0.0                                                                               | 0.8   | 16.0                                                                              | 0.0                                                                               | 1.4   | 5.4                                                                               | 0.2                                                                               | 0.1                                                                               | 5.9                                                                               | 0.2                                                                               | 1.5                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 1.4   | 0.1                                                                               | 0.0                                                                               | 1.7   | 0.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 0.1                                                                               | 0.4                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 20.1                                                                              | 0.0                                                                               | 10.3  | 33.1                                                                              | 0.0                                                                               | 12.4  | 21.7                                                                              | 14.1                                                                              | 13.9                                                                              | 22.3                                                                              | 14.3                                                                              | 16.0                                                                              |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 375                                                                               |                                                                                   | 346   |                                                                                   |                                                                                   |       | 51                                                                                |                                                                                   | 106                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 11.6                                                                              |                                                                                   | 12.8  |                                                                                   |                                                                                   |       | 18.4                                                                              |                                                                                   | 17.2                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   |       | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 5.3                                                                               | 8.6                                                                               | 4.5   | 16.2                                                                              | 5.4                                                                               | 8.4   | 6.0                                                                               | 14.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5.6                                                                             | 27.1                                                                              | * 5   | 29.1                                                                              | * 5.8                                                                             | * 27  | * 6.8                                                                             | 27.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.5                                                                               | 2.3                                                                               | 2.1   | 7.0                                                                               | 2.6                                                                               | 3.3   | 2.9                                                                               | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.0   | 1.8                                                                               | 0.0                                                                               | 0.2   | 0.0                                                                               | 1.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 13.1 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Jordan Way & Hanford Armona Road

Existing PM Peak  
04/25/2022

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.4                                                                               |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                                |
| Lane Configurations      |  |        |  |  |  |  |
| Traffic Vol, veh/h       | 250                                                                               | 36     | 27                                                                                | 273                                                                               | 39                                                                                | 16                                                                                 |
| Future Vol, veh/h        | 250                                                                               | 36     | 27                                                                                | 273                                                                               | 39                                                                                | 16                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 2      | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop                                                                               |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None                                                                               |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -                                                                                  |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Peak Hour Factor         | 90                                                                                | 90     | 90                                                                                | 90                                                                                | 90                                                                                | 90                                                                                 |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  |
| Mvmt Flow                | 278                                                                               | 40     | 30                                                                                | 303                                                                               | 43                                                                                | 18                                                                                 |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Major/Minor              | Major1                                                                            | Major2 |                                                                                   | Minor1                                                                            |                                                                                   |                                                                                    |
| Conflicting Flow All     | 0                                                                                 | 0      | 320                                                                               | 0                                                                                 | 663                                                                               | 300                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 300                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 363                                                                               | -                                                                                  |
| Critical Hdwy            | -                                                                                 | -      | 4.13                                                                              | -                                                                                 | 6.43                                                                              | 6.23                                                                               |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -                                                                                  |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -                                                                                  |
| Follow-up Hdwy           | -                                                                                 | -      | 2.227                                                                             | -                                                                                 | 3.527                                                                             | 3.327                                                                              |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1234                                                                              | -                                                                                 | 425                                                                               | 737                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 749                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 702                                                                               | -                                                                                  |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |                                                                                    |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1232                                                                              | -                                                                                 | 414                                                                               | 736                                                                                |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 514                                                                               | -                                                                                  |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 748                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 685                                                                               | -                                                                                  |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Approach                 | EB                                                                                | WB     |                                                                                   | NB                                                                                |                                                                                   |                                                                                    |
| HCM Control Delay, s     | 0                                                                                 | 0.7    |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                    |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |                                                                                    |
| Capacity (veh/h)         | 563                                                                               | -      | -                                                                                 | 1232                                                                              | -                                                                                 |                                                                                    |
| HCM Lane V/C Ratio       | 0.109                                                                             | -      | -                                                                                 | 0.024                                                                             | -                                                                                 |                                                                                    |
| HCM Control Delay (s)    | 12.2                                                                              | -      | -                                                                                 | 8                                                                                 | -                                                                                 |                                                                                    |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |                                                                                    |
| HCM 95th %tile Q(veh)    | 0.4                                                                               | -      | -                                                                                 | 0.1                                                                               | -                                                                                 |                                                                                    |

# HCM 6th Signalized Intersection Summary

## 5: 10th Avenue & Hanford Armona Road

Existing PM Peak

04/25/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |  |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 149                                                                               | 15                                                                                | 96                                                                                | 4                                                                                 | 8                                                                                 | 8     | 112                                                                               | 203                                                                               | 5                                                                                 | 16                                                                                | 154                                                                               | 176                                                                               |
| Future Volume (veh/h)        | 149                                                                               | 15                                                                                | 96                                                                                | 4                                                                                 | 8                                                                                 | 8     | 112                                                                               | 203                                                                               | 5                                                                                 | 16                                                                                | 154                                                                               | 176                                                                               |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              |
| Adj Flow Rate, veh/h         | 157                                                                               | 16                                                                                | 101                                                                               | 4                                                                                 | 8                                                                                 | 8     | 118                                                                               | 214                                                                               | 5                                                                                 | 17                                                                                | 162                                                                               | 185                                                                               |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95  | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                   | 201                                                                               | 412                                                                               | 348                                                                               | 10                                                                                | 97                                                                                | 97    | 160                                                                               | 510                                                                               | 430                                                                               | 38                                                                                | 382                                                                               | 322                                                                               |
| Arrive On Green              | 0.11                                                                              | 0.22                                                                              | 0.22                                                                              | 0.01                                                                              | 0.11                                                                              | 0.11  | 0.09                                                                              | 0.27                                                                              | 0.27                                                                              | 0.02                                                                              | 0.21                                                                              | 0.21                                                                              |
| Sat Flow, veh/h              | 1767                                                                              | 1856                                                                              | 1565                                                                              | 1767                                                                              | 849                                                                               | 849   | 1767                                                                              | 1856                                                                              | 1564                                                                              | 1767                                                                              | 1856                                                                              | 1561                                                                              |
| Grp Volume(v), veh/h         | 157                                                                               | 16                                                                                | 101                                                                               | 4                                                                                 | 0                                                                                 | 16    | 118                                                                               | 214                                                                               | 5                                                                                 | 17                                                                                | 162                                                                               | 185                                                                               |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1856                                                                              | 1565                                                                              | 1767                                                                              | 0                                                                                 | 1698  | 1767                                                                              | 1856                                                                              | 1564                                                                              | 1767                                                                              | 1856                                                                              | 1561                                                                              |
| Q Serve(g_s), s              | 3.5                                                                               | 0.3                                                                               | 2.2                                                                               | 0.1                                                                               | 0.0                                                                               | 0.3   | 2.7                                                                               | 3.9                                                                               | 0.1                                                                               | 0.4                                                                               | 3.1                                                                               | 4.4                                                                               |
| Cycle Q Clear(g_c), s        | 3.5                                                                               | 0.3                                                                               | 2.2                                                                               | 0.1                                                                               | 0.0                                                                               | 0.3   | 2.7                                                                               | 3.9                                                                               | 0.1                                                                               | 0.4                                                                               | 3.1                                                                               | 4.4                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.50  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 201                                                                               | 412                                                                               | 348                                                                               | 10                                                                                | 0                                                                                 | 194   | 160                                                                               | 510                                                                               | 430                                                                               | 38                                                                                | 382                                                                               | 322                                                                               |
| V/C Ratio(X)                 | 0.78                                                                              | 0.04                                                                              | 0.29                                                                              | 0.42                                                                              | 0.00                                                                              | 0.08  | 0.74                                                                              | 0.42                                                                              | 0.01                                                                              | 0.45                                                                              | 0.42                                                                              | 0.58                                                                              |
| Avail Cap(c_a), veh/h        | 295                                                                               | 1693                                                                              | 1429                                                                              | 217                                                                               | 0                                                                                 | 1458  | 251                                                                               | 1311                                                                              | 1105                                                                              | 217                                                                               | 1293                                                                              | 1088                                                                              |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 17.6                                                                              | 12.4                                                                              | 13.2                                                                              | 20.2                                                                              | 0.0                                                                               | 16.1  | 18.1                                                                              | 12.1                                                                              | 10.7                                                                              | 19.7                                                                              | 14.1                                                                              | 14.6                                                                              |
| Incr Delay (d2), s/veh       | 8.0                                                                               | 0.0                                                                               | 0.5                                                                               | 26.3                                                                              | 0.0                                                                               | 0.2   | 6.5                                                                               | 0.5                                                                               | 0.0                                                                               | 8.1                                                                               | 0.7                                                                               | 1.6                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 1.6                                                                               | 0.1                                                                               | 0.6                                                                               | 0.1                                                                               | 0.0                                                                               | 0.1   | 1.1                                                                               | 1.1                                                                               | 0.0                                                                               | 0.2                                                                               | 1.0                                                                               | 1.3                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 25.5                                                                              | 12.5                                                                              | 13.6                                                                              | 46.5                                                                              | 0.0                                                                               | 16.3  | 24.6                                                                              | 12.7                                                                              | 10.8                                                                              | 27.8                                                                              | 14.8                                                                              | 16.2                                                                              |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 274                                                                               |                                                                                   |                                                                                   | 20                                                                                |                                                                                   |       | 337                                                                               |                                                                                   |                                                                                   | 364                                                                               |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 20.4                                                                              |                                                                                   |                                                                                   | 22.4                                                                              |                                                                                   |       | 16.8                                                                              |                                                                                   |                                                                                   | 16.1                                                                              |                                                                                   |                                                                                   |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |       | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 5.1                                                                               | 16.9                                                                              | 4.4                                                                               | 14.4                                                                              | 7.9                                                                               | 14.1  | 8.8                                                                               | 9.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7 | * 4.2                                                                             | 5.3                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5.8                                                                             | * 28  | * 6.8                                                                             | 35.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 5.9                                                                               | 2.1                                                                               | 4.2                                                                               | 4.7                                                                               | 6.4   | 5.5                                                                               | 2.3                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 1.4   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

HCM 6th Ctrl Delay 17.7

HCM 6th LOS B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Existing PM Peak

04/25/2022

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations               |                                                                                   |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 1                                                                                 | 21                                                                                | 93                                                                                | 18                                                                                | 18                                                                                | 96                                                                                | 74                                                                                  | 33                                                                                  | 159                                                                                 | 24                                                                                  | 48                                                                                  | 78                                                                                  |
| Future Volume (vph)               | 1                                                                                 | 21                                                                                | 93                                                                                | 18                                                                                | 18                                                                                | 96                                                                                | 74                                                                                  | 33                                                                                  | 159                                                                                 | 24                                                                                  | 48                                                                                  | 78                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                |
| Flt Protected                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Flt Permitted                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Peak-hour factor, PHF             | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                |
| Adj. Flow (vph)                   | 1                                                                                 | 25                                                                                | 111                                                                               | 21                                                                                | 21                                                                                | 114                                                                               | 88                                                                                  | 39                                                                                  | 189                                                                                 | 29                                                                                  | 57                                                                                  | 93                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 17                                                                                | 0                                                                                 | 0                                                                                 | 71                                                                                  | 0                                                                                   | 0                                                                                   | 19                                                                                  | 0                                                                                   | 0                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 26                                                                                | 111                                                                               | 4                                                                                 | 21                                                                                | 114                                                                               | 17                                                                                  | 39                                                                                  | 189                                                                                 | 10                                                                                  | 57                                                                                  | 93                                                                                  |
| Heavy Vehicles (%)                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Turn Type                         | Prot                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases                  | 7                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             |                                                                                   | 0.9                                                                               | 10.2                                                                              | 10.2                                                                              | 0.9                                                                               | 10.5                                                                              | 10.5                                                                                | 3.1                                                                                 | 18.8                                                                                | 18.8                                                                                | 5.4                                                                                 | 21.5                                                                                |
| Effective Green, g (s)            |                                                                                   | 0.9                                                                               | 10.2                                                                              | 10.2                                                                              | 0.9                                                                               | 10.5                                                                              | 10.5                                                                                | 3.1                                                                                 | 18.8                                                                                | 18.8                                                                                | 5.4                                                                                 | 21.5                                                                                |
| Actuated g/C Ratio                |                                                                                   | 0.02                                                                              | 0.18                                                                              | 0.18                                                                              | 0.02                                                                              | 0.19                                                                              | 0.19                                                                                | 0.06                                                                                | 0.34                                                                                | 0.34                                                                                | 0.10                                                                                | 0.39                                                                                |
| Clearance Time (s)                |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 27                                                                                | 333                                                                               | 283                                                                               | 27                                                                                | 343                                                                               | 291                                                                                 | 96                                                                                  | 1166                                                                                | 521                                                                                 | 167                                                                                 | 702                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.02                                                                             | 0.06                                                                              |                                                                                   | 0.01                                                                              | c0.06                                                                             |                                                                                     | 0.02                                                                                | c0.05                                                                               |                                                                                     | c0.03                                                                               | 0.05                                                                                |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.01                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         |                                                                                   | 0.96                                                                              | 0.33                                                                              | 0.01                                                                              | 0.78                                                                              | 0.33                                                                              | 0.06                                                                                | 0.41                                                                                | 0.16                                                                                | 0.02                                                                                | 0.34                                                                                | 0.13                                                                                |
| Uniform Delay, d1                 |                                                                                   | 27.2                                                                              | 19.6                                                                              | 18.5                                                                              | 27.2                                                                              | 19.4                                                                              | 18.4                                                                                | 25.3                                                                                | 12.8                                                                                | 12.2                                                                                | 23.3                                                                                | 10.9                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 156.3                                                                             | 0.6                                                                               | 0.0                                                                               | 81.9                                                                              | 0.6                                                                               | 0.1                                                                                 | 2.8                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 1.2                                                                                 | 0.1                                                                                 |
| Delay (s)                         |                                                                                   | 183.5                                                                             | 20.2                                                                              | 18.5                                                                              | 109.0                                                                             | 20.0                                                                              | 18.5                                                                                | 28.1                                                                                | 12.9                                                                                | 12.2                                                                                | 24.6                                                                                | 11.0                                                                                |
| Level of Service                  |                                                                                   | F                                                                                 | C                                                                                 | B                                                                                 | F                                                                                 | B                                                                                 | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   |                                                                                   | 46.9                                                                              |                                                                                   |                                                                                   | 27.8                                                                              |                                                                                     |                                                                                     | 15.1                                                                                |                                                                                     |                                                                                     | 15.4                                                                                |
| Approach LOS                      |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.26                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 55.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 30.6%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Existing PM Peak

04/25/2022

|                        |      |
|------------------------|------|
| Movement               | SBR  |
| Lane Configurations    |      |
| Traffic Volume (vph)   | 20   |
| Future Volume (vph)    | 20   |
| Ideal Flow (vphpl)     | 1900 |
| Total Lost time (s)    | 5.3  |
| Lane Util. Factor      | 1.00 |
| Frt                    | 0.85 |
| Flt Protected          | 1.00 |
| Satd. Flow (prot)      | 1538 |
| Flt Permitted          | 1.00 |
| Satd. Flow (perm)      | 1538 |
| Peak-hour factor, PHF  | 0.84 |
| Adj. Flow (vph)        | 24   |
| RTOR Reduction (vph)   | 15   |
| Lane Group Flow (vph)  | 9    |
| Heavy Vehicles (%)     | 5%   |
| Turn Type              | Perm |
| Protected Phases       |      |
| Permitted Phases       | 6    |
| Actuated Green, G (s)  | 21.5 |
| Effective Green, g (s) | 21.5 |
| Actuated g/C Ratio     | 0.39 |
| Clearance Time (s)     | 5.3  |
| Vehicle Extension (s)  | 3.0  |
| Lane Grp Cap (vph)     | 596  |
| v/s Ratio Prot         |      |
| v/s Ratio Perm         | 0.01 |
| v/c Ratio              | 0.02 |
| Uniform Delay, d1      | 10.4 |
| Progression Factor     | 1.00 |
| Incremental Delay, d2  | 0.0  |
| Delay (s)              | 10.4 |
| Level of Service       | B    |
| Approach Delay (s)     |      |
| Approach LOS           |      |
| Intersection Summary   |      |

Intersection

Int Delay, s/veh 1.1

| Movement                 | EBL  | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR  |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |      |  |  |      |  |      |
| Traffic Vol, veh/h       | 8    | 107                                                                               | 134                                                                               | 21   | 17                                                                                | 10   |
| Future Vol, veh/h        | 8    | 107                                                                               | 134                                                                               | 21   | 17                                                                                | 10   |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0    |
| Sign Control             | Free | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop |
| RT Channelized           | -    | None                                                                              | -                                                                                 | None | -                                                                                 | None |
| Storage Length           | -    | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -    |
| Veh in Median Storage, # | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Grade, %                 | -    | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -    |
| Peak Hour Factor         | 93   | 93                                                                                | 93                                                                                | 93   | 93                                                                                | 93   |
| Heavy Vehicles, %        | 3    | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3    |
| Mvmt Flow                | 9    | 115                                                                               | 144                                                                               | 23   | 18                                                                                | 11   |

| Major/Minor          | Major1 | Major2 | Minor2        |
|----------------------|--------|--------|---------------|
| Conflicting Flow All | 167    | 0      | 0 289 156     |
| Stage 1              | -      | -      | - 156 -       |
| Stage 2              | -      | -      | - 133 -       |
| Critical Hdwy        | 4.13   | -      | - 6.43 6.23   |
| Critical Hdwy Stg 1  | -      | -      | - 5.43 -      |
| Critical Hdwy Stg 2  | -      | -      | - 5.43 -      |
| Follow-up Hdwy       | 2.227  | -      | - 3.527 3.327 |
| Pot Cap-1 Maneuver   | 1405   | -      | - 699 887     |
| Stage 1              | -      | -      | - 870 -       |
| Stage 2              | -      | -      | - 891 -       |
| Platoon blocked, %   | -      | -      | -             |
| Mov Cap-1 Maneuver   | 1405   | -      | - 694 887     |
| Mov Cap-2 Maneuver   | -      | -      | - 694 -       |
| Stage 1              | -      | -      | - 864 -       |
| Stage 2              | -      | -      | - 891 -       |

| Approach             | EB  | WB | SB |
|----------------------|-----|----|----|
| HCM Control Delay, s | 0.5 | 0  | 10 |
| HCM LOS              |     |    | B  |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 1405  | -   | -   | -   | 755   |
| HCM Lane V/C Ratio    | 0.006 | -   | -   | -   | 0.038 |
| HCM Control Delay (s) | 7.6   | 0   | -   | -   | 10    |
| HCM Lane LOS          | A     | A   | -   | -   | B     |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   | 0.1   |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.8 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 29   | 72                                                                                | 15   | 8    | 85                                                                                | 48   | 23   | 101                                                                                 | 8    | 41   | 70                                                                                  | 35   |
| Future Vol, veh/h   | 29   | 72                                                                                | 15   | 8    | 85                                                                                | 48   | 23   | 101                                                                                 | 8    | 41   | 70                                                                                  | 35   |
| Peak Hour Factor    | 0.98 | 0.98                                                                              | 0.98 | 0.98 | 0.98                                                                              | 0.98 | 0.98 | 0.98                                                                                | 0.98 | 0.98 | 0.98                                                                                | 0.98 |
| Heavy Vehicles, %   | 5    | 5                                                                                 | 5    | 5    | 5                                                                                 | 5    | 5    | 5                                                                                   | 5    | 5    | 5                                                                                   | 5    |
| Mvmt Flow           | 30   | 73                                                                                | 15   | 8    | 87                                                                                | 49   | 23   | 103                                                                                 | 8    | 42   | 71                                                                                  | 36   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 0    | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB  | SB  |
|----------------------------|-----|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  | NB  |
| Opposing Lanes             | 1   | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1   |
| HCM Control Delay          | 8.8 | 8.7 | 8.9 | 8.9 |
| HCM LOS                    | A   | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 17%   | 25%   | 6%    | 28%   |
| Vol Thru, %            | 77%   | 62%   | 60%   | 48%   |
| Vol Right, %           | 6%    | 13%   | 34%   | 24%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 132   | 116   | 141   | 146   |
| LT Vol                 | 23    | 29    | 8     | 41    |
| Through Vol            | 101   | 72    | 85    | 70    |
| RT Vol                 | 8     | 15    | 48    | 35    |
| Lane Flow Rate         | 135   | 118   | 144   | 149   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.179 | 0.158 | 0.184 | 0.194 |
| Departure Headway (Hd) | 4.787 | 4.808 | 4.616 | 4.686 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 748   | 743   | 774   | 764   |
| Service Time           | 2.83  | 2.854 | 2.661 | 2.728 |
| HCM Lane V/C Ratio     | 0.18  | 0.159 | 0.186 | 0.195 |
| HCM Control Delay      | 8.9   | 8.8   | 8.7   | 8.9   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.6   | 0.6   | 0.7   | 0.7   |

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  |
| Maximum Queue (ft)    | 102 | 97  | 92  | 81  | 114 | 54 | 87  |
| Average Queue (ft)    | 49  | 53  | 44  | 36  | 31  | 17 | 43  |
| 95th Queue (ft)       | 81  | 81  | 71  | 59  | 65  | 43 | 69  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R   |
| Maximum Queue (ft)    | 133 | 52  | 114 | 113 | 185 | 206 | 90  |
| Average Queue (ft)    | 43  | 27  | 52  | 47  | 97  | 36  | 39  |
| 95th Queue (ft)       | 84  | 52  | 101 | 102 | 161 | 121 | 64  |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |     |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |
| Storage Bay Dist (ft) |     | 295 |     |     |     |     | 105 |
| Storage Blk Time (%)  |     |     |     |     |     | 0   | 0   |
| Queuing Penalty (veh) |     |     |     |     |     | 0   | 0   |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 50  | 142  | 25 | 101  | 53  | 53  | 31 | 31  | 91  | 53  |
| Average Queue (ft)    | 26  | 48   | 6  | 38   | 28  | 11  | 7  | 8   | 12  | 22  |
| 95th Queue (ft)       | 48  | 105  | 22 | 82   | 55  | 38  | 26 | 28  | 47  | 49  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     | 0    |    | 0    |     |     |    |     | 0   |     |
| Queuing Penalty (veh) |     | 0    |    | 0    |     |     |    |     | 0   |     |



Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB |
|-----------------------|------|----|
| Directions Served     | L    | LR |
| Maximum Queue (ft)    | 47   | 79 |
| Average Queue (ft)    | 7    | 35 |
| 95th Queue (ft)       | 28   | 61 |
| Link Distance (ft)    | 1339 |    |
| Upstream Blk Time (%) |      |    |
| Queuing Penalty (veh) |      |    |
| Storage Bay Dist (ft) | 75   |    |
| Storage Blk Time (%)  |      |    |
| Queuing Penalty (veh) |      |    |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB | EB | WB  | WB | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|----|----|-----|----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T  | R  | L   | TR | L   | T   | L   | T   | R   |
| Maximum Queue (ft)    | 143 | 93 | 40 | 26  | 48 | 68  | 132 | 31  | 118 | 54  |
| Average Queue (ft)    | 70  | 4  | 13 | 4   | 12 | 27  | 37  | 6   | 49  | 31  |
| 95th Queue (ft)       | 127 | 32 | 31 | 18  | 37 | 58  | 86  | 24  | 97  | 58  |
| Link Distance (ft)    | 936 |    |    | 372 |    |     | 448 |     | 399 |     |
| Upstream Blk Time (%) |     |    |    |     |    |     |     |     |     |     |
| Queuing Penalty (veh) |     |    |    |     |    |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |    | 55 | 155 |    | 155 |     | 110 |     | 265 |
| Storage Blk Time (%)  | 3   | 0  | 0  |     |    |     | 1   |     | 0   |     |
| Queuing Penalty (veh) | 1   | 0  | 0  |     |    |     | 0   |     | 0   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              |
|-----------------------|
| Directions Served     |
| Maximum Queue (ft)    |
| Average Queue (ft)    |
| 95th Queue (ft)       |
| Link Distance (ft)    |
| Upstream Blk Time (%) |
| Queuing Penalty (veh) |
| Storage Bay Dist (ft) |
| Storage Blk Time (%)  |
| Queuing Penalty (veh) |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB | WB  | WB  | WB | NB  | NB  | NB | NB  | SB  | SB |
|-----------------------|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|
| Directions Served     | UL  | T   | R  | L   | T   | R  | L   | T   | T  | R   | L   | T  |
| Maximum Queue (ft)    | 57  | 64  | 50 | 65  | 110 | 57 | 69  | 68  | 70 | 56  | 57  | 46 |
| Average Queue (ft)    | 19  | 20  | 9  | 18  | 28  | 13 | 9   | 21  | 11 | 6   | 21  | 9  |
| 95th Queue (ft)       | 49  | 45  | 32 | 49  | 66  | 38 | 34  | 50  | 45 | 25  | 49  | 29 |
| Link Distance (ft)    | 680 |     |    | 436 |     |    | 276 |     |    | 276 |     |    |
| Upstream Blk Time (%) |     |     |    |     |     |    |     |     |    |     |     |    |
| Queuing Penalty (veh) |     |     |    |     |     |    |     |     |    |     |     |    |
| Storage Bay Dist (ft) | 165 | 150 |    | 175 | 175 |    | 175 | 100 |    |     | 250 |    |
| Storage Blk Time (%)  |     |     |    |     |     |    |     |     |    |     |     |    |
| Queuing Penalty (veh) |     |     |    |     |     |    |     |     |    |     |     |    |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 62   |
| Average Queue (ft)    | 8    |
| 95th Queue (ft)       | 34   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | LR   |
| Maximum Queue (ft)    | 51   |
| Average Queue (ft)    | 12   |
| 95th Queue (ft)       | 36   |
| Link Distance (ft)    | 2057 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 78   | 76   | 75   | 77   |
| Average Queue (ft)    | 41   | 37   | 44   | 33   |
| 95th Queue (ft)       | 75   | 65   | 69   | 67   |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | EB  | SE  |
|-----------------------|-----|-----|
| Directions Served     | T   | L   |
| Maximum Queue (ft)    | 30  | 53  |
| Average Queue (ft)    | 1   | 26  |
| 95th Queue (ft)       | 10  | 52  |
| Link Distance (ft)    | 361 | 209 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Network Summary

|                                 |
|---------------------------------|
| Network wide Queuing Penalty: 3 |
|---------------------------------|

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  | T   |
| Maximum Queue (ft)    | 97  | 96  | 112 | 72  | 79  | 31 | 154 | 56  |
| Average Queue (ft)    | 53  | 60  | 62  | 37  | 34  | 13 | 69  | 8   |
| 95th Queue (ft)       | 86  | 89  | 97  | 59  | 72  | 37 | 118 | 35  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R  |
| Maximum Queue (ft)    | 162 | 95  | 136 | 139 | 188 | 161 | 79 |
| Average Queue (ft)    | 65  | 52  | 68  | 56  | 104 | 29  | 41 |
| 95th Queue (ft)       | 126 | 85  | 124 | 121 | 170 | 99  | 67 |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |    |
| Upstream Blk Time (%) |     |     |     |     |     |     |    |
| Queuing Penalty (veh) |     |     |     |     |     |     |    |
| Storage Bay Dist (ft) |     | 295 |     |     |     | 105 |    |
| Storage Blk Time (%)  |     |     |     |     |     |     |    |
| Queuing Penalty (veh) |     |     |     |     |     |     |    |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 69  | 109  | 45 | 213  | 55  | 52  | 31 | 74  | 52  | 53  |
| Average Queue (ft)    | 26  | 38   | 6  | 57   | 19  | 8   | 6  | 17  | 10  | 29  |
| 95th Queue (ft)       | 56  | 85   | 25 | 133  | 49  | 32  | 25 | 53  | 36  | 57  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     |      |    | 3    |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    | 0    |     |     |    |     |     |     |

Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB |
|-----------------------|------|----|
| Directions Served     | L    | LR |
| Maximum Queue (ft)    | 46   | 68 |
| Average Queue (ft)    | 4    | 29 |
| 95th Queue (ft)       | 23   | 55 |
| Link Distance (ft)    | 1339 |    |
| Upstream Blk Time (%) |      |    |
| Queuing Penalty (veh) |      |    |
| Storage Bay Dist (ft) | 75   |    |
| Storage Blk Time (%)  |      |    |
| Queuing Penalty (veh) |      |    |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB | EB | WB  | WB | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|----|----|-----|----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T  | R  | L   | TR | L   | T   | L   | T   | R   |
| Maximum Queue (ft)    | 140 | 44 | 60 | 25  | 52 | 117 | 125 | 53  | 96  | 102 |
| Average Queue (ft)    | 68  | 4  | 19 | 4   | 11 | 54  | 49  | 13  | 45  | 48  |
| 95th Queue (ft)       | 112 | 20 | 44 | 19  | 36 | 92  | 107 | 42  | 85  | 76  |
| Link Distance (ft)    | 936 |    |    | 372 |    |     | 448 |     | 399 |     |
| Upstream Blk Time (%) |     |    |    |     |    |     |     |     |     |     |
| Queuing Penalty (veh) |     |    |    |     |    |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |    | 55 | 155 |    | 155 |     | 110 |     | 265 |
| Storage Blk Time (%)  | 3   | 0  | 0  |     |    |     | 0   |     | 0   |     |
| Queuing Penalty (veh) | 4   | 0  | 0  |     |    |     | 0   |     | 0   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              |
|-----------------------|
| Directions Served     |
| Maximum Queue (ft)    |
| Average Queue (ft)    |
| 95th Queue (ft)       |
| Link Distance (ft)    |
| Upstream Blk Time (%) |
| Queuing Penalty (veh) |
| Storage Bay Dist (ft) |
| Storage Blk Time (%)  |
| Queuing Penalty (veh) |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB | EB  | WB  | WB  | WB | NB  | NB | NB  | NB  | SB      | SB |
|-----------------------|-----|----|-----|-----|-----|----|-----|----|-----|-----|---------|----|
| Directions Served     | UL  | T  | R   | L   | T   | R  | L   | T  | T   | R   | L       | T  |
| Maximum Queue (ft)    | 63  | 67 | 20  | 47  | 113 | 45 | 75  | 65 | 68  | 32  | 70      | 66 |
| Average Queue (ft)    | 14  | 30 | 6   | 12  | 37  | 16 | 17  | 28 | 13  | 7   | 23      | 22 |
| 95th Queue (ft)       | 38  | 60 | 18  | 33  | 78  | 37 | 50  | 58 | 41  | 20  | 52      | 58 |
| Link Distance (ft)    | 680 |    |     | 436 |     |    | 276 |    |     | 276 |         |    |
| Upstream Blk Time (%) |     |    |     |     |     |    |     |    |     |     |         |    |
| Queuing Penalty (veh) |     |    |     |     |     |    |     |    |     |     |         |    |
| Storage Bay Dist (ft) | 165 |    | 150 |     | 175 |    | 175 |    | 175 |     | 100 250 |    |
| Storage Blk Time (%)  |     |    |     |     |     |    |     |    |     |     |         |    |
| Queuing Penalty (veh) |     |    |     |     |     |    |     |    |     |     |         |    |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 35   |
| Average Queue (ft)    | 4    |
| 95th Queue (ft)       | 18   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | LR   |
| Maximum Queue (ft)    | 51   |
| Average Queue (ft)    | 18   |
| 95th Queue (ft)       | 41   |
| Link Distance (ft)    | 2057 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 75   | 78   | 72   | 77   |
| Average Queue (ft)    | 32   | 36   | 34   | 39   |
| 95th Queue (ft)       | 55   | 60   | 52   | 66   |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | SE  |
|-----------------------|-----|
| Directions Served     | L   |
| Maximum Queue (ft)    | 123 |
| Average Queue (ft)    | 48  |
| 95th Queue (ft)       | 98  |
| Link Distance (ft)    | 209 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Network Summary

|                                 |
|---------------------------------|
| Network wide Queuing Penalty: 4 |
|---------------------------------|

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                         |
|---------------------|--------------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Existing AM Peak        |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 414  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.72 | Total Trucks, %                  | 4.03 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.24 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52195  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44139 | PF Power Coefficient             | 0.67822 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 6.4     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 35.2                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 35.2 | Percent Followers, %              | 54.7 |
| Segment Travel Time, minutes | 0.83 | Follower Density, followers/mi/ln | 6.4  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 6.4                               | C   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                   |                      |                         |
|---------------------|-------------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                                   | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                     | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                                   | Time Period Analyzed | Existing AM Peak        |
| Project Description | 02 Hanford-Armona Road<br>Between 10 1/2 Avenue<br>and Jordan Way | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 335  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.74 | Total Trucks, %                  | 3.39 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.20 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43653  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48329 | PF Power Coefficient             | 0.66113 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.0     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.2                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.2 | Percent Followers, %              | 51.3 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 5.0  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.0                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                 |                      |                         |
|---------------------|-----------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                                 | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                   | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                                 | Time Period Analyzed | Existing AM Peak        |
| Project Description | 03 Hanford-Armona Road<br>Between Jordan Way and<br>10th Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 23.4 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 293  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 6.25 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.17 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 39.5    |
| Speed Slope Coefficient           | 2.65189  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50451 | PF Power Coefficient             | 0.67582 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 38.2                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 38.2 | Percent Followers, %              | 48.1 |
| Segment Travel Time, minutes | 0.27 | Follower Density, followers/mi/ln | 3.7  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.7                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                         |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing AM Peak        |
| Project Description | 04 10.5 Avenue Between Hanford Armona Road and Orchard Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 92   | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.60 | Total Trucks, %                  | 9.87 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.05 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.5    |
| Speed Slope Coefficient           | 2.29128  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42068 | PF Power Coefficient             | 0.65951 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 0.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 32.5                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 32.5 | Percent Followers, %              | 25.6 |
| Segment Travel Time, minutes | 0.96 | Follower Density, followers/mi/ln | 0.7  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 0.7                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                         |
|---------------------|----------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Existing AM Peak        |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 95   | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.42 | Total Trucks, %                  | 13.33 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.06  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.4    |
| Speed Slope Coefficient           | 2.28310  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42395 | PF Power Coefficient             | 0.65839 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 0.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 32.4                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 32.4 | Percent Followers, %              | 26.1 |
| Segment Travel Time, minutes | 0.91 | Follower Density, followers/mi/ln | 0.8  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 0.8                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                         |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing AM Peak        |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 211  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.68 | Total Trucks, %                  | 21.40 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.12  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.3    |
| Speed Slope Coefficient           | 3.14891  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42118 | PF Power Coefficient             | 0.72418 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 47.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 47.1 | Percent Followers, %              | 36.9 |
| Segment Travel Time, minutes | 0.62 | Follower Density, followers/mi/ln | 1.7  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.7                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                         |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing AM Peak        |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 188  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.88 | Total Trucks, %                  | 17.65 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.11  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.3    |
| Speed Slope Coefficient           | 3.20179  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41674 | PF Power Coefficient             | 0.72668 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.3     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.2                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.2 | Percent Followers, %              | 34.3 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 1.3  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.3                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                         |
|---------------------|--------------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Existing PM Peak        |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 517  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.83 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.30 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52381  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44159 | PF Power Coefficient             | 0.67823 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 8.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 35.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 35.0 | Percent Followers, %              | 60.2 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 8.9  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 8.9                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                   |                      |                         |
|---------------------|-------------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                                   | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                     | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                                   | Time Period Analyzed | Existing PM Peak        |
| Project Description | 02 Hanford-Armona Road<br>Between 10 1/2 Avenue<br>and Jordan Way | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 374  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.85 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.22 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43724  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48339 | PF Power Coefficient             | 0.66114 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.1 | Percent Followers, %              | 53.9 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 5.9  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.9                               | C   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                 |                      |                         |
|---------------------|-----------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                                 | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                   | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                                 | Time Period Analyzed | Existing PM Peak        |
| Project Description | 03 Hanford-Armona Road<br>Between Jordan Way and<br>10th Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 17.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 305  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.97 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.18 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 41.1    |
| Speed Slope Coefficient           | 2.73635  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50445 | PF Power Coefficient             | 0.68170 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 39.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 39.7 | Percent Followers, %              | 48.8 |
| Segment Travel Time, minutes | 0.26 | Follower Density, followers/mi/ln | 3.8  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.8                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                         |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing PM Peak        |
| Project Description | 04 10.5 Avenue Between Hanford Armona Road and Orchard Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 67   | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.04 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30368  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42275 | PF Power Coefficient             | 0.65971 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 0.4     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 32.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 32.7 | Percent Followers, %              | 21.2 |
| Segment Travel Time, minutes | 0.95 | Follower Density, followers/mi/ln | 0.4  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 0.4                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                         |
|---------------------|----------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Existing PM Peak        |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 80   | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.56 | Total Trucks, %                  | 3.70 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.05 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30048  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42689 | PF Power Coefficient             | 0.65868 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 0.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 32.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 32.7 | Percent Followers, %              | 23.7 |
| Segment Travel Time, minutes | 0.90 | Follower Density, followers/mi/ln | 0.6  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 0.6                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                         |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing PM Peak        |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 200  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.89 | Total Trucks, %                  | 3.75 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.12 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.9    |
| Speed Slope Coefficient           | 3.18076  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42061 | PF Power Coefficient             | 0.72351 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.5     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 47.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 47.7 | Percent Followers, %              | 35.8 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 1.5  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.5                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                         |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022               |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                    |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing PM Peak        |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 228  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.90 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.13 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.8    |
| Speed Slope Coefficient           | 3.22823  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41606 | PF Power Coefficient             | 0.72608 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.4                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.4 | Percent Followers, %              | 38.4 |
| Segment Travel Time, minutes | 0.60 | Follower Density, followers/mi/ln | 1.8  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.8                               | A   |

## Appendix F: Existing plus Project Traffic Conditions



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

*A p p | F*

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Existing Plus Project AM Peak

04/26/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 55                                                                                | 232                                                                               | 47    | 18                                                                                | 218                                                                               | 27    | 124                                                                               | 62                                                                                | 24                                                                                | 12                                                                                | 21                                                                                | 34                                                                                |
| Future Volume (veh/h)        | 55                                                                                | 232                                                                               | 47    | 18                                                                                | 218                                                                               | 27    | 124                                                                               | 62                                                                                | 24                                                                                | 12                                                                                | 21                                                                                | 34                                                                                |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                              |
| Adj Flow Rate, veh/h         | 76                                                                                | 322                                                                               | 65    | 25                                                                                | 303                                                                               | 38    | 172                                                                               | 86                                                                                | 33                                                                                | 17                                                                                | 29                                                                                | 47                                                                                |
| Peak Hour Factor             | 0.72                                                                              | 0.72                                                                              | 0.72  | 0.72                                                                              | 0.72                                                                              | 0.72  | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              |
| Percent Heavy Veh, %         | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Cap, veh/h                   | 121                                                                               | 450                                                                               | 91    | 52                                                                                | 423                                                                               | 53    | 219                                                                               | 389                                                                               | 329                                                                               | 37                                                                                | 198                                                                               | 168                                                                               |
| Arrive On Green              | 0.07                                                                              | 0.31                                                                              | 0.31  | 0.03                                                                              | 0.27                                                                              | 0.27  | 0.13                                                                              | 0.21                                                                              | 0.21                                                                              | 0.02                                                                              | 0.11                                                                              | 0.11                                                                              |
| Sat Flow, veh/h              | 1739                                                                              | 1474                                                                              | 298   | 1739                                                                              | 1590                                                                              | 199   | 1739                                                                              | 1826                                                                              | 1547                                                                              | 1739                                                                              | 1826                                                                              | 1547                                                                              |
| Grp Volume(v), veh/h         | 76                                                                                | 0                                                                                 | 387   | 25                                                                                | 0                                                                                 | 341   | 172                                                                               | 86                                                                                | 33                                                                                | 17                                                                                | 29                                                                                | 47                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 1739                                                                              | 0                                                                                 | 1772  | 1739                                                                              | 0                                                                                 | 1790  | 1739                                                                              | 1826                                                                              | 1547                                                                              | 1739                                                                              | 1826                                                                              | 1547                                                                              |
| Q Serve(g_s), s              | 1.8                                                                               | 0.0                                                                               | 8.2   | 0.6                                                                               | 0.0                                                                               | 7.3   | 4.1                                                                               | 1.6                                                                               | 0.7                                                                               | 0.4                                                                               | 0.6                                                                               | 1.2                                                                               |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 0.0                                                                               | 8.2   | 0.6                                                                               | 0.0                                                                               | 7.3   | 4.1                                                                               | 1.6                                                                               | 0.7                                                                               | 0.4                                                                               | 0.6                                                                               | 1.2                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.17  | 1.00                                                                              |                                                                                   | 0.11  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 121                                                                               | 0                                                                                 | 541   | 52                                                                                | 0                                                                                 | 476   | 219                                                                               | 389                                                                               | 329                                                                               | 37                                                                                | 198                                                                               | 168                                                                               |
| V/C Ratio(X)                 | 0.63                                                                              | 0.00                                                                              | 0.71  | 0.48                                                                              | 0.00                                                                              | 0.72  | 0.79                                                                              | 0.22                                                                              | 0.10                                                                              | 0.46                                                                              | 0.15                                                                              | 0.28                                                                              |
| Avail Cap(c_a), veh/h        | 206                                                                               | 0                                                                                 | 1143  | 206                                                                               | 0                                                                                 | 1155  | 321                                                                               | 1273                                                                              | 1079                                                                              | 206                                                                               | 1165                                                                              | 988                                                                               |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 19.1                                                                              | 0.0                                                                               | 13.1  | 20.2                                                                              | 0.0                                                                               | 14.1  | 17.9                                                                              | 13.8                                                                              | 13.4                                                                              | 20.5                                                                              | 17.1                                                                              | 17.3                                                                              |
| Incr Delay (d2), s/veh       | 5.2                                                                               | 0.0                                                                               | 1.8   | 6.6                                                                               | 0.0                                                                               | 2.0   | 7.7                                                                               | 0.3                                                                               | 0.1                                                                               | 8.5                                                                               | 0.3                                                                               | 0.9                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 0.0                                                                               | 2.6   | 0.3                                                                               | 0.0                                                                               | 2.5   | 1.8                                                                               | 0.6                                                                               | 0.2                                                                               | 0.2                                                                               | 0.2                                                                               | 0.4                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 24.3                                                                              | 0.0                                                                               | 14.8  | 26.8                                                                              | 0.0                                                                               | 16.1  | 25.6                                                                              | 14.0                                                                              | 13.5                                                                              | 28.9                                                                              | 17.4                                                                              | 18.2                                                                              |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 463                                                                               |                                                                                   | 366   |                                                                                   |                                                                                   |       | 291                                                                               |                                                                                   | 93                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 16.4                                                                              |                                                                                   | 16.9  |                                                                                   |                                                                                   |       | 20.8                                                                              |                                                                                   | 19.9                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   |       | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 5.1                                                                               | 13.9                                                                              | 5.5   | 17.8                                                                              | 9.5                                                                               | 9.5   | 7.2                                                                               | 16.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5                                                                               | 29.5                                                                              | * 5   | 27.3                                                                              | * 7.8                                                                             | * 27  | * 5                                                                               | 27.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 3.6                                                                               | 2.6   | 10.2                                                                              | 6.1                                                                               | 3.2   | 3.8                                                                               | 9.3                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.5                                                                               | 0.0   | 2.0                                                                               | 0.1                                                                               | 0.2   | 0.0                                                                               | 1.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 17.9 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.6                                                                               |        |                                                                                   |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |  |  |  |       |
| Traffic Vol, veh/h       | 212                                                                               | 28     | 24                                                                                | 184                                                                               | 55                                                                                | 44    |
| Future Vol, veh/h        | 212                                                                               | 28     | 24                                                                                | 184                                                                               | 55                                                                                | 44    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1     |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 74                                                                                | 74     | 74                                                                                | 74                                                                                | 74                                                                                | 74    |
| Heavy Vehicles, %        | 6                                                                                 | 6      | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6     |
| Mvmt Flow                | 286                                                                               | 38     | 32                                                                                | 249                                                                               | 74                                                                                | 59    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            | Major2 | Minor1                                                                            |                                                                                   |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 324                                                                               | 0                                                                                 | 618                                                                               | 306   |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 305                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 313                                                                               | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.16                                                                              | -                                                                                 | 6.46                                                                              | 6.26  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.46                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.46                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.254                                                                             | -                                                                                 | 3.554                                                                             | 3.354 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1214                                                                              | -                                                                                 | 446                                                                               | 725   |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 739                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 732                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1214                                                                              | -                                                                                 | 434                                                                               | 724   |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 529                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 739                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 713                                                                               | -     |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                | WB     | NB                                                                                |                                                                                   |                                                                                   |       |
| HCM Control Delay, s     | 0                                                                                 | 0.9    | 12.7                                                                              |                                                                                   |                                                                                   |       |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 601                                                                               | -      | -                                                                                 | 1214                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.223                                                                             | -      | -                                                                                 | 0.027                                                                             | -                                                                                 |       |
| HCM Control Delay (s)    | 12.7                                                                              | -      | -                                                                                 | 8                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile O(veh)    | 0.8                                                                               | -      | -                                                                                 | 0.1                                                                               | -                                                                                 |       |



# HCM 6th Signalized Intersection Summary 5: 10th Avenue & Hanford Armona Road

Existing Plus Project AM Peak

04/26/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 197                                                                               | 5                                                                                 | 53                                                                                | 3                                                                                 | 6                                                                                 | 12                                                                                | 55                                                                                  | 167                                                                                 | 1                                                                                   | 6                                                                                   | 154                                                                                 | 157                                                                                 |
| Future Volume (veh/h)        | 197                                                                               | 5                                                                                 | 53                                                                                | 3                                                                                 | 6                                                                                 | 12                                                                                | 55                                                                                  | 167                                                                                 | 1                                                                                   | 6                                                                                   | 154                                                                                 | 157                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                |
| Adj Flow Rate, veh/h         | 243                                                                               | 6                                                                                 | 65                                                                                | 4                                                                                 | 7                                                                                 | 15                                                                                | 68                                                                                  | 206                                                                                 | 1                                                                                   | 7                                                                                   | 190                                                                                 | 194                                                                                 |
| Peak Hour Factor             | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Percent Heavy Veh, %         | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   |
| Cap, veh/h                   | 288                                                                               | 440                                                                               | 373                                                                               | 9                                                                                 | 42                                                                                | 90                                                                                | 113                                                                                 | 468                                                                                 | 397                                                                                 | 16                                                                                  | 367                                                                                 | 311                                                                                 |
| Arrive On Green              | 0.17                                                                              | 0.24                                                                              | 0.24                                                                              | 0.01                                                                              | 0.08                                                                              | 0.08                                                                              | 0.07                                                                                | 0.26                                                                                | 0.26                                                                                | 0.01                                                                                | 0.20                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 509                                                                               | 1091                                                                              | 1711                                                                                | 1796                                                                                | 1522                                                                                | 1711                                                                                | 1796                                                                                | 1522                                                                                |
| Grp Volume(v), veh/h         | 243                                                                               | 6                                                                                 | 65                                                                                | 4                                                                                 | 0                                                                                 | 22                                                                                | 68                                                                                  | 206                                                                                 | 1                                                                                   | 7                                                                                   | 190                                                                                 | 194                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 0                                                                                 | 1600                                                                              | 1711                                                                                | 1796                                                                                | 1522                                                                                | 1711                                                                                | 1796                                                                                | 1522                                                                                |
| Q Serve(g_s), s              | 5.6                                                                               | 0.1                                                                               | 1.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 1.6                                                                                 | 3.9                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 3.8                                                                                 | 4.7                                                                                 |
| Cycle Q Clear(g_c), s        | 5.6                                                                               | 0.1                                                                               | 1.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 1.6                                                                                 | 3.9                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 3.8                                                                                 | 4.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.68                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 288                                                                               | 440                                                                               | 373                                                                               | 9                                                                                 | 0                                                                                 | 131                                                                               | 113                                                                                 | 468                                                                                 | 397                                                                                 | 16                                                                                  | 367                                                                                 | 311                                                                                 |
| V/C Ratio(X)                 | 0.84                                                                              | 0.01                                                                              | 0.17                                                                              | 0.43                                                                              | 0.00                                                                              | 0.17                                                                              | 0.60                                                                                | 0.44                                                                                | 0.00                                                                                | 0.44                                                                                | 0.52                                                                                | 0.62                                                                                |
| Avail Cap(c_a), veh/h        | 288                                                                               | 1652                                                                              | 1400                                                                              | 211                                                                               | 0                                                                                 | 1385                                                                              | 211                                                                                 | 1279                                                                                | 1084                                                                                | 211                                                                                 | 1297                                                                                | 1099                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.3                                                                              | 11.6                                                                              | 12.0                                                                              | 20.0                                                                              | 0.0                                                                               | 17.3                                                                              | 18.4                                                                                | 12.5                                                                                | 11.1                                                                                | 19.9                                                                                | 14.3                                                                                | 14.7                                                                                |
| Incr Delay (d2), s/veh       | 20.0                                                                              | 0.0                                                                               | 0.2                                                                               | 28.5                                                                              | 0.0                                                                               | 0.6                                                                               | 5.1                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 17.7                                                                                | 1.1                                                                                 | 2.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.3                                                                               | 0.0                                                                               | 0.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 0.6                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 1.3                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 36.3                                                                              | 11.6                                                                              | 12.3                                                                              | 48.5                                                                              | 0.0                                                                               | 17.9                                                                              | 23.4                                                                                | 13.1                                                                                | 11.1                                                                                | 37.6                                                                                | 15.5                                                                                | 16.7                                                                                |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 314                                                                               |                                                                                   |                                                                                   | 26                                                                                |                                                                                   |                                                                                   | 275                                                                                 |                                                                                     |                                                                                     | 391                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 30.9                                                                              |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 15.7                                                                                |                                                                                     |                                                                                     | 16.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.6                                                                               | 16.2                                                                              | 4.4                                                                               | 15.2                                                                              | 6.9                                                                               | 14.0                                                                              | 11.0                                                                                | 8.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7                                                                             | * 4.2                                                                               | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5                                                                               | * 29                                                                              | * 6.8                                                                               | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.2                                                                               | 5.9                                                                               | 2.1                                                                               | 3.4                                                                               | 3.6                                                                               | 6.7                                                                               | 7.6                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.9                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 20.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |                                                                                   |          |                                                                                   |       |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4.3                                                                               |          |                                                                                   |       |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |       |       |  |
| Traffic Vol, veh/h       | 32                                                                                | 53       | 71                                                                                | 8     | 18    | 39                                                                                |
| Future Vol, veh/h        | 32                                                                                | 53       | 71                                                                                | 8     | 18    | 39                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Peak Hour Factor         | 88                                                                                | 88       | 88                                                                                | 88    | 88    | 88                                                                                |
| Heavy Vehicles, %        | 5                                                                                 | 5        | 5                                                                                 | 5     | 5     | 5                                                                                 |
| Mvmt Flow                | 36                                                                                | 60       | 81                                                                                | 9     | 20    | 44                                                                                |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |       |                                                                                   |
| Conflicting Flow All     | 170                                                                               | 86       | 0                                                                                 | 0     | 90    | 0                                                                                 |
| Stage 1                  | 86                                                                                | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 84                                                                                | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy            | 6.45                                                                              | 6.25     | -                                                                                 | -     | 4.15  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.45                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.45                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Follow-up Hdwy           | 3.545                                                                             | 3.345    | -                                                                                 | -     | 2.245 | -                                                                                 |
| Pot Cap-1 Maneuver       | 813                                                                               | 964      | -                                                                                 | -     | 1486  | -                                                                                 |
| Stage 1                  | 930                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 932                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 802                                                                               | 964      | -                                                                                 | -     | 1486  | -                                                                                 |
| Mov Cap-2 Maneuver       | 802                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 1                  | 930                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 919                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB    |       |                                                                                   |
| HCM Control Delay, s     | 9.5                                                                               | 0        |                                                                                   | 2.4   |       |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 896                                                                               | 1486  | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.108                                                                             | 0.014 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 9.5                                                                               | 7.5   | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | A                                                                                 | A     | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.4                                                                               | 0     | -     |                                                                                   |

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Existing Plus Project AM Peak

04/26/2022

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 32                                                                                | 76                                                                                | 24                                                                                | 30                                                                                | 85                                                                                | 39                                                                                | 17                                                                                  | 73                                                                                  | 23                                                                                  | 41                                                                                  | 59                                                                                  | 21                                                                                  |
| Future Volume (vph)               | 32                                                                                | 76                                                                                | 24                                                                                | 30                                                                                | 85                                                                                | 39                                                                                | 17                                                                                  | 73                                                                                  | 23                                                                                  | 41                                                                                  | 59                                                                                  | 21                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                                | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                                | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Peak-hour factor, PHF             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)                   | 33                                                                                | 79                                                                                | 25                                                                                | 31                                                                                | 89                                                                                | 41                                                                                | 18                                                                                  | 76                                                                                  | 24                                                                                  | 43                                                                                  | 61                                                                                  | 22                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 22                                                                                | 0                                                                                 | 0                                                                                 | 35                                                                                | 0                                                                                   | 0                                                                                   | 15                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  |
| Lane Group Flow (vph)             | 33                                                                                | 79                                                                                | 3                                                                                 | 31                                                                                | 89                                                                                | 6                                                                                 | 18                                                                                  | 76                                                                                  | 9                                                                                   | 43                                                                                  | 61                                                                                  | 10                                                                                  |
| Heavy Vehicles (%)                | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 3.0                                                                               | 7.5                                                                               | 7.5                                                                               | 3.0                                                                               | 7.8                                                                               | 7.8                                                                               | 1.0                                                                                 | 21.6                                                                                | 21.6                                                                                | 3.0                                                                                 | 24.0                                                                                | 24.0                                                                                |
| Effective Green, g (s)            | 3.0                                                                               | 7.5                                                                               | 7.5                                                                               | 3.0                                                                               | 7.8                                                                               | 7.8                                                                               | 1.0                                                                                 | 21.6                                                                                | 21.6                                                                                | 3.0                                                                                 | 24.0                                                                                | 24.0                                                                                |
| Actuated g/C Ratio                | 0.05                                                                              | 0.14                                                                              | 0.14                                                                              | 0.05                                                                              | 0.14                                                                              | 0.14                                                                              | 0.02                                                                                | 0.39                                                                                | 0.39                                                                                | 0.05                                                                                | 0.43                                                                                | 0.43                                                                                |
| Clearance Time (s)                | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 86                                                                                | 228                                                                               | 194                                                                               | 86                                                                                | 237                                                                               | 201                                                                               | 28                                                                                  | 1250                                                                                | 559                                                                                 | 86                                                                                  | 730                                                                                 | 621                                                                                 |
| v/s Ratio Prot                    | c0.02                                                                             | 0.05                                                                              |                                                                                   | 0.02                                                                              | c0.05                                                                             |                                                                                   | 0.01                                                                                | 0.02                                                                                |                                                                                     | c0.03                                                                               | c0.04                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |
| v/c Ratio                         | 0.38                                                                              | 0.35                                                                              | 0.02                                                                              | 0.36                                                                              | 0.38                                                                              | 0.03                                                                              | 0.64                                                                                | 0.06                                                                                | 0.02                                                                                | 0.50                                                                                | 0.08                                                                                | 0.02                                                                                |
| Uniform Delay, d1                 | 25.2                                                                              | 21.6                                                                              | 20.7                                                                              | 25.2                                                                              | 21.5                                                                              | 20.4                                                                              | 26.9                                                                                | 10.5                                                                                | 10.3                                                                                | 25.4                                                                                | 9.1                                                                                 | 8.9                                                                                 |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 2.8                                                                               | 0.9                                                                               | 0.0                                                                               | 2.6                                                                               | 1.0                                                                               | 0.1                                                                               | 40.9                                                                                | 0.0                                                                                 | 0.0                                                                                 | 4.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Delay (s)                         | 28.0                                                                              | 22.5                                                                              | 20.7                                                                              | 27.7                                                                              | 22.5                                                                              | 20.5                                                                              | 67.9                                                                                | 10.5                                                                                | 10.3                                                                                | 29.9                                                                                | 9.2                                                                                 | 8.9                                                                                 |
| Level of Service                  | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | A                                                                                   | A                                                                                   |
| Approach Delay (s)                |                                                                                   | 23.5                                                                              |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                     | 19.2                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 20.7                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                           |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.21                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 55.2                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                                |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 30.9%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                                |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |                                                                                   |      |                                                                                   |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 3      |                                                                                   |                                                                                   |      |                                                                                   |       |
| Movement                 | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR   |
| Lane Configurations      |        |  |  |      |  |       |
| Traffic Vol, veh/h       | 22     | 94                                                                                | 80                                                                                | 26   | 26                                                                                | 45    |
| Future Vol, veh/h        | 22     | 94                                                                                | 80                                                                                | 26   | 26                                                                                | 45    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0     |
| Sign Control             | Free   | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop  |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -                                                                                 | None  |
| Storage Length           | -      | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Grade, %                 | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Peak Hour Factor         | 89     | 89                                                                                | 89                                                                                | 89   | 89                                                                                | 89    |
| Heavy Vehicles, %        | 19     | 19                                                                                | 19                                                                                | 19   | 19                                                                                | 19    |
| Mvmt Flow                | 25     | 106                                                                               | 90                                                                                | 29   | 29                                                                                | 51    |
| Major/Minor              | Major1 | Major2                                                                            | Minor2                                                                            |      |                                                                                   |       |
| Conflicting Flow All     | 119    | 0                                                                                 | -                                                                                 | 0    | 261                                                                               | 105   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 105                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 156                                                                               | -     |
| Critical Hdwy            | 4.29   | -                                                                                 | -                                                                                 | -    | 6.59                                                                              | 6.39  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    | 5.59                                                                              | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    | 5.59                                                                              | -     |
| Follow-up Hdwy           | 2.371  | -                                                                                 | -                                                                                 | -    | 3.671                                                                             | 3.471 |
| Pot Cap-1 Maneuver       | 1370   | -                                                                                 | -                                                                                 | -    | 693                                                                               | 905   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 879                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 833                                                                               | -     |
| Platoon blocked, %       |        | -                                                                                 | -                                                                                 | -    |                                                                                   |       |
| Mov Cap-1 Maneuver       | 1370   | -                                                                                 | -                                                                                 | -    | 680                                                                               | 905   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    | 680                                                                               | -     |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 862                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 833                                                                               | -     |
| Approach                 | EB     | WB                                                                                |                                                                                   | SB   |                                                                                   |       |
| HCM Control Delay, s     | 1.5    | 0                                                                                 |                                                                                   | 10   |                                                                                   |       |
| HCM LOS                  |        |                                                                                   |                                                                                   | B    |                                                                                   |       |
| Minor Lane/Major Mvmt    | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBLn1                                                                             |       |
| Capacity (veh/h)         | 1370   | -                                                                                 | -                                                                                 | -    | 807                                                                               |       |
| HCM Lane V/C Ratio       | 0.018  | -                                                                                 | -                                                                                 | -    | 0.099                                                                             |       |
| HCM Control Delay (s)    | 7.7    | 0                                                                                 | -                                                                                 | -    | 10                                                                                |       |
| HCM Lane LOS             | A      | A                                                                                 | -                                                                                 | -    | B                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | -                                                                                 | -    | 0.3                                                                               |       |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.9 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 30   | 66                                                                                | 31   | 12   | 56                                                                                | 13   | 14   | 59                                                                                  | 5    | 13   | 63                                                                                  | 41   |
| Future Vol, veh/h   | 30   | 66                                                                                | 31   | 12   | 56                                                                                | 13   | 14   | 59                                                                                  | 5    | 13   | 63                                                                                  | 41   |
| Peak Hour Factor    | 0.91 | 0.91                                                                              | 0.91 | 0.91 | 0.91                                                                              | 0.91 | 0.91 | 0.91                                                                                | 0.91 | 0.91 | 0.91                                                                                | 0.91 |
| Heavy Vehicles, %   | 26   | 26                                                                                | 26   | 26   | 26                                                                                | 26   | 26   | 26                                                                                  | 26   | 26   | 26                                                                                  | 26   |
| Mvmt Flow           | 33   | 73                                                                                | 34   | 13   | 62                                                                                | 14   | 15   | 65                                                                                  | 5    | 14   | 69                                                                                  | 45   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 0    | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB  | SB  |
|----------------------------|-----|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  | NB  |
| Opposing Lanes             | 1   | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1   |
| HCM Control Delay          | 9.1 | 8.7 | 8.8 | 8.9 |
| HCM LOS                    | A   | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 18%   | 24%   | 15%   | 11%   |
| Vol Thru, %            | 76%   | 52%   | 69%   | 54%   |
| Vol Right, %           | 6%    | 24%   | 16%   | 35%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 78    | 127   | 81    | 117   |
| LT Vol                 | 14    | 30    | 12    | 13    |
| Through Vol            | 59    | 66    | 56    | 63    |
| RT Vol                 | 5     | 31    | 13    | 41    |
| Lane Flow Rate         | 86    | 140   | 89    | 129   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.121 | 0.19  | 0.123 | 0.173 |
| Departure Headway (Hd) | 5.078 | 4.895 | 4.991 | 4.842 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 705   | 733   | 717   | 741   |
| Service Time           | 3.111 | 2.927 | 3.026 | 2.873 |
| HCM Lane V/C Ratio     | 0.122 | 0.191 | 0.124 | 0.174 |
| HCM Control Delay      | 8.8   | 9.1   | 8.7   | 8.9   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.4   | 0.7   | 0.4   | 0.6   |

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Existing Plus Project PM Peak

04/26/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 44                                                                                | 303                                                                               | 111   | 24                                                                                | 297                                                                               | 29    | 89                                                                                | 36                                                                                | 14                                                                                | 27                                                                                | 43                                                                                | 56                                                                                |
| Future Volume (veh/h)        | 44                                                                                | 303                                                                               | 111   | 24                                                                                | 297                                                                               | 29    | 89                                                                                | 36                                                                                | 14                                                                                | 27                                                                                | 43                                                                                | 56                                                                                |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              |
| Adj Flow Rate, veh/h         | 48                                                                                | 329                                                                               | 121   | 26                                                                                | 323                                                                               | 32    | 97                                                                                | 39                                                                                | 15                                                                                | 29                                                                                | 47                                                                                | 61                                                                                |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                   | 91                                                                                | 439                                                                               | 162   | 55                                                                                | 531                                                                               | 53    | 144                                                                               | 287                                                                               | 243                                                                               | 61                                                                                | 199                                                                               | 169                                                                               |
| Arrive On Green              | 0.05                                                                              | 0.34                                                                              | 0.34  | 0.03                                                                              | 0.32                                                                              | 0.32  | 0.08                                                                              | 0.15                                                                              | 0.15                                                                              | 0.03                                                                              | 0.11                                                                              | 0.11                                                                              |
| Sat Flow, veh/h              | 1767                                                                              | 1293                                                                              | 475   | 1767                                                                              | 1661                                                                              | 165   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                              | 1856                                                                              | 1572                                                                              |
| Grp Volume(v), veh/h         | 48                                                                                | 0                                                                                 | 450   | 26                                                                                | 0                                                                                 | 355   | 97                                                                                | 39                                                                                | 15                                                                                | 29                                                                                | 47                                                                                | 61                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 0                                                                                 | 1768  | 1767                                                                              | 0                                                                                 | 1825  | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                              | 1856                                                                              | 1572                                                                              |
| Q Serve(g_s), s              | 1.1                                                                               | 0.0                                                                               | 9.3   | 0.6                                                                               | 0.0                                                                               | 6.8   | 2.2                                                                               | 0.8                                                                               | 0.3                                                                               | 0.7                                                                               | 1.0                                                                               | 1.5                                                                               |
| Cycle Q Clear(g_c), s        | 1.1                                                                               | 0.0                                                                               | 9.3   | 0.6                                                                               | 0.0                                                                               | 6.8   | 2.2                                                                               | 0.8                                                                               | 0.3                                                                               | 0.7                                                                               | 1.0                                                                               | 1.5                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.27  | 1.00                                                                              |                                                                                   | 0.09  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 91                                                                                | 0                                                                                 | 601   | 55                                                                                | 0                                                                                 | 584   | 144                                                                               | 287                                                                               | 243                                                                               | 61                                                                                | 199                                                                               | 169                                                                               |
| V/C Ratio(X)                 | 0.53                                                                              | 0.00                                                                              | 0.75  | 0.47                                                                              | 0.00                                                                              | 0.61  | 0.68                                                                              | 0.14                                                                              | 0.06                                                                              | 0.48                                                                              | 0.24                                                                              | 0.36                                                                              |
| Avail Cap(c_a), veh/h        | 214                                                                               | 0                                                                                 | 1176  | 214                                                                               | 0                                                                                 | 1214  | 325                                                                               | 1284                                                                              | 1088                                                                              | 244                                                                               | 1212                                                                              | 1027                                                                              |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 19.1                                                                              | 0.0                                                                               | 12.1  | 19.7                                                                              | 0.0                                                                               | 11.9  | 18.5                                                                              | 15.1                                                                              | 14.9                                                                              | 19.6                                                                              | 16.9                                                                              | 17.1                                                                              |
| Incr Delay (d2), s/veh       | 4.7                                                                               | 0.0                                                                               | 1.9   | 6.1                                                                               | 0.0                                                                               | 1.0   | 5.4                                                                               | 0.2                                                                               | 0.1                                                                               | 5.8                                                                               | 0.6                                                                               | 1.3                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 0.0                                                                               | 2.9   | 0.3                                                                               | 0.0                                                                               | 2.1   | 1.0                                                                               | 0.3                                                                               | 0.1                                                                               | 0.3                                                                               | 0.4                                                                               | 0.5                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 23.9                                                                              | 0.0                                                                               | 14.0  | 25.8                                                                              | 0.0                                                                               | 12.9  | 23.9                                                                              | 15.3                                                                              | 15.0                                                                              | 25.4                                                                              | 17.5                                                                              | 18.4                                                                              |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 498                                                                               |                                                                                   |       | 381                                                                               |                                                                                   |       | 151                                                                               |                                                                                   |                                                                                   | 137                                                                               |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 14.9                                                                              |                                                                                   |       | 13.8                                                                              |                                                                                   |       | 20.8                                                                              |                                                                                   |                                                                                   | 19.6                                                                              |                                                                                   |                                                                                   |
| Approach LOS                 | B                                                                                 |                                                                                   |       | B                                                                                 |                                                                                   |       | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 5.6                                                                               | 11.3                                                                              | 5.5   | 18.9                                                                              | 7.6                                                                               | 9.3   | 6.3                                                                               | 18.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5.7                                                                             | 28.6                                                                              | * 5   | 27.5                                                                              | * 7.6                                                                             | * 27  | * 5                                                                               | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.7                                                                               | 2.8                                                                               | 2.6   | 11.3                                                                              | 4.2                                                                               | 3.5   | 3.1                                                                               | 8.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.2                                                                               | 0.0   | 2.4                                                                               | 0.1                                                                               | 0.4   | 0.0                                                                               | 1.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

HCM 6th Ctrl Delay 15.9

HCM 6th LOS B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.1                                                                               |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                                |
| Lane Configurations      |  |        |  |  |  |  |
| Traffic Vol, veh/h       | 257                                                                               | 57     | 59                                                                                | 291                                                                               | 53                                                                                | 31                                                                                 |
| Future Vol, veh/h        | 257                                                                               | 57     | 59                                                                                | 291                                                                               | 53                                                                                | 31                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 2      | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop                                                                               |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None                                                                               |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -                                                                                  |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Peak Hour Factor         | 90                                                                                | 90     | 90                                                                                | 90                                                                                | 90                                                                                | 90                                                                                 |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  |
| Mvmt Flow                | 286                                                                               | 63     | 66                                                                                | 323                                                                               | 59                                                                                | 34                                                                                 |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Major/Minor              | Major1                                                                            | Major2 |                                                                                   | Minor1                                                                            |                                                                                   |                                                                                    |
| Conflicting Flow All     | 0                                                                                 | 0      | 351                                                                               | 0                                                                                 | 775                                                                               | 320                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 320                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 455                                                                               | -                                                                                  |
| Critical Hdwy            | -                                                                                 | -      | 4.13                                                                              | -                                                                                 | 6.43                                                                              | 6.23                                                                               |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -                                                                                  |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -                                                                                  |
| Follow-up Hdwy           | -                                                                                 | -      | 2.227                                                                             | -                                                                                 | 3.527                                                                             | 3.327                                                                              |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1202                                                                              | -                                                                                 | 365                                                                               | 718                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 734                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 637                                                                               | -                                                                                  |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |                                                                                    |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1200                                                                              | -                                                                                 | 344                                                                               | 717                                                                                |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 456                                                                               | -                                                                                  |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 733                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 602                                                                               | -                                                                                  |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Approach                 | EB                                                                                | WB     |                                                                                   | NB                                                                                |                                                                                   |                                                                                    |
| HCM Control Delay, s     | 0                                                                                 | 1.4    |                                                                                   | 13.3                                                                              |                                                                                   |                                                                                    |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |                                                                                    |
| Capacity (veh/h)         | 527                                                                               | -      | -                                                                                 | 1200                                                                              | -                                                                                 |                                                                                    |
| HCM Lane V/C Ratio       | 0.177                                                                             | -      | -                                                                                 | 0.055                                                                             | -                                                                                 |                                                                                    |
| HCM Control Delay (s)    | 13.3                                                                              | -      | -                                                                                 | 8.2                                                                               | -                                                                                 |                                                                                    |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |                                                                                    |
| HCM 95th %tile O(veh)    | 0.6                                                                               | -      | -                                                                                 | 0.2                                                                               | -                                                                                 |                                                                                    |

# HCM 6th Signalized Intersection Summary 5: 10th Avenue & Hanford Armona Road

Existing Plus Project PM Peak

04/26/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 169                                                                               | 16                                                                                | 97                                                                                | 4                                                                                 | 11                                                                                | 8                                                                                 | 114                                                                                 | 203                                                                                 | 5                                                                                   | 16                                                                                  | 154                                                                                 | 221                                                                                 |
| Future Volume (veh/h)        | 169                                                                               | 16                                                                                | 97                                                                                | 4                                                                                 | 11                                                                                | 8                                                                                 | 114                                                                                 | 203                                                                                 | 5                                                                                   | 16                                                                                  | 154                                                                                 | 221                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                                |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 178                                                                               | 17                                                                                | 102                                                                               | 4                                                                                 | 12                                                                                | 8                                                                                 | 120                                                                                 | 214                                                                                 | 5                                                                                   | 17                                                                                  | 162                                                                                 | 233                                                                                 |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 225                                                                               | 433                                                                               | 365                                                                               | 10                                                                                | 115                                                                               | 77                                                                                | 155                                                                                 | 551                                                                                 | 465                                                                                 | 38                                                                                  | 428                                                                                 | 360                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.23                                                                              | 0.23                                                                              | 0.01                                                                              | 0.11                                                                              | 0.11                                                                              | 0.09                                                                                | 0.30                                                                                | 0.30                                                                                | 0.02                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 1856                                                                              | 1566                                                                              | 1767                                                                              | 1036                                                                              | 691                                                                               | 1767                                                                                | 1856                                                                                | 1565                                                                                | 1767                                                                                | 1856                                                                                | 1562                                                                                |
| Grp Volume(v), veh/h         | 178                                                                               | 17                                                                                | 102                                                                               | 4                                                                                 | 0                                                                                 | 20                                                                                | 120                                                                                 | 214                                                                                 | 5                                                                                   | 17                                                                                  | 162                                                                                 | 233                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1856                                                                              | 1566                                                                              | 1767                                                                              | 0                                                                                 | 1727                                                                              | 1767                                                                                | 1856                                                                                | 1565                                                                                | 1767                                                                                | 1856                                                                                | 1562                                                                                |
| Q Serve(g_s), s              | 4.3                                                                               | 0.3                                                                               | 2.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 2.9                                                                                 | 4.0                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 3.2                                                                                 | 5.9                                                                                 |
| Cycle Q Clear(g_c), s        | 4.3                                                                               | 0.3                                                                               | 2.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 2.9                                                                                 | 4.0                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 3.2                                                                                 | 5.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.40                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 225                                                                               | 433                                                                               | 365                                                                               | 10                                                                                | 0                                                                                 | 192                                                                               | 155                                                                                 | 551                                                                                 | 465                                                                                 | 38                                                                                  | 428                                                                                 | 360                                                                                 |
| V/C Ratio(X)                 | 0.79                                                                              | 0.04                                                                              | 0.28                                                                              | 0.42                                                                              | 0.00                                                                              | 0.10                                                                              | 0.77                                                                                | 0.39                                                                                | 0.01                                                                                | 0.45                                                                                | 0.38                                                                                | 0.65                                                                                |
| Avail Cap(c_a), veh/h        | 274                                                                               | 1576                                                                              | 1330                                                                              | 202                                                                               | 0                                                                                 | 1380                                                                              | 202                                                                                 | 1220                                                                                | 1029                                                                                | 202                                                                                 | 1237                                                                                | 1041                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 18.5                                                                              | 13.0                                                                              | 13.8                                                                              | 21.7                                                                              | 0.0                                                                               | 17.5                                                                              | 19.6                                                                                | 12.2                                                                                | 10.9                                                                                | 21.2                                                                                | 14.2                                                                                | 15.2                                                                                |
| Incr Delay (d2), s/veh       | 12.0                                                                              | 0.0                                                                               | 0.4                                                                               | 26.4                                                                              | 0.0                                                                               | 0.2                                                                               | 12.9                                                                                | 0.4                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.6                                                                                 | 1.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.2                                                                               | 0.1                                                                               | 0.7                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 1.5                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 1.1                                                                                 | 1.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.6                                                                              | 13.0                                                                              | 14.2                                                                              | 48.1                                                                              | 0.0                                                                               | 17.7                                                                              | 32.5                                                                                | 12.7                                                                                | 10.9                                                                                | 29.4                                                                                | 14.8                                                                                | 17.2                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 297                                                                               |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 339                                                                                 |                                                                                     |                                                                                     | 412                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 23.9                                                                              |                                                                                   |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   | 19.7                                                                                |                                                                                     |                                                                                     | 16.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.1                                                                               | 18.7                                                                              | 4.4                                                                               | 15.5                                                                              | 8.0                                                                               | 15.8                                                                              | 9.8                                                                                 | 10.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7                                                                             | * 4.2                                                                               | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5                                                                               | * 29                                                                              | * 6.8                                                                               | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 6.0                                                                               | 2.1                                                                               | 4.3                                                                               | 4.9                                                                               | 7.9                                                                               | 6.3                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

HCM 6th Ctrl Delay 19.8

HCM 6th LOS B

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



| Intersection             |                                                                                   |      |                                                                                   |      |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.6                                                                               |      |                                                                                   |      |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR  | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
| Lane Configurations      |  |      |  |      |      |  |
| Traffic Vol, veh/h       | 19                                                                                | 36   | 64                                                                                | 37   | 58   | 57                                                                                |
| Future Vol, veh/h        | 19                                                                                | 36   | 64                                                                                | 37   | 58   | 57                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0    | 0    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -    | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 88                                                                                | 88   | 88                                                                                | 88   | 88   | 88                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 |
| Mvmt Flow                | 22                                                                                | 41   | 73                                                                                | 42   | 66   | 65                                                                                |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 291    | 94     | 0      | 0 | 115   |
| Stage 1              | 94     | -      | -      | - | -     |
| Stage 2              | 197    | -      | -      | - | -     |
| Critical Hdwy        | 6.43   | 6.23   | -      | - | 4.13  |
| Critical Hdwy Stg 1  | 5.43   | -      | -      | - | -     |
| Critical Hdwy Stg 2  | 5.43   | -      | -      | - | -     |
| Follow-up Hdwy       | 3.527  | 3.327  | -      | - | 2.227 |
| Pot Cap-1 Maneuver   | 698    | 960    | -      | - | 1468  |
| Stage 1              | 927    | -      | -      | - | -     |
| Stage 2              | 834    | -      | -      | - | -     |
| Platoon blocked, %   |        |        | -      | - | -     |
| Mov Cap-1 Maneuver   | 665    | 960    | -      | - | 1468  |
| Mov Cap-2 Maneuver   | 665    | -      | -      | - | -     |
| Stage 1              | 927    | -      | -      | - | -     |
| Stage 2              | 795    | -      | -      | - | -     |

| Approach             | WB  | NB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 9.7 | 0  | 3.8 |
| HCM LOS              | A   |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 832   | 1468  |
| HCM Lane V/C Ratio    | -   | -        | 0.075 | 0.045 |
| HCM Control Delay (s) | -   | -        | 9.7   | 7.6   |
| HCM Lane LOS          | -   | -        | A     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.2   | 0.1   |

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Existing Plus Project PM Peak

04/26/2022

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations               |                                                                                   |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 1                                                                                 | 21                                                                                | 129                                                                               | 18                                                                                | 24                                                                                | 112                                                                               | 76                                                                                  | 33                                                                                  | 159                                                                                 | 38                                                                                  | 50                                                                                  | 78                                                                                  |
| Future Volume (vph)               | 1                                                                                 | 21                                                                                | 129                                                                               | 18                                                                                | 24                                                                                | 112                                                                               | 76                                                                                  | 33                                                                                  | 159                                                                                 | 38                                                                                  | 50                                                                                  | 78                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                |
| Flt Protected                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Flt Permitted                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Peak-hour factor, PHF             | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                |
| Adj. Flow (vph)                   | 1                                                                                 | 25                                                                                | 154                                                                               | 21                                                                                | 29                                                                                | 133                                                                               | 90                                                                                  | 39                                                                                  | 189                                                                                 | 45                                                                                  | 60                                                                                  | 93                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 17                                                                                | 0                                                                                 | 0                                                                                 | 69                                                                                  | 0                                                                                   | 0                                                                                   | 30                                                                                  | 0                                                                                   | 0                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 26                                                                                | 154                                                                               | 4                                                                                 | 29                                                                                | 133                                                                               | 21                                                                                  | 39                                                                                  | 189                                                                                 | 15                                                                                  | 60                                                                                  | 93                                                                                  |
| Heavy Vehicles (%)                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Turn Type                         | Prot                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases                  | 7                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             |                                                                                   | 1.0                                                                               | 11.8                                                                              | 11.8                                                                              | 2.7                                                                               | 13.8                                                                              | 13.8                                                                                | 2.7                                                                                 | 19.1                                                                                | 19.1                                                                                | 5.1                                                                                 | 21.9                                                                                |
| Effective Green, g (s)            |                                                                                   | 1.0                                                                               | 11.8                                                                              | 11.8                                                                              | 2.7                                                                               | 13.8                                                                              | 13.8                                                                                | 2.7                                                                                 | 19.1                                                                                | 19.1                                                                                | 5.1                                                                                 | 21.9                                                                                |
| Actuated g/C Ratio                |                                                                                   | 0.02                                                                              | 0.20                                                                              | 0.20                                                                              | 0.05                                                                              | 0.23                                                                              | 0.23                                                                                | 0.05                                                                                | 0.32                                                                                | 0.32                                                                                | 0.09                                                                                | 0.37                                                                                |
| Clearance Time (s)                |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 29                                                                                | 363                                                                               | 308                                                                               | 78                                                                                | 424                                                                               | 360                                                                                 | 78                                                                                  | 1116                                                                                | 499                                                                                 | 149                                                                                 | 674                                                                                 |
| v/s Ratio Prot                    |                                                                                   | 0.02                                                                              | c0.09                                                                             |                                                                                   | c0.02                                                                             | 0.07                                                                              |                                                                                     | 0.02                                                                                | c0.05                                                                               |                                                                                     | c0.03                                                                               | 0.05                                                                                |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.00                                                                              |                                                                                   |                                                                                   | 0.01                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         |                                                                                   | 0.90                                                                              | 0.42                                                                              | 0.01                                                                              | 0.37                                                                              | 0.31                                                                              | 0.06                                                                                | 0.50                                                                                | 0.17                                                                                | 0.03                                                                                | 0.40                                                                                | 0.14                                                                                |
| Uniform Delay, d1                 |                                                                                   | 28.8                                                                              | 20.5                                                                              | 18.8                                                                              | 27.2                                                                              | 18.6                                                                              | 17.5                                                                                | 27.4                                                                                | 14.2                                                                                | 13.5                                                                                | 25.4                                                                                | 12.2                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 122.2                                                                             | 0.8                                                                               | 0.0                                                                               | 3.0                                                                               | 0.4                                                                               | 0.1                                                                                 | 5.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 1.8                                                                                 | 0.1                                                                                 |
| Delay (s)                         |                                                                                   | 151.1                                                                             | 21.3                                                                              | 18.9                                                                              | 30.2                                                                              | 19.0                                                                              | 17.5                                                                                | 32.4                                                                                | 14.3                                                                                | 13.6                                                                                | 27.2                                                                                | 12.3                                                                                |
| Level of Service                  |                                                                                   | F                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   |                                                                                   | 37.9                                                                              |                                                                                   |                                                                                   | 19.8                                                                              |                                                                                     |                                                                                     | 16.7                                                                                |                                                                                     |                                                                                     | 17.3                                                                                |
| Approach LOS                      |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 22.4                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.28                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 58.8                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 40.2%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                        |      |
|------------------------|------|
| Movement               | SBR  |
| Lane Configurations    |      |
| Traffic Volume (vph)   | 20   |
| Future Volume (vph)    | 20   |
| Ideal Flow (vphpl)     | 1900 |
| Total Lost time (s)    | 5.3  |
| Lane Util. Factor      | 1.00 |
| Frt                    | 0.85 |
| Flt Protected          | 1.00 |
| Satd. Flow (prot)      | 1538 |
| Flt Permitted          | 1.00 |
| Satd. Flow (perm)      | 1538 |
| Peak-hour factor, PHF  | 0.84 |
| Adj. Flow (vph)        | 24   |
| RTOR Reduction (vph)   | 15   |
| Lane Group Flow (vph)  | 9    |
| Heavy Vehicles (%)     | 5%   |
| Turn Type              | Perm |
| Protected Phases       |      |
| Permitted Phases       | 6    |
| Actuated Green, G (s)  | 21.9 |
| Effective Green, g (s) | 21.9 |
| Actuated g/C Ratio     | 0.37 |
| Clearance Time (s)     | 5.3  |
| Vehicle Extension (s)  | 3.0  |
| Lane Grp Cap (vph)     | 572  |
| v/s Ratio Prot         |      |
| v/s Ratio Perm         | 0.01 |
| v/c Ratio              | 0.02 |
| Uniform Delay, d1      | 11.6 |
| Progression Factor     | 1.00 |
| Incremental Delay, d2  | 0.0  |
| Delay (s)              | 11.7 |
| Level of Service       | B    |
| Approach Delay (s)     |      |
| Approach LOS           |      |
| Intersection Summary   |      |

| Intersection             |        |                                                                                   |                                                                                   |      |                                                                                   |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.8    |                                                                                   |                                                                                   |      |                                                                                   |       |
| Movement                 | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR   |
| Lane Configurations      |        |  |  |      |  |       |
| Traffic Vol, veh/h       | 60     | 107                                                                               | 134                                                                               | 39   | 28                                                                                | 34    |
| Future Vol, veh/h        | 60     | 107                                                                               | 134                                                                               | 39   | 28                                                                                | 34    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0     |
| Sign Control             | Free   | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop  |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -                                                                                 | None  |
| Storage Length           | -      | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Grade, %                 | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Peak Hour Factor         | 93     | 93                                                                                | 93                                                                                | 93   | 93                                                                                | 93    |
| Heavy Vehicles, %        | 3      | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3     |
| Mvmt Flow                | 65     | 115                                                                               | 144                                                                               | 42   | 30                                                                                | 37    |
| Major/Minor              | Major1 | Major2                                                                            | Minor2                                                                            |      |                                                                                   |       |
| Conflicting Flow All     | 186    | 0                                                                                 | -                                                                                 | 0    | 410                                                                               | 165   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 165                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 245                                                                               | -     |
| Critical Hdwy            | 4.13   | -                                                                                 | -                                                                                 | -    | 6.43                                                                              | 6.23  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    | 5.43                                                                              | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    | 5.43                                                                              | -     |
| Follow-up Hdwy           | 2.227  | -                                                                                 | -                                                                                 | -    | 3.527                                                                             | 3.327 |
| Pot Cap-1 Maneuver       | 1382   | -                                                                                 | -                                                                                 | -    | 596                                                                               | 877   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 862                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 793                                                                               | -     |
| Platoon blocked, %       |        | -                                                                                 | -                                                                                 | -    |                                                                                   |       |
| Mov Cap-1 Maneuver       | 1382   | -                                                                                 | -                                                                                 | -    | 566                                                                               | 877   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    | 566                                                                               | -     |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 819                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 793                                                                               | -     |
| Approach                 | EB     | WB                                                                                |                                                                                   | SB   |                                                                                   |       |
| HCM Control Delay, s     | 2.8    | 0                                                                                 |                                                                                   | 10.7 |                                                                                   |       |
| HCM LOS                  |        |                                                                                   |                                                                                   | B    |                                                                                   |       |
| Minor Lane/Major Mvmt    | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBLn1                                                                             |       |
| Capacity (veh/h)         | 1382   | -                                                                                 | -                                                                                 | -    | 703                                                                               |       |
| HCM Lane V/C Ratio       | 0.047  | -                                                                                 | -                                                                                 | -    | 0.095                                                                             |       |
| HCM Control Delay (s)    | 7.7    | 0                                                                                 | -                                                                                 | -    | 10.7                                                                              |       |
| HCM Lane LOS             | A      | A                                                                                 | -                                                                                 | -    | B                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | -                                                                                 | -    | 0.3                                                                               |       |

| Intersection              |   |
|---------------------------|---|
| Intersection Delay, s/veh | 9 |
| Intersection LOS          | A |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 32   | 75   | 20   | 8    | 87   | 48   | 37   | 103  | 8    | 41   | 70   | 37   |
| Future Vol, veh/h   | 32   | 75   | 20   | 8    | 87   | 48   | 37   | 103  | 8    | 41   | 70   | 37   |
| Peak Hour Factor    | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles, %   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| Mvmt Flow           | 33   | 77   | 20   | 8    | 89   | 49   | 38   | 105  | 8    | 42   | 71   | 38   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  | SB |
|----------------------------|-----|-----|-----|----|
| Opposing Approach          | WB  | EB  | SB  | NB |
| Opposing Lanes             | 1   | 1   | 1   | 1  |
| Conflicting Approach Left  | SB  | NB  | EB  | WB |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1  |
| Conflicting Approach Right | NB  | SB  | WB  | EB |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1  |
| HCM Control Delay          | 8.9 | 8.8 | 9.1 | 9  |
| HCM LOS                    | A   | A   | A   | A  |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 25%   | 25%   | 6%    | 28%   |
| Vol Thru, %            | 70%   | 59%   | 61%   | 47%   |
| Vol Right, %           | 5%    | 16%   | 34%   | 25%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 148   | 127   | 143   | 148   |
| LT Vol                 | 37    | 32    | 8     | 41    |
| Through Vol            | 103   | 75    | 87    | 70    |
| RT Vol                 | 8     | 20    | 48    | 37    |
| Lane Flow Rate         | 151   | 130   | 146   | 151   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.203 | 0.175 | 0.19  | 0.199 |
| Departure Headway (Hd) | 4.847 | 4.848 | 4.686 | 4.739 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 737   | 736   | 762   | 754   |
| Service Time           | 2.9   | 2.9   | 2.737 | 2.791 |
| HCM Lane V/C Ratio     | 0.205 | 0.177 | 0.192 | 0.2   |
| HCM Control Delay      | 9.1   | 8.9   | 8.8   | 9     |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.8   | 0.6   | 0.7   | 0.7   |

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  | T   |
| Maximum Queue (ft)    | 104 | 105 | 72  | 55  | 78  | 31 | 119 | 49  |
| Average Queue (ft)    | 57  | 43  | 41  | 37  | 40  | 20 | 49  | 5   |
| 95th Queue (ft)       | 87  | 72  | 62  | 54  | 67  | 43 | 83  | 28  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R  |
| Maximum Queue (ft)    | 151 | 52  | 115 | 162 | 179 | 174 | 75 |
| Average Queue (ft)    | 48  | 23  | 64  | 68  | 88  | 24  | 35 |
| 95th Queue (ft)       | 103 | 53  | 110 | 142 | 151 | 101 | 59 |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |    |
| Upstream Blk Time (%) |     |     |     |     |     |     |    |
| Queuing Penalty (veh) |     |     |     |     |     |     |    |
| Storage Bay Dist (ft) |     | 295 |     |     |     | 105 |    |
| Storage Blk Time (%)  |     |     |     |     |     |     |    |
| Queuing Penalty (veh) |     |     |     |     |     |     |    |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 107 | 106  | 47 | 154  | 141 | 116 | 50 | 31  | 31  | 53  |
| Average Queue (ft)    | 34  | 62   | 7  | 55   | 61  | 33  | 12 | 10  | 14  | 18  |
| 95th Queue (ft)       | 77  | 106  | 27 | 113  | 109 | 79  | 37 | 33  | 38  | 45  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     |      |    | 1    | 0   | 1   |    |     |     |     |
| Queuing Penalty (veh) |     |      |    | 0    | 0   | 1   |    |     |     |     |

Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB |
|-----------------------|------|----|
| Directions Served     | L    | LR |
| Maximum Queue (ft)    | 30   | 75 |
| Average Queue (ft)    | 5    | 42 |
| 95th Queue (ft)       | 22   | 71 |
| Link Distance (ft)    | 1339 |    |
| Upstream Blk Time (%) |      |    |
| Queuing Penalty (veh) |      |    |
| Storage Bay Dist (ft) | 75   |    |
| Storage Blk Time (%)  |      |    |
| Queuing Penalty (veh) |      |    |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB | EB | WB  | WB | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|----|----|-----|----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T  | R  | L   | TR | L   | T   | L   | T   | R   |
| Maximum Queue (ft)    | 152 | 75 | 54 | 25  | 45 | 89  | 134 | 31  | 137 | 101 |
| Average Queue (ft)    | 86  | 4  | 16 | 1   | 10 | 34  | 47  | 5   | 56  | 36  |
| 95th Queue (ft)       | 146 | 27 | 38 | 10  | 33 | 61  | 111 | 23  | 115 | 70  |
| Link Distance (ft)    | 936 |    |    | 372 |    |     | 448 |     | 399 |     |
| Upstream Blk Time (%) |     |    |    |     |    |     |     |     |     |     |
| Queuing Penalty (veh) |     |    |    |     |    |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |    | 55 | 155 |    | 155 |     | 110 |     | 265 |
| Storage Blk Time (%)  | 7   | 0  | 0  |     |    |     | 0   |     | 2   |     |
| Queuing Penalty (veh) | 4   | 0  | 0  |     |    |     | 0   |     | 3   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              | WB  |
|-----------------------|-----|
| Directions Served     | LR  |
| Maximum Queue (ft)    | 78  |
| Average Queue (ft)    | 40  |
| 95th Queue (ft)       | 66  |
| Link Distance (ft)    | 862 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB | WB  | WB  | WB | NB  | NB  | NB | NB  | SB  | SB |
|-----------------------|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|
| Directions Served     | UL  | T   | R  | L   | T   | R  | L   | T   | T  | R   | L   | T  |
| Maximum Queue (ft)    | 103 | 92  | 51 | 61  | 108 | 43 | 69  | 46  | 79 | 50  | 95  | 82 |
| Average Queue (ft)    | 20  | 23  | 6  | 17  | 36  | 15 | 15  | 20  | 5  | 11  | 23  | 18 |
| 95th Queue (ft)       | 59  | 53  | 24 | 44  | 74  | 39 | 49  | 47  | 32 | 31  | 57  | 53 |
| Link Distance (ft)    | 680 |     |    | 436 |     |    | 276 |     |    | 276 |     |    |
| Upstream Blk Time (%) |     |     |    |     |     |    |     |     |    |     |     |    |
| Queuing Penalty (veh) |     |     |    |     |     |    |     |     |    |     |     |    |
| Storage Bay Dist (ft) | 165 | 150 |    | 175 | 175 |    | 175 | 100 |    |     | 250 |    |
| Storage Blk Time (%)  |     |     |    |     |     |    |     |     |    |     |     |    |
| Queuing Penalty (veh) |     |     |    |     |     |    |     |     |    |     |     |    |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 69   |
| Average Queue (ft)    | 14   |
| 95th Queue (ft)       | 47   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | LR   |
| Maximum Queue (ft)    | 73   |
| Average Queue (ft)    | 37   |
| 95th Queue (ft)       | 68   |
| Link Distance (ft)    | 2057 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |



Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 100  | 79   | 74   | 87   |
| Average Queue (ft)    | 50   | 41   | 35   | 41   |
| 95th Queue (ft)       | 83   | 80   | 66   | 77   |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | EB  | SE  |
|-----------------------|-----|-----|
| Directions Served     | T   | L   |
| Maximum Queue (ft)    | 31  | 73  |
| Average Queue (ft)    | 1   | 24  |
| 95th Queue (ft)       | 10  | 65  |
| Link Distance (ft)    | 361 | 209 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Network Summary

|                                 |
|---------------------------------|
| Network wide Queuing Penalty: 9 |
|---------------------------------|

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  | T   |
| Maximum Queue (ft)    | 99  | 108 | 94  | 79  | 77  | 54 | 162 | 92  |
| Average Queue (ft)    | 64  | 63  | 54  | 37  | 35  | 25 | 80  | 15  |
| 95th Queue (ft)       | 92  | 92  | 85  | 59  | 58  | 54 | 146 | 56  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R   |
| Maximum Queue (ft)    | 142 | 121 | 120 | 138 | 243 | 180 | 101 |
| Average Queue (ft)    | 68  | 51  | 60  | 55  | 125 | 55  | 36  |
| 95th Queue (ft)       | 115 | 87  | 110 | 121 | 210 | 159 | 68  |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |     |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |
| Storage Bay Dist (ft) |     | 295 |     |     |     |     | 105 |
| Storage Blk Time (%)  |     |     |     |     |     | 1   | 0   |
| Queuing Penalty (veh) |     |     |     |     |     | 2   | 0   |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 88  | 298  | 47 | 167  | 135 | 74  | 31 | 53  | 75  | 72  |
| Average Queue (ft)    | 23  | 102  | 17 | 76   | 51  | 25  | 10 | 17  | 23  | 26  |
| 95th Queue (ft)       | 61  | 198  | 41 | 138  | 99  | 61  | 33 | 47  | 53  | 57  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     | 2    |    | 4    | 0   |     |    |     |     |     |
| Queuing Penalty (veh) |     | 1    |    | 1    | 0   |     |    |     |     |     |

Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | EB   | WB | NB   |
|-----------------------|------|----|------|
| Directions Served     | TR   | L  | LR   |
| Maximum Queue (ft)    | 22   | 72 | 75   |
| Average Queue (ft)    | 1    | 15 | 37   |
| 95th Queue (ft)       | 10   | 46 | 68   |
| Link Distance (ft)    | 1547 |    | 1339 |
| Upstream Blk Time (%) |      |    |      |
| Queuing Penalty (veh) |      |    |      |
| Storage Bay Dist (ft) |      | 75 |      |
| Storage Blk Time (%)  |      | 0  |      |
| Queuing Penalty (veh) |      | 0  |      |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB  | EB  | WB  | WB  | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T   | R   | L   | TR  | L   | T   | R   | L   | T   | R   |
| Maximum Queue (ft)    | 202 | 23  | 147 | 24  | 48  | 153 | 157 | 20  | 52  | 159 | 80  |
| Average Queue (ft)    | 83  | 5   | 27  | 1   | 16  | 65  | 62  | 1   | 22  | 54  | 51  |
| 95th Queue (ft)       | 156 | 21  | 71  | 8   | 39  | 116 | 130 | 7   | 49  | 111 | 78  |
| Link Distance (ft)    |     | 936 |     |     | 372 |     | 448 |     |     | 399 |     |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |     | 55  | 155 |     | 155 |     | 130 | 110 |     | 265 |
| Storage Blk Time (%)  | 6   |     | 0   |     |     | 1   | 2   |     |     | 2   |     |
| Queuing Penalty (veh) | 6   |     | 1   |     |     | 1   | 3   |     |     | 4   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              | WB  | SB   |
|-----------------------|-----|------|
| Directions Served     | LR  | LT   |
| Maximum Queue (ft)    | 54  | 52   |
| Average Queue (ft)    | 30  | 4    |
| 95th Queue (ft)       | 52  | 22   |
| Link Distance (ft)    | 862 | 2833 |
| Upstream Blk Time (%) |     |      |
| Queuing Penalty (veh) |     |      |
| Storage Bay Dist (ft) |     |      |
| Storage Blk Time (%)  |     |      |
| Queuing Penalty (veh) |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB  | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB   |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Directions Served     | UL  | T   | R   | L   | T   | R   | L   | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 60  | 150 | 39  | 51  | 88  | 42  | 61  | 79  | 60  | 37  | 94  | 82   |
| Average Queue (ft)    | 12  | 34  | 6   | 11  | 42  | 17  | 20  | 29  | 11  | 10  | 30  | 23   |
| 95th Queue (ft)       | 35  | 77  | 22  | 34  | 83  | 32  | 52  | 57  | 36  | 25  | 67  | 62   |
| Link Distance (ft)    |     | 680 |     |     | 436 |     |     | 276 | 276 |     |     | 1524 |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |      |
| Storage Bay Dist (ft) | 165 |     | 150 | 175 |     | 175 | 175 |     |     | 100 | 250 |      |
| Storage Blk Time (%)  |     | 0   |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     | 0   |     |     |     |     |     |     |     |     |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 42   |
| Average Queue (ft)    | 6    |
| 95th Queue (ft)       | 23   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | EB   | SB   |
|-----------------------|------|------|
| Directions Served     | LT   | LR   |
| Maximum Queue (ft)    | 43   | 52   |
| Average Queue (ft)    | 9    | 25   |
| 95th Queue (ft)       | 31   | 44   |
| Link Distance (ft)    | 2076 | 2057 |
| Upstream Blk Time (%) |      |      |
| Queuing Penalty (veh) |      |      |
| Storage Bay Dist (ft) |      |      |
| Storage Blk Time (%)  |      |      |
| Queuing Penalty (veh) |      |      |

Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 78   | 103  | 75   | 68   |
| Average Queue (ft)    | 33   | 41   | 35   | 35   |
| 95th Queue (ft)       | 57   | 72   | 58   | 57   |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | EB  | SE  |
|-----------------------|-----|-----|
| Directions Served     | T   | L   |
| Maximum Queue (ft)    | 99  | 94  |
| Average Queue (ft)    | 7   | 35  |
| 95th Queue (ft)       | 43  | 71  |
| Link Distance (ft)    | 361 | 209 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Network Summary

|                                  |
|----------------------------------|
| Network wide Queuing Penalty: 19 |
|----------------------------------|

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                               |
|---------------------|--------------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 547  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.72 | Total Trucks, %                  | 4.03 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.32 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52195  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44139 | PF Power Coefficient             | 0.67822 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 9.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 35.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 35.0 | Percent Followers, %              | 61.6 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 9.6  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 9.6                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                   |                      |                               |
|---------------------|-------------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                                   | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                     | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                                   | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 02 Hanford-Armona Road<br>Between 10 1/2 Avenue<br>and Jordan Way | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 362  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.74 | Total Trucks, %                  | 3.39 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.21 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43653  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48329 | PF Power Coefficient             | 0.66113 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.1 | Percent Followers, %              | 53.1 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 5.6  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.6                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                 |                      |                               |
|---------------------|-----------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                                 | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                   | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                                 | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 03 Hanford-Armona Road<br>Between Jordan Way and<br>10th Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 23.4 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 340  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 6.25 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.20 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 39.5    |
| Speed Slope Coefficient           | 2.65189  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50451 | PF Power Coefficient             | 0.67582 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 38.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 38.1 | Percent Followers, %              | 51.6 |
| Segment Travel Time, minutes | 0.27 | Follower Density, followers/mi/ln | 4.6  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.6                               | B   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                               |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 04 10.5 Avenue Between Hanford Armona Road and Orchard Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 307  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.60 | Total Trucks, %                  | 9.87 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.18 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.5    |
| Speed Slope Coefficient           | 2.29128  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42068 | PF Power Coefficient             | 0.65951 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 31.3                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.3 | Percent Followers, %              | 47.9 |
| Segment Travel Time, minutes | 0.99 | Follower Density, followers/mi/ln | 4.7  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.7                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                               |
|---------------------|----------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 155  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.42 | Total Trucks, %                  | 13.33 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.09  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.4    |
| Speed Slope Coefficient           | 2.28310  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42395 | PF Power Coefficient             | 0.65839 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 31.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.7 | Percent Followers, %              | 34.1 |
| Segment Travel Time, minutes | 0.93 | Follower Density, followers/mi/ln | 1.7  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.7                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                               |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 260  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.68 | Total Trucks, %                  | 21.40 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.15  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.3    |
| Speed Slope Coefficient           | 3.14891  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42118 | PF Power Coefficient             | 0.72418 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.3     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 46.9                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 46.9 | Percent Followers, %              | 41.5 |
| Segment Travel Time, minutes | 0.62 | Follower Density, followers/mi/ln | 2.3  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.3                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                               |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing Plus Project AM Peak |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 198  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.88 | Total Trucks, %                  | 17.65 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.12  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.3    |
| Speed Slope Coefficient           | 3.20179  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41674 | PF Power Coefficient             | 0.72668 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.5     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.1 | Percent Followers, %              | 35.4 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 1.5  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.5                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                               |
|---------------------|--------------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 653  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.83 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.38 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52381  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44159 | PF Power Coefficient             | 0.67823 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 12.4    |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 34.8                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.8 | Percent Followers, %              | 66.0 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 12.4 |
| Vehicle LOS                  | D    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 12.4                              | D   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                   |                      |                               |
|---------------------|-------------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                                   | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                     | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                                   | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 02 Hanford-Armona Road<br>Between 10 1/2 Avenue<br>and Jordan Way | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 412  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.85 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.24 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43724  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48339 | PF Power Coefficient             | 0.66114 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 6.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.0 | Percent Followers, %              | 56.2 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 6.8  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 6.8                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                 |                      |                               |
|---------------------|-----------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                                 | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                   | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                                 | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 03 Hanford-Armona Road<br>Between Jordan Way and<br>10th Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 17.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 357  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.97 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.21 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 41.1    |
| Speed Slope Coefficient           | 2.73635  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50445 | PF Power Coefficient             | 0.68170 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 39.5                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 39.5 | Percent Followers, %              | 52.5 |
| Segment Travel Time, minutes | 0.26 | Follower Density, followers/mi/ln | 4.7  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.7                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                               |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 04 10.5 Avenue Between Hanford Armona Road and Orchard Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 251  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.15 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30368  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42275 | PF Power Coefficient             | 0.65971 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.4     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 31.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.7 | Percent Followers, %              | 43.5 |
| Segment Travel Time, minutes | 0.98 | Follower Density, followers/mi/ln | 3.4  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.4                               | B   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                               |
|---------------------|----------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 205  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.56 | Total Trucks, %                  | 3.70 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.12 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30048  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42689 | PF Power Coefficient             | 0.65868 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 31.8                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.8 | Percent Followers, %              | 39.5 |
| Segment Travel Time, minutes | 0.93 | Follower Density, followers/mi/ln | 2.6  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.6                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                               |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 251  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.89 | Total Trucks, %                  | 3.75 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.15 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.9    |
| Speed Slope Coefficient           | 3.18076  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42061 | PF Power Coefficient             | 0.72351 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.1     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 47.5                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 47.5 | Percent Followers, %              | 40.7 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 2.1  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.1                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                               |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                     |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                          |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Existing Plus Project PM Peak |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary       |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 248  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.90 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.15 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.8    |
| Speed Slope Coefficient           | 3.22823  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41606 | PF Power Coefficient             | 0.72608 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.1     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.3                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.3 | Percent Followers, %              | 40.2 |
| Segment Travel Time, minutes | 0.60 | Follower Density, followers/mi/ln | 2.1  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.1                               | B   |

## Appendix G: Near Term plus Project Traffic Conditions



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

A p p | G

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Near Term Plus Project AM Peak

04/26/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 58                                                                                | 235                                                                               | 47    | 18                                                                                | 220                                                                               | 27    | 124                                                                               | 74                                                                                | 24                                                                                | 12                                                                                | 22                                                                                | 36                                                                                |
| Future Volume (veh/h)        | 58                                                                                | 235                                                                               | 47    | 18                                                                                | 220                                                                               | 27    | 124                                                                               | 74                                                                                | 24                                                                                | 12                                                                                | 22                                                                                | 36                                                                                |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                              | 1826                                                                              |
| Adj Flow Rate, veh/h         | 81                                                                                | 326                                                                               | 65    | 25                                                                                | 306                                                                               | 38    | 172                                                                               | 103                                                                               | 33                                                                                | 17                                                                                | 31                                                                                | 50                                                                                |
| Peak Hour Factor             | 0.72                                                                              | 0.72                                                                              | 0.72  | 0.72                                                                              | 0.72                                                                              | 0.72  | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              | 0.72                                                                              |
| Percent Heavy Veh, %         | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5                                                                                 |
| Cap, veh/h                   | 126                                                                               | 457                                                                               | 91    | 52                                                                                | 425                                                                               | 53    | 219                                                                               | 391                                                                               | 331                                                                               | 37                                                                                | 200                                                                               | 170                                                                               |
| Arrive On Green              | 0.07                                                                              | 0.31                                                                              | 0.31  | 0.03                                                                              | 0.27                                                                              | 0.27  | 0.13                                                                              | 0.21                                                                              | 0.21                                                                              | 0.02                                                                              | 0.11                                                                              | 0.11                                                                              |
| Sat Flow, veh/h              | 1739                                                                              | 1478                                                                              | 295   | 1739                                                                              | 1592                                                                              | 198   | 1739                                                                              | 1826                                                                              | 1547                                                                              | 1739                                                                              | 1826                                                                              | 1547                                                                              |
| Grp Volume(v), veh/h         | 81                                                                                | 0                                                                                 | 391   | 25                                                                                | 0                                                                                 | 344   | 172                                                                               | 103                                                                               | 33                                                                                | 17                                                                                | 31                                                                                | 50                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 1739                                                                              | 0                                                                                 | 1772  | 1739                                                                              | 0                                                                                 | 1790  | 1739                                                                              | 1826                                                                              | 1547                                                                              | 1739                                                                              | 1826                                                                              | 1547                                                                              |
| Q Serve(g_s), s              | 1.9                                                                               | 0.0                                                                               | 8.4   | 0.6                                                                               | 0.0                                                                               | 7.5   | 4.1                                                                               | 2.0                                                                               | 0.7                                                                               | 0.4                                                                               | 0.7                                                                               | 1.3                                                                               |
| Cycle Q Clear(g_c), s        | 1.9                                                                               | 0.0                                                                               | 8.4   | 0.6                                                                               | 0.0                                                                               | 7.5   | 4.1                                                                               | 2.0                                                                               | 0.7                                                                               | 0.4                                                                               | 0.7                                                                               | 1.3                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.17  | 1.00                                                                              |                                                                                   | 0.11  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 126                                                                               | 0                                                                                 | 548   | 52                                                                                | 0                                                                                 | 477   | 219                                                                               | 391                                                                               | 331                                                                               | 37                                                                                | 200                                                                               | 170                                                                               |
| V/C Ratio(X)                 | 0.64                                                                              | 0.00                                                                              | 0.71  | 0.48                                                                              | 0.00                                                                              | 0.72  | 0.79                                                                              | 0.26                                                                              | 0.10                                                                              | 0.46                                                                              | 0.15                                                                              | 0.29                                                                              |
| Avail Cap(c_a), veh/h        | 203                                                                               | 0                                                                                 | 1131  | 203                                                                               | 0                                                                                 | 1143  | 317                                                                               | 1260                                                                              | 1067                                                                              | 203                                                                               | 1153                                                                              | 977                                                                               |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 19.3                                                                              | 0.0                                                                               | 13.1  | 20.4                                                                              | 0.0                                                                               | 14.2  | 18.1                                                                              | 14.0                                                                              | 13.5                                                                              | 20.7                                                                              | 17.2                                                                              | 17.5                                                                              |
| Incr Delay (d2), s/veh       | 5.4                                                                               | 0.0                                                                               | 1.7   | 6.6                                                                               | 0.0                                                                               | 2.1   | 7.9                                                                               | 0.4                                                                               | 0.1                                                                               | 8.5                                                                               | 0.4                                                                               | 1.0                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 0.0                                                                               | 2.7   | 0.3                                                                               | 0.0                                                                               | 2.6   | 1.8                                                                               | 0.7                                                                               | 0.2                                                                               | 0.2                                                                               | 0.3                                                                               | 0.4                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 24.7                                                                              | 0.0                                                                               | 14.8  | 27.1                                                                              | 0.0                                                                               | 16.3  | 26.1                                                                              | 14.4                                                                              | 13.6                                                                              | 29.2                                                                              | 17.6                                                                              | 18.5                                                                              |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 472                                                                               |                                                                                   | 369   |                                                                                   |                                                                                   | 308   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 16.5                                                                              |                                                                                   | 17.0  |                                                                                   |                                                                                   | 20.8  |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   | C     |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 5.1                                                                               | 14.1                                                                              | 5.5   | 18.1                                                                              | 9.6                                                                               | 9.6   | 7.3                                                                               | 16.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5                                                                               | 29.5                                                                              | * 5   | 27.3                                                                              | * 7.8                                                                             | * 27  | * 5                                                                               | 27.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 4.0                                                                               | 2.6   | 10.4                                                                              | 6.1                                                                               | 3.3   | 3.9                                                                               | 9.5                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.6                                                                               | 0.0   | 2.0                                                                               | 0.1                                                                               | 0.2   | 0.0                                                                               | 1.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 18.0 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.6                                                                               |        |                                                                                   |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |  |  |  |       |
| Traffic Vol, veh/h       | 215                                                                               | 28     | 24                                                                                | 186                                                                               | 55                                                                                | 44    |
| Future Vol, veh/h        | 215                                                                               | 28     | 24                                                                                | 186                                                                               | 55                                                                                | 44    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1     |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 74                                                                                | 74     | 74                                                                                | 74                                                                                | 74                                                                                | 74    |
| Heavy Vehicles, %        | 6                                                                                 | 6      | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6     |
| Mvmt Flow                | 291                                                                               | 38     | 32                                                                                | 251                                                                               | 74                                                                                | 59    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            | Major2 |                                                                                   | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 329                                                                               | 0                                                                                 | 625                                                                               | 311   |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 310                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 315                                                                               | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.16                                                                              | -                                                                                 | 6.46                                                                              | 6.26  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.46                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.46                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.254                                                                             | -                                                                                 | 3.554                                                                             | 3.354 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1208                                                                              | -                                                                                 | 442                                                                               | 720   |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 735                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 731                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1208                                                                              | -                                                                                 | 431                                                                               | 719   |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 527                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 735                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 712                                                                               | -     |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                | WB     |                                                                                   | NB                                                                                |                                                                                   |       |
| HCM Control Delay, s     | 0                                                                                 | 0.9    |                                                                                   | 12.7                                                                              |                                                                                   |       |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 598                                                                               | -      | -                                                                                 | 1208                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.224                                                                             | -      | -                                                                                 | 0.027                                                                             | -                                                                                 |       |
| HCM Control Delay (s)    | 12.7                                                                              | -      | -                                                                                 | 8.1                                                                               | -                                                                                 |       |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile O(veh)    | 0.9                                                                               | -      | -                                                                                 | 0.1                                                                               | -                                                                                 |       |

# HCM 6th Signalized Intersection Summary

## 5: 10th Avenue & Hanford Armona Road

Near Term Plus Project AM Peak

04/26/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 200                                                                               | 5                                                                                 | 53                                                                                | 3                                                                                 | 6                                                                                 | 12                                                                                | 55                                                                                  | 173                                                                                 | 2                                                                                   | 6                                                                                   | 156                                                                                 | 159                                                                                 |
| Future Volume (veh/h)        | 200                                                                               | 5                                                                                 | 53                                                                                | 3                                                                                 | 6                                                                                 | 12                                                                                | 55                                                                                  | 173                                                                                 | 2                                                                                   | 6                                                                                   | 156                                                                                 | 159                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                |
| Adj Flow Rate, veh/h         | 247                                                                               | 6                                                                                 | 65                                                                                | 4                                                                                 | 7                                                                                 | 15                                                                                | 68                                                                                  | 214                                                                                 | 2                                                                                   | 7                                                                                   | 193                                                                                 | 196                                                                                 |
| Peak Hour Factor             | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Percent Heavy Veh, %         | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   |
| Cap, veh/h                   | 287                                                                               | 439                                                                               | 372                                                                               | 9                                                                                 | 42                                                                                | 89                                                                                | 113                                                                                 | 471                                                                                 | 399                                                                                 | 16                                                                                  | 369                                                                                 | 313                                                                                 |
| Arrive On Green              | 0.17                                                                              | 0.24                                                                              | 0.24                                                                              | 0.01                                                                              | 0.08                                                                              | 0.08                                                                              | 0.07                                                                                | 0.26                                                                                | 0.26                                                                                | 0.01                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 509                                                                               | 1091                                                                              | 1711                                                                                | 1796                                                                                | 1522                                                                                | 1711                                                                                | 1796                                                                                | 1522                                                                                |
| Grp Volume(v), veh/h         | 247                                                                               | 6                                                                                 | 65                                                                                | 4                                                                                 | 0                                                                                 | 22                                                                                | 68                                                                                  | 214                                                                                 | 2                                                                                   | 7                                                                                   | 193                                                                                 | 196                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 0                                                                                 | 1600                                                                              | 1711                                                                                | 1796                                                                                | 1522                                                                                | 1711                                                                                | 1796                                                                                | 1522                                                                                |
| Q Serve(g_s), s              | 5.7                                                                               | 0.1                                                                               | 1.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 1.6                                                                                 | 4.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 3.9                                                                                 | 4.8                                                                                 |
| Cycle Q Clear(g_c), s        | 5.7                                                                               | 0.1                                                                               | 1.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 1.6                                                                                 | 4.0                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 3.9                                                                                 | 4.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.68                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 287                                                                               | 439                                                                               | 372                                                                               | 9                                                                                 | 0                                                                                 | 131                                                                               | 113                                                                                 | 471                                                                                 | 399                                                                                 | 16                                                                                  | 369                                                                                 | 313                                                                                 |
| V/C Ratio(X)                 | 0.86                                                                              | 0.01                                                                              | 0.17                                                                              | 0.43                                                                              | 0.00                                                                              | 0.17                                                                              | 0.60                                                                                | 0.45                                                                                | 0.01                                                                                | 0.44                                                                                | 0.52                                                                                | 0.63                                                                                |
| Avail Cap(c_a), veh/h        | 287                                                                               | 1649                                                                              | 1397                                                                              | 211                                                                               | 0                                                                                 | 1382                                                                              | 211                                                                                 | 1276                                                                                | 1082                                                                                | 211                                                                                 | 1294                                                                                | 1097                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.4                                                                              | 11.6                                                                              | 12.1                                                                              | 20.1                                                                              | 0.0                                                                               | 17.3                                                                              | 18.4                                                                                | 12.5                                                                                | 11.0                                                                                | 20.0                                                                                | 14.3                                                                                | 14.7                                                                                |
| Incr Delay (d2), s/veh       | 22.3                                                                              | 0.0                                                                               | 0.2                                                                               | 28.5                                                                              | 0.0                                                                               | 0.6                                                                               | 5.1                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 17.7                                                                                | 1.1                                                                                 | 2.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.5                                                                               | 0.0                                                                               | 0.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 0.6                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.1                                                                                 | 1.3                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 38.7                                                                              | 11.6                                                                              | 12.3                                                                              | 48.6                                                                              | 0.0                                                                               | 17.9                                                                              | 23.5                                                                                | 13.2                                                                                | 11.0                                                                                | 37.7                                                                                | 15.5                                                                                | 16.7                                                                                |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 318                                                                               |                                                                                   |                                                                                   | 26                                                                                |                                                                                   |                                                                                   | 284                                                                                 |                                                                                     |                                                                                     | 396                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 32.8                                                                              |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 15.7                                                                                |                                                                                     |                                                                                     | 16.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.6                                                                               | 16.3                                                                              | 4.4                                                                               | 15.2                                                                              | 6.9                                                                               | 14.0                                                                              | 11.0                                                                                | 8.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7                                                                             | * 4.2                                                                               | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5                                                                               | * 29                                                                              | * 6.8                                                                               | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.2                                                                               | 6.0                                                                               | 2.1                                                                               | 3.4                                                                               | 3.6                                                                               | 6.8                                                                               | 7.7                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 21.5 |
| HCM 6th LOS        | C    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |          |                                                                                   |       |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |       |       |  |
| Traffic Vol, veh/h       | 32                                                                                | 53       | 84                                                                                | 8     | 18    | 40                                                                                |
| Future Vol, veh/h        | 32                                                                                | 53       | 84                                                                                | 8     | 18    | 40                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Peak Hour Factor         | 88                                                                                | 88       | 88                                                                                | 88    | 88    | 88                                                                                |
| Heavy Vehicles, %        | 5                                                                                 | 5        | 5                                                                                 | 5     | 5     | 5                                                                                 |
| Mvmt Flow                | 36                                                                                | 60       | 95                                                                                | 9     | 20    | 45                                                                                |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |       |                                                                                   |
| Conflicting Flow All     | 185                                                                               | 100      | 0                                                                                 | 0     | 104   | 0                                                                                 |
| Stage 1                  | 100                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 85                                                                                | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy            | 6.45                                                                              | 6.25     | -                                                                                 | -     | 4.15  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.45                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.45                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Follow-up Hdwy           | 3.545                                                                             | 3.345    | -                                                                                 | -     | 2.245 | -                                                                                 |
| Pot Cap-1 Maneuver       | 797                                                                               | 947      | -                                                                                 | -     | 1469  | -                                                                                 |
| Stage 1                  | 917                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 931                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 786                                                                               | 947      | -                                                                                 | -     | 1469  | -                                                                                 |
| Mov Cap-2 Maneuver       | 786                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 1                  | 917                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 918                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |       |                                                                                   |
| HCM Control Delay, s     | 9.6                                                                               | 0        | 2.3                                                                               |       |       |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 879                                                                               | 1469  | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.11                                                                              | 0.014 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 9.6                                                                               | 7.5   | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | A                                                                                 | A     | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.4                                                                               | 0     | -     |                                                                                   |



# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Near Term Plus Project AM Peak

04/26/2022

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |    |  |  |  |  |  |
| Traffic Volume (vph)              | 75                                                                                | 111                                                                               | 29                                                                                | 30                                                                                | 94                                                                                | 40                                                                                | 19                                                                                  | 73                                                                                  | 23                                                                                  | 43                                                                                  | 60                                                                                  | 34                                                                                  |
| Future Volume (vph)               | 75                                                                                | 111                                                                               | 29                                                                                | 30                                                                                | 94                                                                                | 40                                                                                | 19                                                                                  | 73                                                                                  | 23                                                                                  | 43                                                                                  | 60                                                                                  | 34                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                                | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                                | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Peak-hour factor, PHF             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)                   | 78                                                                                | 116                                                                               | 30                                                                                | 31                                                                                | 98                                                                                | 42                                                                                | 20                                                                                  | 76                                                                                  | 24                                                                                  | 45                                                                                  | 62                                                                                  | 35                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 21                                                                                | 0                                                                                 | 0                                                                                 | 34                                                                                | 0                                                                                   | 0                                                                                   | 17                                                                                  | 0                                                                                   | 0                                                                                   | 24                                                                                  |
| Lane Group Flow (vph)             | 78                                                                                | 116                                                                               | 9                                                                                 | 31                                                                                | 98                                                                                | 8                                                                                 | 20                                                                                  | 76                                                                                  | 7                                                                                   | 45                                                                                  | 63                                                                                  | 11                                                                                  |
| Heavy Vehicles (%)                | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 10.0                                                                              | 18.6                                                                              | 18.6                                                                              | 3.4                                                                               | 12.3                                                                              | 12.3                                                                              | 1.2                                                                                 | 18.2                                                                                | 18.2                                                                                | 3.4                                                                                 | 20.8                                                                                | 20.8                                                                                |
| Effective Green, g (s)            | 10.0                                                                              | 18.6                                                                              | 18.6                                                                              | 3.4                                                                               | 12.3                                                                              | 12.3                                                                              | 1.2                                                                                 | 18.2                                                                                | 18.2                                                                                | 3.4                                                                                 | 20.8                                                                                | 20.8                                                                                |
| Actuated g/C Ratio                | 0.16                                                                              | 0.29                                                                              | 0.29                                                                              | 0.05                                                                              | 0.19                                                                              | 0.19                                                                              | 0.02                                                                                | 0.29                                                                                | 0.29                                                                                | 0.05                                                                                | 0.33                                                                                | 0.33                                                                                |
| Clearance Time (s)                | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 250                                                                               | 490                                                                               | 417                                                                               | 85                                                                                | 324                                                                               | 275                                                                               | 30                                                                                  | 912                                                                                 | 408                                                                                 | 85                                                                                  | 548                                                                                 | 466                                                                                 |
| v/s Ratio Prot                    | c0.05                                                                             | 0.07                                                                              |                                                                                   | 0.02                                                                              | c0.06                                                                             |                                                                                   | 0.01                                                                                | 0.02                                                                                |                                                                                     | c0.03                                                                               | c0.04                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                     |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |
| v/c Ratio                         | 0.31                                                                              | 0.24                                                                              | 0.02                                                                              | 0.36                                                                              | 0.30                                                                              | 0.03                                                                              | 0.67                                                                                | 0.08                                                                                | 0.02                                                                                | 0.53                                                                                | 0.11                                                                                | 0.02                                                                                |
| Uniform Delay, d1                 | 23.8                                                                              | 17.2                                                                              | 16.1                                                                              | 29.1                                                                              | 22.0                                                                              | 20.9                                                                              | 31.1                                                                                | 16.6                                                                                | 16.3                                                                                | 29.4                                                                                | 15.0                                                                                | 14.6                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 0.7                                                                               | 0.3                                                                               | 0.0                                                                               | 2.6                                                                               | 0.5                                                                               | 0.0                                                                               | 44.1                                                                                | 0.0                                                                                 | 0.0                                                                                 | 5.8                                                                                 | 0.1                                                                                 | 0.0                                                                                 |
| Delay (s)                         | 24.5                                                                              | 17.4                                                                              | 16.1                                                                              | 31.8                                                                              | 22.6                                                                              | 20.9                                                                              | 75.2                                                                                | 16.7                                                                                | 16.3                                                                                | 35.2                                                                                | 15.1                                                                                | 14.6                                                                                |
| Level of Service                  | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | E                                                                                   | B                                                                                   | B                                                                                   | D                                                                                   | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 19.7                                                                              |                                                                                   |                                                                                   | 23.8                                                                              |                                                                                   |                                                                                     | 26.4                                                                                |                                                                                     |                                                                                     | 21.3                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 22.3                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                           |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.25                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 63.7                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                                |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 33.3%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                                |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |                                                                                   |        |                                                                                   |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 3      |                                                                                   |                                                                                   |        |                                                                                   |       |
| Movement                 | EBL    | EBT                                                                               | WBT                                                                               | WBR    | SBL                                                                               | SBR   |
| Lane Configurations      |        |  |  |        |  |       |
| Traffic Vol, veh/h       | 35     | 117                                                                               | 89                                                                                | 26     | 26                                                                                | 46    |
| Future Vol, veh/h        | 35     | 117                                                                               | 89                                                                                | 26     | 26                                                                                | 46    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0      | 0                                                                                 | 0     |
| Sign Control             | Free   | Free                                                                              | Free                                                                              | Free   | Stop                                                                              | Stop  |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None   | -                                                                                 | None  |
| Storage Length           | -      | -                                                                                 | -                                                                                 | -      | 0                                                                                 | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | 0                                                                                 | -      | 0                                                                                 | -     |
| Grade, %                 | -      | 0                                                                                 | 0                                                                                 | -      | 0                                                                                 | -     |
| Peak Hour Factor         | 89     | 89                                                                                | 89                                                                                | 89     | 89                                                                                | 89    |
| Heavy Vehicles, %        | 19     | 19                                                                                | 19                                                                                | 19     | 19                                                                                | 19    |
| Mvmt Flow                | 39     | 131                                                                               | 100                                                                               | 29     | 29                                                                                | 52    |
|                          |        |                                                                                   |                                                                                   |        |                                                                                   |       |
| Major/Minor              | Major1 | Major2                                                                            |                                                                                   | Minor2 |                                                                                   |       |
| Conflicting Flow All     | 129    | 0                                                                                 | -                                                                                 | 0      | 324                                                                               | 115   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -      | 115                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -      | 209                                                                               | -     |
| Critical Hdwy            | 4.29   | -                                                                                 | -                                                                                 | -      | 6.59                                                                              | 6.39  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -      | 5.59                                                                              | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -      | 5.59                                                                              | -     |
| Follow-up Hdwy           | 2.371  | -                                                                                 | -                                                                                 | -      | 3.671                                                                             | 3.471 |
| Pot Cap-1 Maneuver       | 1358   | -                                                                                 | -                                                                                 | -      | 636                                                                               | 893   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -      | 869                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -      | 787                                                                               | -     |
| Platoon blocked, %       |        | -                                                                                 | -                                                                                 | -      |                                                                                   |       |
| Mov Cap-1 Maneuver       | 1358   | -                                                                                 | -                                                                                 | -      | 616                                                                               | 893   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -      | 616                                                                               | -     |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -      | 842                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -      | 787                                                                               | -     |
|                          |        |                                                                                   |                                                                                   |        |                                                                                   |       |
|                          |        |                                                                                   |                                                                                   |        |                                                                                   |       |
| Approach                 | EB     | WB                                                                                |                                                                                   | SB     |                                                                                   |       |
| HCM Control Delay, s     | 1.8    | 0                                                                                 |                                                                                   | 10.2   |                                                                                   |       |
| HCM LOS                  | B      |                                                                                   |                                                                                   |        |                                                                                   |       |
|                          |        |                                                                                   |                                                                                   |        |                                                                                   |       |
|                          |        |                                                                                   |                                                                                   |        |                                                                                   |       |
| Minor Lane/Major Mvmt    | EBL    | EBT                                                                               | WBT                                                                               | WBR    | SBLn1                                                                             |       |
| Capacity (veh/h)         | 1358   | -                                                                                 | -                                                                                 | -      | 768                                                                               |       |
| HCM Lane V/C Ratio       | 0.029  | -                                                                                 | -                                                                                 | -      | 0.105                                                                             |       |
| HCM Control Delay (s)    | 7.7    | 0                                                                                 | -                                                                                 | -      | 10.2                                                                              |       |
| HCM Lane LOS             | A      | A                                                                                 | -                                                                                 | -      | B                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | -                                                                                 | -      | 0.4                                                                               |       |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 9.1 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL  | NBT                                                                                 | NBR  | SBL  | SBT                                                                                 | SBR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 37   | 79                                                                                | 34   | 12   | 61                                                                                | 13   | 15   | 59                                                                                  | 5    | 13   | 63                                                                                  | 43   |
| Future Vol, veh/h   | 37   | 79                                                                                | 34   | 12   | 61                                                                                | 13   | 15   | 59                                                                                  | 5    | 13   | 63                                                                                  | 43   |
| Peak Hour Factor    | 0.91 | 0.91                                                                              | 0.91 | 0.91 | 0.91                                                                              | 0.91 | 0.91 | 0.91                                                                                | 0.91 | 0.91 | 0.91                                                                                | 0.91 |
| Heavy Vehicles, %   | 26   | 26                                                                                | 26   | 26   | 26                                                                                | 26   | 26   | 26                                                                                  | 26   | 26   | 26                                                                                  | 26   |
| Mvmt Flow           | 41   | 87                                                                                | 37   | 13   | 67                                                                                | 14   | 16   | 65                                                                                  | 5    | 14   | 69                                                                                  | 47   |
| Number of Lanes     | 0    | 1                                                                                 | 0    | 0    | 1                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | EB  | WB  | NB | SB |
|----------------------------|-----|-----|----|----|
| Opposing Approach          | WB  | EB  | SB | NB |
| Opposing Lanes             | 1   | 1   | 1  | 1  |
| Conflicting Approach Left  | SB  | NB  | EB | WB |
| Conflicting Lanes Left     | 1   | 1   | 1  | 1  |
| Conflicting Approach Right | NB  | SB  | WB | EB |
| Conflicting Lanes Right    | 1   | 1   | 1  | 1  |
| HCM Control Delay          | 9.4 | 8.9 | 9  | 9  |
| HCM LOS                    | A   | A   | A  | A  |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 19%   | 25%   | 14%   | 11%   |
| Vol Thru, %            | 75%   | 53%   | 71%   | 53%   |
| Vol Right, %           | 6%    | 23%   | 15%   | 36%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 79    | 150   | 86    | 119   |
| LT Vol                 | 15    | 37    | 12    | 13    |
| Through Vol            | 59    | 79    | 61    | 63    |
| RT Vol                 | 5     | 34    | 13    | 43    |
| Lane Flow Rate         | 87    | 165   | 95    | 131   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.125 | 0.226 | 0.132 | 0.179 |
| Departure Headway (Hd) | 5.167 | 4.929 | 5.042 | 4.919 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 693   | 727   | 710   | 728   |
| Service Time           | 3.209 | 2.968 | 3.085 | 2.957 |
| HCM Lane V/C Ratio     | 0.126 | 0.227 | 0.134 | 0.18  |
| HCM Control Delay      | 9     | 9.4   | 8.9   | 9     |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.4   | 0.9   | 0.5   | 0.6   |

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Near Term Plus Project PM Peak

04/27/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 45                                                                                | 306                                                                               | 111   | 24                                                                                | 302                                                                               | 29    | 89                                                                                | 53                                                                                | 14                                                                                | 27                                                                                | 52                                                                                | 61                                                                                |
| Future Volume (veh/h)        | 45                                                                                | 306                                                                               | 111   | 24                                                                                | 302                                                                               | 29    | 89                                                                                | 53                                                                                | 14                                                                                | 27                                                                                | 52                                                                                | 61                                                                                |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              |
| Adj Flow Rate, veh/h         | 49                                                                                | 333                                                                               | 121   | 26                                                                                | 328                                                                               | 32    | 97                                                                                | 58                                                                                | 15                                                                                | 29                                                                                | 57                                                                                | 66                                                                                |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                   | 92                                                                                | 443                                                                               | 161   | 55                                                                                | 533                                                                               | 52    | 143                                                                               | 292                                                                               | 248                                                                               | 60                                                                                | 206                                                                               | 174                                                                               |
| Arrive On Green              | 0.05                                                                              | 0.34                                                                              | 0.34  | 0.03                                                                              | 0.32                                                                              | 0.32  | 0.08                                                                              | 0.16                                                                              | 0.16                                                                              | 0.03                                                                              | 0.11                                                                              | 0.11                                                                              |
| Sat Flow, veh/h              | 1767                                                                              | 1298                                                                              | 471   | 1767                                                                              | 1663                                                                              | 162   | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                              | 1856                                                                              | 1572                                                                              |
| Grp Volume(v), veh/h         | 49                                                                                | 0                                                                                 | 454   | 26                                                                                | 0                                                                                 | 360   | 97                                                                                | 58                                                                                | 15                                                                                | 29                                                                                | 57                                                                                | 66                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 0                                                                                 | 1769  | 1767                                                                              | 0                                                                                 | 1826  | 1767                                                                              | 1856                                                                              | 1572                                                                              | 1767                                                                              | 1856                                                                              | 1572                                                                              |
| Q Serve(g_s), s              | 1.1                                                                               | 0.0                                                                               | 9.5   | 0.6                                                                               | 0.0                                                                               | 7.0   | 2.2                                                                               | 1.1                                                                               | 0.3                                                                               | 0.7                                                                               | 1.2                                                                               | 1.6                                                                               |
| Cycle Q Clear(g_c), s        | 1.1                                                                               | 0.0                                                                               | 9.5   | 0.6                                                                               | 0.0                                                                               | 7.0   | 2.2                                                                               | 1.1                                                                               | 0.3                                                                               | 0.7                                                                               | 1.2                                                                               | 1.6                                                                               |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.27  | 1.00                                                                              |                                                                                   | 0.09  | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 92                                                                                | 0                                                                                 | 603   | 55                                                                                | 0                                                                                 | 585   | 143                                                                               | 292                                                                               | 248                                                                               | 60                                                                                | 206                                                                               | 174                                                                               |
| V/C Ratio(X)                 | 0.53                                                                              | 0.00                                                                              | 0.75  | 0.47                                                                              | 0.00                                                                              | 0.62  | 0.68                                                                              | 0.20                                                                              | 0.06                                                                              | 0.48                                                                              | 0.28                                                                              | 0.38                                                                              |
| Avail Cap(c_a), veh/h        | 212                                                                               | 0                                                                                 | 1165  | 212                                                                               | 0                                                                                 | 1202  | 322                                                                               | 1271                                                                              | 1077                                                                              | 241                                                                               | 1200                                                                              | 1017                                                                              |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 19.3                                                                              | 0.0                                                                               | 12.2  | 19.9                                                                              | 0.0                                                                               | 12.0  | 18.7                                                                              | 15.3                                                                              | 15.0                                                                              | 19.8                                                                              | 17.0                                                                              | 17.2                                                                              |
| Incr Delay (d2), s/veh       | 4.8                                                                               | 0.0                                                                               | 1.9   | 6.1                                                                               | 0.0                                                                               | 1.1   | 5.5                                                                               | 0.3                                                                               | 0.1                                                                               | 5.8                                                                               | 0.7                                                                               | 1.4                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 0.0                                                                               | 2.9   | 0.3                                                                               | 0.0                                                                               | 2.2   | 1.0                                                                               | 0.4                                                                               | 0.1                                                                               | 0.3                                                                               | 0.5                                                                               | 0.5                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 24.1                                                                              | 0.0                                                                               | 14.1  | 26.0                                                                              | 0.0                                                                               | 13.1  | 24.2                                                                              | 15.6                                                                              | 15.1                                                                              | 25.6                                                                              | 17.7                                                                              | 18.6                                                                              |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 503                                                                               |                                                                                   | 386   |                                                                                   |                                                                                   |       | 170                                                                               |                                                                                   |                                                                                   | 152                                                                               |                                                                                   |                                                                                   |
| Approach Delay, s/veh        | 15.1                                                                              |                                                                                   | 13.9  |                                                                                   |                                                                                   |       | 20.5                                                                              |                                                                                   |                                                                                   | 19.6                                                                              |                                                                                   |                                                                                   |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   |       | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 5.6                                                                               | 11.5                                                                              | 5.5   | 19.1                                                                              | 7.6                                                                               | 9.5   | 6.4                                                                               | 18.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | * 5.7                                                                             | 28.6                                                                              | * 5   | 27.5                                                                              | * 7.6                                                                             | * 27  | * 5                                                                               | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+I1), s | 2.7                                                                               | 3.1                                                                               | 2.6   | 11.5                                                                              | 4.2                                                                               | 3.6   | 3.1                                                                               | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.3                                                                               | 0.0   | 2.4                                                                               | 0.1                                                                               | 0.4   | 0.0                                                                               | 1.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 16.0 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.2                                                                               |        |                                                                                   |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |  |  |  |       |
| Traffic Vol, veh/h       | 258                                                                               | 57     | 59                                                                                | 296                                                                               | 53                                                                                | 31    |
| Future Vol, veh/h        | 258                                                                               | 57     | 59                                                                                | 296                                                                               | 53                                                                                | 31    |
| Conflicting Peds, #/hr   | 0                                                                                 | 2      | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 90                                                                                | 90     | 90                                                                                | 90                                                                                | 90                                                                                | 90    |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3     |
| Mvmt Flow                | 287                                                                               | 63     | 66                                                                                | 329                                                                               | 59                                                                                | 34    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            | Major2 |                                                                                   | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 352                                                                               | 0                                                                                 | 782                                                                               | 321   |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 321                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 461                                                                               | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.13                                                                              | -                                                                                 | 6.43                                                                              | 6.23  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.227                                                                             | -                                                                                 | 3.527                                                                             | 3.327 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1201                                                                              | -                                                                                 | 361                                                                               | 718   |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 733                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 633                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1199                                                                              | -                                                                                 | 340                                                                               | 717   |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 452                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 732                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 598                                                                               | -     |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                | WB     |                                                                                   | NB                                                                                |                                                                                   |       |
| HCM Control Delay, s     | 0                                                                                 | 1.4    |                                                                                   | 13.4                                                                              |                                                                                   |       |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 523                                                                               | -      | -                                                                                 | 1199                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.178                                                                             | -      | -                                                                                 | 0.055                                                                             | -                                                                                 |       |
| HCM Control Delay (s)    | 13.4                                                                              | -      | -                                                                                 | 8.2                                                                               | -                                                                                 |       |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile O(veh)    | 0.6                                                                               | -      | -                                                                                 | 0.2                                                                               | -                                                                                 |       |

# HCM 6th Signalized Intersection Summary

## 5: 10th Avenue & Hanford Armona Road

Near Term Plus Project PM Peak

04/27/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 170                                                                               | 16                                                                                | 97                                                                                | 5                                                                                 | 11                                                                                | 8                                                                                 | 114                                                                                 | 210                                                                                 | 7                                                                                   | 16                                                                                  | 169                                                                                 | 226                                                                                 |
| Future Volume (veh/h)        | 170                                                                               | 16                                                                                | 97                                                                                | 5                                                                                 | 11                                                                                | 8                                                                                 | 114                                                                                 | 210                                                                                 | 7                                                                                   | 16                                                                                  | 169                                                                                 | 226                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 179                                                                               | 17                                                                                | 102                                                                               | 5                                                                                 | 12                                                                                | 8                                                                                 | 120                                                                                 | 221                                                                                 | 7                                                                                   | 17                                                                                  | 178                                                                                 | 238                                                                                 |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 226                                                                               | 431                                                                               | 364                                                                               | 12                                                                                | 115                                                                               | 77                                                                                | 154                                                                                 | 558                                                                                 | 470                                                                                 | 38                                                                                  | 436                                                                                 | 367                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.23                                                                              | 0.23                                                                              | 0.01                                                                              | 0.11                                                                              | 0.11                                                                              | 0.09                                                                                | 0.30                                                                                | 0.30                                                                                | 0.02                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 1856                                                                              | 1566                                                                              | 1767                                                                              | 1036                                                                              | 691                                                                               | 1767                                                                                | 1856                                                                                | 1565                                                                                | 1767                                                                                | 1856                                                                                | 1562                                                                                |
| Grp Volume(v), veh/h         | 179                                                                               | 17                                                                                | 102                                                                               | 5                                                                                 | 0                                                                                 | 20                                                                                | 120                                                                                 | 221                                                                                 | 7                                                                                   | 17                                                                                  | 178                                                                                 | 238                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 1856                                                                              | 1566                                                                              | 1767                                                                              | 0                                                                                 | 1727                                                                              | 1767                                                                                | 1856                                                                                | 1565                                                                                | 1767                                                                                | 1856                                                                                | 1562                                                                                |
| Q Serve(g_s), s              | 4.3                                                                               | 0.3                                                                               | 2.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 2.9                                                                                 | 4.2                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 3.6                                                                                 | 6.1                                                                                 |
| Cycle Q Clear(g_c), s        | 4.3                                                                               | 0.3                                                                               | 2.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.5                                                                               | 2.9                                                                                 | 4.2                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 3.6                                                                                 | 6.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.40                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 226                                                                               | 431                                                                               | 364                                                                               | 12                                                                                | 0                                                                                 | 192                                                                               | 154                                                                                 | 558                                                                                 | 470                                                                                 | 38                                                                                  | 436                                                                                 | 367                                                                                 |
| V/C Ratio(X)                 | 0.79                                                                              | 0.04                                                                              | 0.28                                                                              | 0.42                                                                              | 0.00                                                                              | 0.10                                                                              | 0.78                                                                                | 0.40                                                                                | 0.01                                                                                | 0.45                                                                                | 0.41                                                                                | 0.65                                                                                |
| Avail Cap(c_a), veh/h        | 272                                                                               | 1562                                                                              | 1318                                                                              | 200                                                                               | 0                                                                                 | 1368                                                                              | 200                                                                                 | 1209                                                                                | 1020                                                                                | 200                                                                                 | 1226                                                                                | 1032                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 18.7                                                                              | 13.1                                                                              | 13.9                                                                              | 21.9                                                                              | 0.0                                                                               | 17.7                                                                              | 19.8                                                                                | 12.3                                                                                | 10.9                                                                                | 21.4                                                                                | 14.3                                                                                | 15.3                                                                                |
| Incr Delay (d2), s/veh       | 12.4                                                                              | 0.0                                                                               | 0.4                                                                               | 21.8                                                                              | 0.0                                                                               | 0.2                                                                               | 13.5                                                                                | 0.5                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.6                                                                                 | 1.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.2                                                                               | 0.1                                                                               | 0.7                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 1.5                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 1.2                                                                                 | 1.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 31.1                                                                              | 13.2                                                                              | 14.3                                                                              | 43.7                                                                              | 0.0                                                                               | 17.9                                                                              | 33.3                                                                                | 12.7                                                                                | 10.9                                                                                | 29.6                                                                                | 14.9                                                                                | 17.2                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                     | 348                                                                                 |                                                                                     |                                                                                     | 433                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 24.3                                                                              |                                                                                   |                                                                                   | 23.1                                                                              |                                                                                   |                                                                                     | 19.8                                                                                |                                                                                     |                                                                                     | 16.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.1                                                                               | 19.0                                                                              | 4.5                                                                               | 15.6                                                                              | 8.1                                                                               | 16.1                                                                              | 9.9                                                                                 | 10.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7                                                                             | * 4.2                                                                               | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5                                                                               | * 29                                                                              | * 6.8                                                                               | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 6.2                                                                               | 2.1                                                                               | 4.4                                                                               | 4.9                                                                               | 8.1                                                                               | 6.3                                                                                 | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 19.9 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

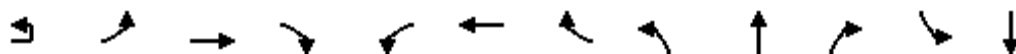
| Intersection             |                                                                                   |          |                                                                                   |       |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.3                                                                               |          |                                                                                   |       |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |       |       |  |
| Traffic Vol, veh/h       | 19                                                                                | 36       | 81                                                                                | 37    | 58    | 66                                                                                |
| Future Vol, veh/h        | 19                                                                                | 36       | 81                                                                                | 37    | 58    | 66                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Peak Hour Factor         | 88                                                                                | 88       | 88                                                                                | 88    | 88    | 88                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3     | 3                                                                                 |
| Mvmt Flow                | 22                                                                                | 41       | 92                                                                                | 42    | 66    | 75                                                                                |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |       |                                                                                   |
| Conflicting Flow All     | 320                                                                               | 113      | 0                                                                                 | 0     | 134   | 0                                                                                 |
| Stage 1                  | 113                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 207                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 671                                                                               | 937      | -                                                                                 | -     | 1444  | -                                                                                 |
| Stage 1                  | 909                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 825                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 639                                                                               | 937      | -                                                                                 | -     | 1444  | -                                                                                 |
| Mov Cap-2 Maneuver       | 639                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 1                  | 909                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 785                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |       |                                                                                   |
| HCM Control Delay, s     | 9.8                                                                               | 0        | 3.6                                                                               |       |       |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 807                                                                               | 1444  | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.077                                                                             | 0.046 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 9.8                                                                               | 7.6   | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | A                                                                                 | A     | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.3                                                                               | 0.1   | -     |                                                                                   |

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Near Term Plus Project PM Peak

04/27/2022



| Movement               | EBU  | EBL   | EBT  | EBR  | WBL  | WBT   | WBR  | NBL  | NBT   | NBR  | SBL   | SBT  |
|------------------------|------|-------|------|------|------|-------|------|------|-------|------|-------|------|
| Lane Configurations    |      | ↔     | ↑    | ↗    | ↖    | ↑     | ↗    | ↖    | ↑↑    | ↗    | ↖     | ↑    |
| Traffic Volume (vph)   | 1    | 36    | 172  | 21   | 24   | 190   | 80   | 39   | 159   | 38   | 53    | 78   |
| Future Volume (vph)    | 1    | 36    | 172  | 21   | 24   | 190   | 80   | 39   | 159   | 38   | 53    | 78   |
| Ideal Flow (vphpl)     | 1900 | 1900  | 1900 | 1900 | 1900 | 1900  | 1900 | 1900 | 1900  | 1900 | 1900  | 1900 |
| Total Lost time (s)    |      | 4.2   | 6.0  | 6.0  | 4.2  | 5.7   | 5.7  | 4.2  | 5.7   | 5.7  | 4.2   | 5.3  |
| Lane Util. Factor      |      | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 0.95  | 1.00 | 1.00  | 1.00 |
| Frt                    |      | 1.00  | 1.00 | 0.85 | 1.00 | 1.00  | 0.85 | 1.00 | 1.00  | 0.85 | 1.00  | 1.00 |
| Flt Protected          |      | 0.95  | 1.00 | 1.00 | 0.95 | 1.00  | 1.00 | 0.95 | 1.00  | 1.00 | 0.95  | 1.00 |
| Satd. Flow (prot)      |      | 1719  | 1810 | 1538 | 1719 | 1810  | 1538 | 1719 | 3438  | 1538 | 1719  | 1810 |
| Flt Permitted          |      | 0.95  | 1.00 | 1.00 | 0.95 | 1.00  | 1.00 | 0.95 | 1.00  | 1.00 | 0.95  | 1.00 |
| Satd. Flow (perm)      |      | 1719  | 1810 | 1538 | 1719 | 1810  | 1538 | 1719 | 3438  | 1538 | 1719  | 1810 |
| Peak-hour factor, PHF  | 0.84 | 0.84  | 0.84 | 0.84 | 0.84 | 0.84  | 0.84 | 0.84 | 0.84  | 0.84 | 0.84  | 0.84 |
| Adj. Flow (vph)        | 1    | 43    | 205  | 25   | 29   | 226   | 95   | 46   | 189   | 45   | 63    | 93   |
| RTOR Reduction (vph)   | 0    | 0     | 0    | 17   | 0    | 0     | 68   | 0    | 0     | 35   | 0     | 0    |
| Lane Group Flow (vph)  | 0    | 44    | 205  | 8    | 29   | 226   | 27   | 46   | 189   | 10   | 63    | 93   |
| Heavy Vehicles (%)     | 5%   | 5%    | 5%   | 5%   | 5%   | 5%    | 5%   | 5%   | 5%    | 5%   | 5%    | 5%   |
| Turn Type              | Prot | Prot  | NA   | Perm | Prot | NA    | Perm | Prot | NA    | Perm | Prot  | NA   |
| Protected Phases       | 7    | 7     | 4    |      | 3    | 8     |      | 5    | 2     |      | 1     | 6    |
| Permitted Phases       |      |       |      | 4    |      |       | 8    |      |       | 2    |       |      |
| Actuated Green, G (s)  |      | 4.7   | 18.2 | 18.2 | 2.8  | 16.6  | 16.6 | 4.7  | 12.9  | 12.9 | 4.7   | 13.3 |
| Effective Green, g (s) |      | 4.7   | 18.2 | 18.2 | 2.8  | 16.6  | 16.6 | 4.7  | 12.9  | 12.9 | 4.7   | 13.3 |
| Actuated g/C Ratio     |      | 0.08  | 0.31 | 0.31 | 0.05 | 0.28  | 0.28 | 0.08 | 0.22  | 0.22 | 0.08  | 0.23 |
| Clearance Time (s)     |      | 4.2   | 6.0  | 6.0  | 4.2  | 5.7   | 5.7  | 4.2  | 5.7   | 5.7  | 4.2   | 5.3  |
| Vehicle Extension (s)  |      | 3.0   | 3.0  | 3.0  | 3.0  | 3.0   | 3.0  | 3.0  | 3.0   | 3.0  | 3.0   | 3.0  |
| Lane Grp Cap (vph)     |      | 137   | 561  | 476  | 81   | 511   | 434  | 137  | 755   | 337  | 137   | 410  |
| v/s Ratio Prot         |      | c0.03 | 0.11 |      | 0.02 | c0.12 |      | 0.03 | c0.05 |      | c0.04 | 0.05 |
| v/s Ratio Perm         |      |       |      | 0.01 |      |       | 0.02 |      |       | 0.01 |       |      |
| v/c Ratio              |      | 0.32  | 0.37 | 0.02 | 0.36 | 0.44  | 0.06 | 0.34 | 0.25  | 0.03 | 0.46  | 0.23 |
| Uniform Delay, d1      |      | 25.5  | 15.8 | 14.0 | 27.1 | 17.3  | 15.4 | 25.5 | 18.9  | 18.0 | 25.8  | 18.5 |
| Progression Factor     |      | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 |
| Incremental Delay, d2  |      | 1.4   | 0.4  | 0.0  | 2.7  | 0.6   | 0.1  | 1.5  | 0.2   | 0.0  | 2.4   | 0.3  |
| Delay (s)              |      | 26.9  | 16.2 | 14.1 | 29.8 | 17.9  | 15.4 | 27.0 | 19.1  | 18.0 | 28.2  | 18.8 |
| Level of Service       |      | C     | B    | B    | C    | B     | B    | C    | B     | B    | C     | B    |
| Approach Delay (s)     |      |       | 17.7 |      |      | 18.2  |      |      | 20.2  |      |       | 21.4 |
| Approach LOS           |      |       | B    |      |      | B     |      |      | C     |      |       | C    |

### Intersection Summary

|                                   |       |                           |      |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay            | 19.2  | HCM 2000 Level of Service | B    |
| HCM 2000 Volume to Capacity ratio | 0.37  |                           |      |
| Actuated Cycle Length (s)         | 58.7  | Sum of lost time (s)      | 20.1 |
| Intersection Capacity Utilization | 44.3% | ICU Level of Service      | A    |
| Analysis Period (min)             | 15    |                           |      |
| c Critical Lane Group             |       |                           |      |



|                        |      |
|------------------------|------|
| Movement               | SBR  |
| Lane Configurations    |      |
| Traffic Volume (vph)   | 45   |
| Future Volume (vph)    | 45   |
| Ideal Flow (vphpl)     | 1900 |
| Total Lost time (s)    | 5.3  |
| Lane Util. Factor      | 1.00 |
| Frt                    | 0.85 |
| Flt Protected          | 1.00 |
| Satd. Flow (prot)      | 1538 |
| Flt Permitted          | 1.00 |
| Satd. Flow (perm)      | 1538 |
| Peak-hour factor, PHF  | 0.84 |
| Adj. Flow (vph)        | 54   |
| RTOR Reduction (vph)   | 42   |
| Lane Group Flow (vph)  | 12   |
| Heavy Vehicles (%)     | 5%   |
| Turn Type              | Perm |
| Protected Phases       |      |
| Permitted Phases       | 6    |
| Actuated Green, G (s)  | 13.3 |
| Effective Green, g (s) | 13.3 |
| Actuated g/C Ratio     | 0.23 |
| Clearance Time (s)     | 5.3  |
| Vehicle Extension (s)  | 3.0  |
| Lane Grp Cap (vph)     | 348  |
| v/s Ratio Prot         |      |
| v/s Ratio Perm         | 0.01 |
| v/c Ratio              | 0.04 |
| Uniform Delay, d1      | 17.7 |
| Progression Factor     | 1.00 |
| Incremental Delay, d2  | 0.0  |
| Delay (s)              | 17.7 |
| Level of Service       | B    |
| Approach Delay (s)     |      |
| Approach LOS           |      |
| Intersection Summary   |      |

| Intersection             |        |                                                                                   |                                                                                   |      |                                                                                   |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.7    |                                                                                   |                                                                                   |      |                                                                                   |       |
| Movement                 | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR   |
| Lane Configurations      |        |  |  |      |  |       |
| Traffic Vol, veh/h       | 77     | 136                                                                               | 208                                                                               | 39   | 28                                                                                | 43    |
| Future Vol, veh/h        | 77     | 136                                                                               | 208                                                                               | 39   | 28                                                                                | 43    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0     |
| Sign Control             | Free   | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop  |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -                                                                                 | None  |
| Storage Length           | -      | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Grade, %                 | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Peak Hour Factor         | 93     | 93                                                                                | 93                                                                                | 93   | 93                                                                                | 93    |
| Heavy Vehicles, %        | 3      | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3     |
| Mvmt Flow                | 83     | 146                                                                               | 224                                                                               | 42   | 30                                                                                | 46    |
| Major/Minor              | Major1 | Major2                                                                            | Minor2                                                                            |      |                                                                                   |       |
| Conflicting Flow All     | 266    | 0                                                                                 | -                                                                                 | 0    | 557                                                                               | 245   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 245                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 312                                                                               | -     |
| Critical Hdwy            | 4.13   | -                                                                                 | -                                                                                 | -    | 6.43                                                                              | 6.23  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    | 5.43                                                                              | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    | 5.43                                                                              | -     |
| Follow-up Hdwy           | 2.227  | -                                                                                 | -                                                                                 | -    | 3.527                                                                             | 3.327 |
| Pot Cap-1 Maneuver       | 1292   | -                                                                                 | -                                                                                 | -    | 490                                                                               | 791   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 793                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 740                                                                               | -     |
| Platoon blocked, %       |        | -                                                                                 | -                                                                                 | -    |                                                                                   |       |
| Mov Cap-1 Maneuver       | 1292   | -                                                                                 | -                                                                                 | -    | 456                                                                               | 791   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    | 456                                                                               | -     |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 737                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 740                                                                               | -     |
| Approach                 | EB     | WB                                                                                |                                                                                   | SB   |                                                                                   |       |
| HCM Control Delay, s     | 2.9    | 0                                                                                 |                                                                                   | 11.7 |                                                                                   |       |
| HCM LOS                  |        |                                                                                   |                                                                                   | B    |                                                                                   |       |
| Minor Lane/Major Mvmt    | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBLn1                                                                             |       |
| Capacity (veh/h)         | 1292   | -                                                                                 | -                                                                                 | -    | 613                                                                               |       |
| HCM Lane V/C Ratio       | 0.064  | -                                                                                 | -                                                                                 | -    | 0.125                                                                             |       |
| HCM Control Delay (s)    | 8      | 0                                                                                 | -                                                                                 | -    | 11.7                                                                              |       |
| HCM Lane LOS             | A      | A                                                                                 | -                                                                                 | -    | B                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0.2    | -                                                                                 | -                                                                                 | -    | 0.4                                                                               |       |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 9.6 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔    |      |      | ↔    |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 41   | 91   | 25   | 8    | 137  | 48   | 44   | 103  | 8    | 41   | 70   | 52   |
| Future Vol, veh/h   | 41   | 91   | 25   | 8    | 137  | 48   | 44   | 103  | 8    | 41   | 70   | 52   |
| Peak Hour Factor    | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles, %   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| Mvmt Flow           | 42   | 93   | 26   | 8    | 140  | 49   | 45   | 105  | 8    | 42   | 71   | 53   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB  | NB  | SB  |
|----------------------------|-----|-----|-----|-----|
| Opposing Approach          | WB  | EB  | SB  | NB  |
| Opposing Lanes             | 1   | 1   | 1   | 1   |
| Conflicting Approach Left  | SB  | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1   | 1   | 1   |
| Conflicting Approach Right | NB  | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1   | 1   | 1   |
| HCM Control Delay          | 9.5 | 9.7 | 9.7 | 9.5 |
| HCM LOS                    | A   | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 28%   | 26%   | 4%    | 25%   |
| Vol Thru, %            | 66%   | 58%   | 71%   | 43%   |
| Vol Right, %           | 5%    | 16%   | 25%   | 32%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 155   | 157   | 193   | 163   |
| LT Vol                 | 44    | 41    | 8     | 41    |
| Through Vol            | 103   | 91    | 137   | 70    |
| RT Vol                 | 8     | 25    | 48    | 52    |
| Lane Flow Rate         | 158   | 160   | 197   | 166   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.224 | 0.222 | 0.266 | 0.228 |
| Departure Headway (Hd) | 5.099 | 4.999 | 4.858 | 4.927 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 697   | 711   | 733   | 722   |
| Service Time           | 3.179 | 3.08  | 2.934 | 3.006 |
| HCM Lane V/C Ratio     | 0.227 | 0.225 | 0.269 | 0.23  |
| HCM Control Delay      | 9.7   | 9.5   | 9.7   | 9.5   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.9   | 0.8   | 1.1   | 0.9   |

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  | T   |
| Maximum Queue (ft)    | 142 | 75  | 79  | 54  | 74  | 54 | 87  | 30  |
| Average Queue (ft)    | 63  | 48  | 40  | 38  | 35  | 28 | 48  | 1   |
| 95th Queue (ft)       | 103 | 68  | 68  | 54  | 62  | 55 | 75  | 10  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R  |
| Maximum Queue (ft)    | 114 | 52  | 164 | 173 | 169 | 51  | 54 |
| Average Queue (ft)    | 52  | 20  | 70  | 58  | 96  | 10  | 37 |
| 95th Queue (ft)       | 92  | 49  | 125 | 120 | 151 | 36  | 55 |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |    |
| Upstream Blk Time (%) |     |     |     |     |     |     |    |
| Queuing Penalty (veh) |     |     |     |     |     |     |    |
| Storage Bay Dist (ft) |     | 295 |     |     |     | 105 |    |
| Storage Blk Time (%)  |     |     |     |     |     |     |    |
| Queuing Penalty (veh) |     |     |     |     |     |     |    |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 111 | 212  | 77 | 194  | 138 | 53  | 77 | 68  | 68  | 47  |
| Average Queue (ft)    | 39  | 70   | 17 | 68   | 71  | 30  | 15 | 11  | 27  | 19  |
| 95th Queue (ft)       | 81  | 144  | 50 | 135  | 121 | 61  | 50 | 41  | 56  | 45  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     | 1    | 0  | 2    | 0   |     | 0  |     |     |     |
| Queuing Penalty (veh) |     | 1    | 0  | 0    | 0   |     | 0  |     |     |     |

Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB |
|-----------------------|------|----|
| Directions Served     | L    | LR |
| Maximum Queue (ft)    | 28   | 89 |
| Average Queue (ft)    | 4    | 42 |
| 95th Queue (ft)       | 19   | 69 |
| Link Distance (ft)    | 1339 |    |
| Upstream Blk Time (%) |      |    |
| Queuing Penalty (veh) |      |    |
| Storage Bay Dist (ft) | 75   |    |
| Storage Blk Time (%)  |      |    |
| Queuing Penalty (veh) |      |    |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB | EB | WB  | WB | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|----|----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T  | R  | L   | TR | L   | T   | R   | L   | T   | R   |
| Maximum Queue (ft)    | 185 | 23 | 64 | 25  | 52 | 109 | 109 | 22  | 51  | 159 | 113 |
| Average Queue (ft)    | 93  | 3  | 14 | 2   | 13 | 35  | 45  | 1   | 6   | 59  | 49  |
| 95th Queue (ft)       | 157 | 15 | 39 | 13  | 40 | 75  | 82  | 7   | 28  | 123 | 85  |
| Link Distance (ft)    | 936 |    |    | 372 |    |     | 448 |     |     | 399 |     |
| Upstream Blk Time (%) |     |    |    |     |    |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |    |    |     |    |     |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |    | 55 | 155 |    | 155 |     | 130 | 110 |     | 265 |
| Storage Blk Time (%)  | 8   |    | 0  |     |    |     |     |     |     | 1   |     |
| Queuing Penalty (veh) | 5   |    | 0  |     |    |     |     |     |     | 2   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              | WB  | SB   |
|-----------------------|-----|------|
| Directions Served     | LR  | LT   |
| Maximum Queue (ft)    | 70  | 29   |
| Average Queue (ft)    | 36  | 1    |
| 95th Queue (ft)       | 53  | 9    |
| Link Distance (ft)    | 862 | 2833 |
| Upstream Blk Time (%) |     |      |
| Queuing Penalty (veh) |     |      |
| Storage Bay Dist (ft) |     |      |
| Storage Blk Time (%)  |     |      |
| Queuing Penalty (veh) |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB  | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB   |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Directions Served     | UL  | T   | R   | L   | T   | R   | L   | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 153 | 69  | 60  | 68  | 77  | 69  | 69  | 44  | 64  | 17  | 84  | 108  |
| Average Queue (ft)    | 47  | 31  | 11  | 26  | 40  | 14  | 15  | 17  | 5   | 6   | 21  | 12   |
| 95th Queue (ft)       | 103 | 66  | 37  | 55  | 70  | 38  | 45  | 38  | 25  | 17  | 51  | 49   |
| Link Distance (ft)    |     | 680 |     |     | 436 |     |     | 276 | 276 |     |     | 1524 |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |      |
| Storage Bay Dist (ft) | 165 |     | 150 | 175 |     | 175 | 175 |     |     | 100 | 250 |      |
| Storage Blk Time (%)  | 0   |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) | 0   |     |     |     |     |     |     |     |     |     |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 62   |
| Average Queue (ft)    | 9    |
| 95th Queue (ft)       | 29   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | EB   | SB   |
|-----------------------|------|------|
| Directions Served     | LT   | LR   |
| Maximum Queue (ft)    | 44   | 73   |
| Average Queue (ft)    | 5    | 40   |
| 95th Queue (ft)       | 22   | 67   |
| Link Distance (ft)    | 2076 | 2057 |
| Upstream Blk Time (%) |      |      |
| Queuing Penalty (veh) |      |      |
| Storage Bay Dist (ft) |      |      |
| Storage Blk Time (%)  |      |      |
| Queuing Penalty (veh) |      |      |

Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 101  | 140  | 75   | 76   |
| Average Queue (ft)    | 48   | 47   | 35   | 41   |
| 95th Queue (ft)       | 77   | 86   | 67   | 70   |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | EB  | SE  |
|-----------------------|-----|-----|
| Directions Served     | T   | L   |
| Maximum Queue (ft)    | 31  | 141 |
| Average Queue (ft)    | 4   | 28  |
| 95th Queue (ft)       | 20  | 77  |
| Link Distance (ft)    | 361 | 209 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Network Summary

|                                 |
|---------------------------------|
| Network wide Queuing Penalty: 9 |
|---------------------------------|

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  | T   |
| Maximum Queue (ft)    | 122 | 100 | 78  | 56  | 77  | 55 | 158 | 54  |
| Average Queue (ft)    | 59  | 62  | 58  | 40  | 37  | 26 | 79  | 9   |
| 95th Queue (ft)       | 95  | 92  | 82  | 57  | 70  | 53 | 133 | 34  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R   |
| Maximum Queue (ft)    | 112 | 142 | 139 | 156 | 293 | 194 | 89  |
| Average Queue (ft)    | 66  | 63  | 63  | 50  | 119 | 46  | 44  |
| 95th Queue (ft)       | 104 | 110 | 114 | 106 | 219 | 142 | 73  |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |     |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |
| Storage Bay Dist (ft) |     | 295 |     |     |     |     | 105 |
| Storage Blk Time (%)  |     |     |     |     |     | 1   | 0   |
| Queuing Penalty (veh) |     |     |     |     |     | 2   | 0   |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 106 | 267  | 69 | 214  | 94  | 72  | 31 | 79  | 78  | 56  |
| Average Queue (ft)    | 36  | 110  | 14 | 81   | 52  | 27  | 5  | 20  | 30  | 30  |
| 95th Queue (ft)       | 81  | 203  | 45 | 158  | 84  | 60  | 22 | 53  | 66  | 56  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     | 4    |    | 6    |     |     |    |     |     |     |
| Queuing Penalty (veh) |     | 2    |    | 1    |     |     |    |     |     |     |



Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB  |
|-----------------------|------|-----|
| Directions Served     | L    | LR  |
| Maximum Queue (ft)    | 67   | 116 |
| Average Queue (ft)    | 12   | 40  |
| 95th Queue (ft)       | 40   | 72  |
| Link Distance (ft)    | 1339 |     |
| Upstream Blk Time (%) |      |     |
| Queuing Penalty (veh) |      |     |
| Storage Bay Dist (ft) | 75   |     |
| Storage Blk Time (%)  | 0    |     |
| Queuing Penalty (veh) | 0    |     |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB  | EB  | WB  | WB | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T   | R   | L   | TR | L   | T   | R   | L   | T   | R   |
| Maximum Queue (ft)    | 180 | 155 | 154 | 26  | 72 | 125 | 200 | 22  | 31  | 161 | 134 |
| Average Queue (ft)    | 84  | 16  | 29  | 5   | 13 | 57  | 66  | 1   | 14  | 60  | 53  |
| 95th Queue (ft)       | 151 | 64  | 73  | 22  | 41 | 108 | 149 | 10  | 37  | 111 | 91  |
| Link Distance (ft)    | 936 |     |     | 372 |    |     | 448 |     |     | 399 |     |
| Upstream Blk Time (%) |     |     |     |     |    |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |    |     |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |     | 55  | 155 |    | 155 |     | 130 | 110 |     | 265 |
| Storage Blk Time (%)  | 5   | 0   | 0   |     |    |     | 2   |     |     | 1   |     |
| Queuing Penalty (veh) | 5   | 0   | 0   |     |    |     | 3   |     |     | 2   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              | WB  | SB   |
|-----------------------|-----|------|
| Directions Served     | LR  | LT   |
| Maximum Queue (ft)    | 54  | 74   |
| Average Queue (ft)    | 27  | 9    |
| 95th Queue (ft)       | 46  | 39   |
| Link Distance (ft)    | 862 | 2833 |
| Upstream Blk Time (%) |     |      |
| Queuing Penalty (veh) |     |      |
| Storage Bay Dist (ft) |     |      |
| Storage Blk Time (%)  |     |      |
| Queuing Penalty (veh) |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB  | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB   |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Directions Served     | UL  | T   | R   | L   | T   | R   | L   | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 71  | 86  | 32  | 48  | 109 | 91  | 71  | 65  | 63  | 42  | 81  | 81   |
| Average Queue (ft)    | 23  | 39  | 7   | 11  | 54  | 18  | 29  | 32  | 19  | 9   | 26  | 25   |
| 95th Queue (ft)       | 49  | 78  | 20  | 34  | 90  | 47  | 60  | 56  | 46  | 25  | 56  | 56   |
| Link Distance (ft)    |     | 680 |     |     | 436 |     |     | 276 | 276 |     |     | 1524 |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |      |
| Storage Bay Dist (ft) | 165 |     | 150 | 175 |     | 175 | 175 |     |     | 100 | 250 |      |
| Storage Blk Time (%)  |     |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 33   |
| Average Queue (ft)    | 11   |
| 95th Queue (ft)       | 24   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | EB   | SB   |
|-----------------------|------|------|
| Directions Served     | LT   | LR   |
| Maximum Queue (ft)    | 32   | 74   |
| Average Queue (ft)    | 9    | 29   |
| 95th Queue (ft)       | 30   | 59   |
| Link Distance (ft)    | 2076 | 2057 |
| Upstream Blk Time (%) |      |      |
| Queuing Penalty (veh) |      |      |
| Storage Bay Dist (ft) |      |      |
| Storage Blk Time (%)  |      |      |
| Queuing Penalty (veh) |      |      |

Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 78   | 73   | 90   | 78   |
| Average Queue (ft)    | 35   | 38   | 41   | 41   |
| 95th Queue (ft)       | 55   | 66   | 68   | 70   |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | EB  | SE  |
|-----------------------|-----|-----|
| Directions Served     | T   | L   |
| Maximum Queue (ft)    | 30  | 117 |
| Average Queue (ft)    | 2   | 45  |
| 95th Queue (ft)       | 14  | 96  |
| Link Distance (ft)    | 361 | 209 |
| Upstream Blk Time (%) |     |     |
| Queuing Penalty (veh) |     |     |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Network Summary

|                                  |
|----------------------------------|
| Network wide Queuing Penalty: 15 |
|----------------------------------|

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                                |
|---------------------|--------------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 553  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.72 | Total Trucks, %                  | 4.02 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.33 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52197  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44139 | PF Power Coefficient             | 0.67822 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 9.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 35.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 35.0 | Percent Followers, %              | 61.9 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 9.8  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 9.8                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                   |                      |                                |
|---------------------|-------------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                   | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                     | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                   | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 02 Hanford-Armona Road<br>Between 10 1/2 Avenue<br>and Jordan Way | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 366  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.74 | Total Trucks, %                  | 3.39 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.22 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43653  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48329 | PF Power Coefficient             | 0.66113 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.1 | Percent Followers, %              | 53.4 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 5.7  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.7                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                           |                      |                                |
|---------------------|-----------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                           | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                             | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                           | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 03 Hanford-Armona Road Between Jordan Way and 10th Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 23.4 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 344  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 6.25 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.20 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 39.5    |
| Speed Slope Coefficient           | 2.65189  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50451 | PF Power Coefficient             | 0.67582 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 38.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 38.1 | Percent Followers, %              | 51.9 |
| Segment Travel Time, minutes | 0.27 | Follower Density, followers/mi/ln | 4.7  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.7                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                |                      |                                |
|---------------------|----------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                  | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 04 10.5 Avenue Between Hanford Armona Drive and Orchard Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 327  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.60 | Total Trucks, %                  | 9.87 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.19 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.5    |
| Speed Slope Coefficient           | 2.29128  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42068 | PF Power Coefficient             | 0.65951 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.2     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 31.2                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.2 | Percent Followers, %              | 49.3 |
| Segment Travel Time, minutes | 0.99 | Follower Density, followers/mi/ln | 5.2  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.2                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                                |
|---------------------|----------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 167  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.42 | Total Trucks, %                  | 13.33 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.10  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.4    |
| Speed Slope Coefficient           | 2.28310  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42395 | PF Power Coefficient             | 0.65839 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 31.6                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.6 | Percent Followers, %              | 35.4 |
| Segment Travel Time, minutes | 0.93 | Follower Density, followers/mi/ln | 1.9  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.9                               | A   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                |
|---------------------|---------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 284  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.68 | Total Trucks, %                  | 21.40 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.17  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.3    |
| Speed Slope Coefficient           | 3.14891  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42118 | PF Power Coefficient             | 0.72418 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 46.8                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 46.8 | Percent Followers, %              | 43.5 |
| Segment Travel Time, minutes | 0.62 | Follower Density, followers/mi/ln | 2.6  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.6                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                |
|---------------------|---------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Near Term Plus Project AM Peak |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 224  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.88 | Total Trucks, %                  | 17.65 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.13  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.3    |
| Speed Slope Coefficient           | 3.20179  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41674 | PF Power Coefficient             | 0.72668 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.0 | Percent Followers, %              | 38.0 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 1.8  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.8                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                                |
|---------------------|--------------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 658  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.83 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.39 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52381  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44159 | PF Power Coefficient             | 0.67823 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 12.5    |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 34.8                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.8 | Percent Followers, %              | 66.2 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 12.5 |
| Vehicle LOS                  | D    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 12.5                              | D   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                   |                      |                                |
|---------------------|-------------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                   | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                     | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                   | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 02 Hanford-Armona Road<br>Between 10 1/2 Avenue<br>and Jordan Way | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 418  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.85 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.25 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43724  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48339 | PF Power Coefficient             | 0.66114 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 6.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.0 | Percent Followers, %              | 56.5 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 6.9  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 6.9                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                 |                      |                                |
|---------------------|-----------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                 | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                   | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                 | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 03 Hanford-Armona Road<br>Between Jordan Way and<br>10th Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 17.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 362  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.97 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.21 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 41.1    |
| Speed Slope Coefficient           | 2.73635  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50445 | PF Power Coefficient             | 0.68170 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 39.5                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 39.5 | Percent Followers, %              | 52.9 |
| Segment Travel Time, minutes | 0.26 | Follower Density, followers/mi/ln | 4.8  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.8                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                |                      |                                |
|---------------------|----------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                                | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                  | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                                | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 04 10.5 Avenue Between Hanford Armona Drive and Orchard Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 263  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.15 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30368  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42275 | PF Power Coefficient             | 0.65971 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.7     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 31.6                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.6 | Percent Followers, %              | 44.5 |
| Segment Travel Time, minutes | 0.98 | Follower Density, followers/mi/ln | 3.7  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.7                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                                |
|---------------------|----------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 236  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.56 | Total Trucks, %                  | 3.70 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.14 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30048  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42689 | PF Power Coefficient             | 0.65868 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.2     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 31.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.7 | Percent Followers, %              | 42.4 |
| Segment Travel Time, minutes | 0.93 | Follower Density, followers/mi/ln | 3.2  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.2                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                |
|---------------------|---------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 302  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.89 | Total Trucks, %                  | 3.75 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.18 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.9    |
| Speed Slope Coefficient           | 3.18076  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42061 | PF Power Coefficient             | 0.72351 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 47.3                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 47.3 | Percent Followers, %              | 45.0 |
| Segment Travel Time, minutes | 0.62 | Follower Density, followers/mi/ln | 2.9  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.9                               | B   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                |
|---------------------|---------------------------------------------------------------|----------------------|--------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                      |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                           |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Near Term Plus Project PM Peak |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary        |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 328  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.90 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.19 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.8    |
| Speed Slope Coefficient           | 3.22823  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41606 | PF Power Coefficient             | 0.72608 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.2     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.1 | Percent Followers, %              | 46.7 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 3.2  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.2                               | B   |

## Appendix H: Cumulative Year 2042 plus Project Traffic Conditions



[www.JLBtraffic.com](http://www.JLBtraffic.com)  
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103  
Fresno, CA 93704  
(559) 570-8991

A p p | H

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Cumulative Year 2042 Plus Project AM Peak

05/05/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 60                                                                                | 237                                                                               | 52    | 17                                                                                | 221                                                                               | 27    | 124                                                                                 | 80                                                                                  | 19                                                                                  | 12                                                                                  | 25                                                                                  | 37                                                                                  |
| Future Volume (veh/h)        | 60                                                                                | 237                                                                               | 52    | 17                                                                                | 221                                                                               | 27    | 124                                                                                 | 80                                                                                  | 19                                                                                  | 12                                                                                  | 25                                                                                  | 37                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                              | 1826                                                                              | 1826  | 1826                                                                                | 1826                                                                                | 1826                                                                                | 1826                                                                                | 1826                                                                                | 1826                                                                                |
| Adj Flow Rate, veh/h         | 70                                                                                | 276                                                                               | 60    | 20                                                                                | 257                                                                               | 31    | 144                                                                                 | 93                                                                                  | 22                                                                                  | 14                                                                                  | 29                                                                                  | 43                                                                                  |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86  | 0.86                                                                              | 0.86                                                                              | 0.86  | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                | 0.86                                                                                |
| Percent Heavy Veh, %         | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                 | 5                                                                                 | 5     | 5                                                                                   | 5                                                                                   | 5                                                                                   | 5                                                                                   | 5                                                                                   | 5                                                                                   |
| Cap, veh/h                   | 119                                                                               | 412                                                                               | 90    | 43                                                                                | 384                                                                               | 46    | 184                                                                                 | 370                                                                                 | 313                                                                                 | 31                                                                                  | 209                                                                                 | 177                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.28                                                                              | 0.28  | 0.02                                                                              | 0.24                                                                              | 0.24  | 0.11                                                                                | 0.20                                                                                | 0.20                                                                                | 0.02                                                                                | 0.11                                                                                | 0.11                                                                                |
| Sat Flow, veh/h              | 1739                                                                              | 1453                                                                              | 316   | 1739                                                                              | 1598                                                                              | 193   | 1739                                                                                | 1826                                                                                | 1547                                                                                | 1739                                                                                | 1826                                                                                | 1547                                                                                |
| Grp Volume(v), veh/h         | 70                                                                                | 0                                                                                 | 336   | 20                                                                                | 0                                                                                 | 288   | 144                                                                                 | 93                                                                                  | 22                                                                                  | 14                                                                                  | 29                                                                                  | 43                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1739                                                                              | 0                                                                                 | 1768  | 1739                                                                              | 0                                                                                 | 1791  | 1739                                                                                | 1826                                                                                | 1547                                                                                | 1739                                                                                | 1826                                                                                | 1547                                                                                |
| Q Serve(g_s), s              | 1.5                                                                               | 0.0                                                                               | 6.5   | 0.4                                                                               | 0.0                                                                               | 5.6   | 3.1                                                                                 | 1.7                                                                                 | 0.4                                                                                 | 0.3                                                                                 | 0.6                                                                                 | 1.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 0.0                                                                               | 6.5   | 0.4                                                                               | 0.0                                                                               | 5.6   | 3.1                                                                                 | 1.7                                                                                 | 0.4                                                                                 | 0.3                                                                                 | 0.6                                                                                 | 1.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.18  | 1.00                                                                              |                                                                                   | 0.11  | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 119                                                                               | 0                                                                                 | 501   | 43                                                                                | 0                                                                                 | 430   | 184                                                                                 | 370                                                                                 | 313                                                                                 | 31                                                                                  | 209                                                                                 | 177                                                                                 |
| V/C Ratio(X)                 | 0.59                                                                              | 0.00                                                                              | 0.67  | 0.46                                                                              | 0.00                                                                              | 0.67  | 0.78                                                                                | 0.25                                                                                | 0.07                                                                                | 0.45                                                                                | 0.14                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h        | 225                                                                               | 0                                                                                 | 1236  | 225                                                                               | 0                                                                                 | 1251  | 365                                                                                 | 1408                                                                                | 1193                                                                                | 225                                                                                 | 1276                                                                                | 1081                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 17.5                                                                              | 0.0                                                                               | 12.2  | 18.6                                                                              | 0.0                                                                               | 13.3  | 16.8                                                                                | 12.9                                                                                | 12.5                                                                                | 18.8                                                                                | 15.4                                                                                | 15.6                                                                                |
| Incr Delay (d2), s/veh       | 4.6                                                                               | 0.0                                                                               | 1.6   | 7.4                                                                               | 0.0                                                                               | 1.8   | 7.0                                                                                 | 0.4                                                                                 | 0.1                                                                                 | 9.6                                                                                 | 0.3                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 0.0                                                                               | 2.0   | 0.2                                                                               | 0.0                                                                               | 1.9   | 1.3                                                                                 | 0.5                                                                                 | 0.1                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 22.0                                                                              | 0.0                                                                               | 13.8  | 26.0                                                                              | 0.0                                                                               | 15.1  | 23.8                                                                                | 13.3                                                                                | 12.6                                                                                | 28.4                                                                                | 15.7                                                                                | 16.3                                                                                |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 406                                                                               |                                                                                   | 308   |                                                                                   |                                                                                   | 259   |                                                                                     |                                                                                     | 86                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 15.2                                                                              |                                                                                   | 15.8  |                                                                                   |                                                                                   | 19.1  |                                                                                     |                                                                                     | 18.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   | B     |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.9                                                                               | 12.7                                                                              | 5.2   | 15.9                                                                              | 8.3                                                                               | 9.3   | 6.8                                                                                 | 14.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                               | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 29.8                                                                              | * 5   | 27.0                                                                              | * 8.1                                                                             | * 27  | * 5                                                                                 | 27.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.3                                                                               | 3.7                                                                               | 2.4   | 8.5                                                                               | 5.1                                                                               | 3.0   | 3.5                                                                                 | 7.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.5                                                                               | 0.0   | 1.8                                                                               | 0.1                                                                               | 0.2   | 0.0                                                                                 | 1.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 16.6 |
| HCM 6th LOS        | B    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.9                                                                               |      |                                                                                   |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |  |  |  |       |
| Traffic Vol, veh/h       | 208                                                                               | 28   | 36                                                                                | 182                                                                               | 55                                                                                | 62    |
| Future Vol, veh/h        | 208                                                                               | 28   | 36                                                                                | 182                                                                               | 55                                                                                | 62    |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1     |
| Sign Control             | Free                                                                              | Free | Free                                                                              | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | 75                                                                                | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92                                                                                | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 6                                                                                 | 6    | 6                                                                                 | 6                                                                                 | 6                                                                                 | 6     |
| Mvmt Flow                | 226                                                                               | 30   | 39                                                                                | 198                                                                               | 60                                                                                | 67    |
|                          |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2                                                                            |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 256                                                                               | 0                                                                                 | 517                                                                               | 242   |
| Stage 1                  | -                                                                                 | -    | -                                                                                 | -                                                                                 | 241                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -                                                                                 | -                                                                                 | 276                                                                               | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.16                                                                              | -                                                                                 | 6.46                                                                              | 6.26  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -                                                                                 | -                                                                                 | 5.46                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -                                                                                 | -                                                                                 | 5.46                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.254                                                                             | -                                                                                 | 3.554                                                                             | 3.354 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1286                                                                              | -                                                                                 | 511                                                                               | 787   |
| Stage 1                  | -                                                                                 | -    | -                                                                                 | -                                                                                 | 790                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -                                                                                 | -                                                                                 | 761                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -    |                                                                                   | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1286                                                                              | -                                                                                 | 496                                                                               | 786   |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -                                                                                 | -                                                                                 | 574                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -                                                                                 | -                                                                                 | 790                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -                                                                                 | -                                                                                 | 738                                                                               | -     |
|                          |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB                                                                                |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 1.3                                                                               |                                                                                   | 11.6                                                                              |       |
| HCM LOS                  | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR                                                                               | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 670                                                                               | -    | -                                                                                 | 1286                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.19                                                                              | -    | -                                                                                 | 0.03                                                                              | -                                                                                 |       |
| HCM Control Delay (s)    | 11.6                                                                              | -    | -                                                                                 | 7.9                                                                               | -                                                                                 |       |
| HCM Lane LOS             | B                                                                                 | -    | -                                                                                 | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile O(veh)    | 0.7                                                                               | -    | -                                                                                 | 0.1                                                                               | -                                                                                 |       |

# HCM 6th Signalized Intersection Summary 5: 10th Avenue & Hanford Armona Road

Cumulative Year 2042 Plus Project AM Peak

05/05/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |  |  |  |  |
| Traffic Volume (veh/h)       | 186                                                                               | 11                                                                                | 67                                                                                | 10                                                                                | 7                                                                                 | 21                                                                                | 70                                                                                  | 217                                                                                 | 6                                                                                   | 16                                                                                  | 203                                                                                 | 158                                                                                 |
| Future Volume (veh/h)        | 186                                                                               | 11                                                                                | 67                                                                                | 10                                                                                | 7                                                                                 | 21                                                                                | 70                                                                                  | 217                                                                                 | 6                                                                                   | 16                                                                                  | 203                                                                                 | 158                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                              | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                | 1796                                                                                |
| Adj Flow Rate, veh/h         | 202                                                                               | 12                                                                                | 73                                                                                | 11                                                                                | 8                                                                                 | 23                                                                                | 76                                                                                  | 236                                                                                 | 7                                                                                   | 17                                                                                  | 221                                                                                 | 172                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                 | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   | 7                                                                                   |
| Cap, veh/h                   | 252                                                                               | 408                                                                               | 346                                                                               | 25                                                                                | 39                                                                                | 111                                                                               | 122                                                                                 | 454                                                                                 | 385                                                                                 | 37                                                                                  | 365                                                                                 | 309                                                                                 |
| Arrive On Green              | 0.15                                                                              | 0.23                                                                              | 0.23                                                                              | 0.01                                                                              | 0.09                                                                              | 0.09                                                                              | 0.07                                                                                | 0.25                                                                                | 0.25                                                                                | 0.02                                                                                | 0.20                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 409                                                                               | 1176                                                                              | 1711                                                                                | 1796                                                                                | 1522                                                                                | 1711                                                                                | 1796                                                                                | 1522                                                                                |
| Grp Volume(v), veh/h         | 202                                                                               | 12                                                                                | 73                                                                                | 11                                                                                | 0                                                                                 | 31                                                                                | 76                                                                                  | 236                                                                                 | 7                                                                                   | 17                                                                                  | 221                                                                                 | 172                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1711                                                                              | 1796                                                                              | 1522                                                                              | 1711                                                                              | 0                                                                                 | 1585                                                                              | 1711                                                                                | 1796                                                                                | 1522                                                                                | 1711                                                                                | 1796                                                                                | 1522                                                                                |
| Q Serve(g_s), s              | 4.6                                                                               | 0.2                                                                               | 1.6                                                                               | 0.3                                                                               | 0.0                                                                               | 0.7                                                                               | 1.7                                                                                 | 4.5                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 4.5                                                                                 | 4.1                                                                                 |
| Cycle Q Clear(g_c), s        | 4.6                                                                               | 0.2                                                                               | 1.6                                                                               | 0.3                                                                               | 0.0                                                                               | 0.7                                                                               | 1.7                                                                                 | 4.5                                                                                 | 0.1                                                                                 | 0.4                                                                                 | 4.5                                                                                 | 4.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.74                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 252                                                                               | 408                                                                               | 346                                                                               | 25                                                                                | 0                                                                                 | 150                                                                               | 122                                                                                 | 454                                                                                 | 385                                                                                 | 37                                                                                  | 365                                                                                 | 309                                                                                 |
| V/C Ratio(X)                 | 0.80                                                                              | 0.03                                                                              | 0.21                                                                              | 0.45                                                                              | 0.00                                                                              | 0.21                                                                              | 0.62                                                                                | 0.52                                                                                | 0.02                                                                                | 0.46                                                                                | 0.61                                                                                | 0.56                                                                                |
| Avail Cap(c_a), veh/h        | 290                                                                               | 1668                                                                              | 1414                                                                              | 214                                                                               | 0                                                                                 | 1384                                                                              | 214                                                                                 | 1291                                                                                | 1094                                                                                | 214                                                                                 | 1309                                                                                | 1110                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.5                                                                              | 12.0                                                                              | 12.6                                                                              | 19.6                                                                              | 0.0                                                                               | 16.8                                                                              | 18.1                                                                                | 12.9                                                                                | 11.2                                                                                | 19.4                                                                                | 14.5                                                                                | 14.3                                                                                |
| Incr Delay (d2), s/veh       | 13.2                                                                              | 0.0                                                                               | 0.3                                                                               | 12.2                                                                              | 0.0                                                                               | 0.7                                                                               | 5.1                                                                                 | 0.9                                                                                 | 0.0                                                                                 | 8.8                                                                                 | 1.6                                                                                 | 1.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.3                                                                               | 0.1                                                                               | 0.4                                                                               | 0.2                                                                               | 0.0                                                                               | 0.2                                                                               | 0.7                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 1.5                                                                                 | 1.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 29.8                                                                              | 12.1                                                                              | 12.9                                                                              | 31.8                                                                              | 0.0                                                                               | 17.4                                                                              | 23.2                                                                                | 13.8                                                                                | 11.3                                                                                | 28.1                                                                                | 16.1                                                                                | 15.9                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 287                                                                               |                                                                                   |                                                                                   | 42                                                                                |                                                                                   |                                                                                   | 319                                                                                 |                                                                                     |                                                                                     | 410                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 24.7                                                                              |                                                                                   |                                                                                   | 21.2                                                                              |                                                                                   |                                                                                   | 16.0                                                                                |                                                                                     |                                                                                     | 16.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.1                                                                               | 15.8                                                                              | 4.8                                                                               | 14.4                                                                              | 7.1                                                                               | 13.8                                                                              | 10.1                                                                                | 9.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7                                                                             | * 4.2                                                                               | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5                                                                               | 28.8                                                                              | * 5                                                                               | * 37                                                                              | * 5                                                                               | * 29                                                                              | * 6.8                                                                               | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.4                                                                               | 6.5                                                                               | 2.3                                                                               | 3.6                                                                               | 3.7                                                                               | 6.5                                                                               | 6.6                                                                                 | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.1                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 1.7                                                                               | 0.0                                                                                 | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 18.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |                                                                                   |          |                                                                                   |       |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.4                                                                               |          |                                                                                   |       |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |       |       |  |
| Traffic Vol, veh/h       | 23                                                                                | 42       | 89                                                                                | 6     | 17    | 39                                                                                |
| Future Vol, veh/h        | 23                                                                                | 42       | 89                                                                                | 6     | 17    | 39                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92    | 92    | 92                                                                                |
| Heavy Vehicles, %        | 5                                                                                 | 5        | 5                                                                                 | 5     | 5     | 5                                                                                 |
| Mvmt Flow                | 25                                                                                | 46       | 97                                                                                | 7     | 18    | 42                                                                                |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |       |                                                                                   |
| Conflicting Flow All     | 179                                                                               | 101      | 0                                                                                 | 0     | 104   | 0                                                                                 |
| Stage 1                  | 101                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 78                                                                                | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy            | 6.45                                                                              | 6.25     | -                                                                                 | -     | 4.15  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.45                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.45                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Follow-up Hdwy           | 3.545                                                                             | 3.345    | -                                                                                 | -     | 2.245 | -                                                                                 |
| Pot Cap-1 Maneuver       | 804                                                                               | 946      | -                                                                                 | -     | 1469  | -                                                                                 |
| Stage 1                  | 916                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 938                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 794                                                                               | 946      | -                                                                                 | -     | 1469  | -                                                                                 |
| Mov Cap-2 Maneuver       | 794                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 1                  | 916                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 926                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |       |                                                                                   |
| HCM Control Delay, s     | 9.4                                                                               | 0        | 2.3                                                                               |       |       |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 886                                                                               | 1469  | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.08                                                                              | 0.013 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 9.4                                                                               | 7.5   | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | A                                                                                 | A     | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.3                                                                               | 0     | -     |                                                                                   |

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Cumulative Year 2042 Plus Project AM Peak

05/05/2022

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (vph)              | 96                                                                                | 128                                                                               | 46                                                                                | 37                                                                                | 99                                                                                | 40                                                                                | 34                                                                                  | 144                                                                                 | 41                                                                                  | 44                                                                                  | 99                                                                                  | 40                                                                                  |
| Future Volume (vph)               | 96                                                                                | 128                                                                               | 46                                                                                | 37                                                                                | 99                                                                                | 40                                                                                | 34                                                                                  | 144                                                                                 | 41                                                                                  | 44                                                                                  | 99                                                                                  | 40                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                                | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                                | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Peak-hour factor, PHF             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)                   | 100                                                                               | 133                                                                               | 48                                                                                | 39                                                                                | 103                                                                               | 42                                                                                | 35                                                                                  | 150                                                                                 | 43                                                                                  | 46                                                                                  | 103                                                                                 | 42                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 35                                                                                | 0                                                                                 | 0                                                                                 | 34                                                                                | 0                                                                                   | 0                                                                                   | 30                                                                                  | 0                                                                                   | 0                                                                                   | 28                                                                                  |
| Lane Group Flow (vph)             | 100                                                                               | 133                                                                               | 13                                                                                | 39                                                                                | 103                                                                               | 8                                                                                 | 35                                                                                  | 150                                                                                 | 13                                                                                  | 46                                                                                  | 103                                                                                 | 14                                                                                  |
| Heavy Vehicles (%)                | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 9.7                                                                               | 18.3                                                                              | 18.3                                                                              | 3.6                                                                               | 12.5                                                                              | 12.5                                                                              | 3.6                                                                                 | 20.3                                                                                | 20.3                                                                                | 6.0                                                                                 | 23.1                                                                                | 23.1                                                                                |
| Effective Green, g (s)            | 9.7                                                                               | 18.3                                                                              | 18.3                                                                              | 3.6                                                                               | 12.5                                                                              | 12.5                                                                              | 3.6                                                                                 | 20.3                                                                                | 20.3                                                                                | 6.0                                                                                 | 23.1                                                                                | 23.1                                                                                |
| Actuated g/C Ratio                | 0.14                                                                              | 0.27                                                                              | 0.27                                                                              | 0.05                                                                              | 0.18                                                                              | 0.18                                                                              | 0.05                                                                                | 0.30                                                                                | 0.30                                                                                | 0.09                                                                                | 0.34                                                                                | 0.34                                                                                |
| Clearance Time (s)                | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 226                                                                               | 450                                                                               | 382                                                                               | 84                                                                                | 307                                                                               | 261                                                                               | 84                                                                                  | 949                                                                                 | 424                                                                                 | 140                                                                                 | 568                                                                                 | 483                                                                                 |
| v/s Ratio Prot                    | c0.06                                                                             | c0.08                                                                             |                                                                                   | 0.02                                                                              | 0.06                                                                              |                                                                                   | 0.02                                                                                | 0.05                                                                                |                                                                                     | c0.03                                                                               | c0.06                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |
| v/c Ratio                         | 0.44                                                                              | 0.30                                                                              | 0.03                                                                              | 0.46                                                                              | 0.34                                                                              | 0.03                                                                              | 0.42                                                                                | 0.16                                                                                | 0.03                                                                                | 0.33                                                                                | 0.18                                                                                | 0.03                                                                                |
| Uniform Delay, d1                 | 26.8                                                                              | 19.9                                                                              | 18.5                                                                              | 31.4                                                                              | 24.3                                                                              | 22.9                                                                              | 31.3                                                                                | 17.7                                                                                | 17.0                                                                                | 29.3                                                                                | 15.9                                                                                | 15.1                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 1.4                                                                               | 0.4                                                                               | 0.0                                                                               | 4.0                                                                               | 0.6                                                                               | 0.0                                                                               | 3.3                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 1.4                                                                                 | 0.2                                                                                 | 0.0                                                                                 |
| Delay (s)                         | 28.2                                                                              | 20.2                                                                              | 18.5                                                                              | 35.4                                                                              | 24.9                                                                              | 23.0                                                                              | 34.7                                                                                | 17.8                                                                                | 17.0                                                                                | 30.6                                                                                | 16.1                                                                                | 15.1                                                                                |
| Level of Service                  | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   | 26.7                                                                              |                                                                                   |                                                                                     | 20.2                                                                                |                                                                                     |                                                                                     | 19.4                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 22.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.30                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 68.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 40.2%                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection             |        |                                                                                   |                                                                                   |      |                                                                                   |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.5    |                                                                                   |                                                                                   |      |                                                                                   |       |
| Movement                 | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR   |
| Lane Configurations      |        |  |  |      |  |       |
| Traffic Vol, veh/h       | 42     | 129                                                                               | 122                                                                               | 23   | 14                                                                                | 47    |
| Future Vol, veh/h        | 42     | 129                                                                               | 122                                                                               | 23   | 14                                                                                | 47    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0     |
| Sign Control             | Free   | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop  |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -                                                                                 | None  |
| Storage Length           | -      | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Grade, %                 | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Peak Hour Factor         | 92     | 92                                                                                | 92                                                                                | 92   | 92                                                                                | 92    |
| Heavy Vehicles, %        | 19     | 19                                                                                | 19                                                                                | 19   | 19                                                                                | 19    |
| Mvmt Flow                | 46     | 140                                                                               | 133                                                                               | 25   | 15                                                                                | 51    |
| Major/Minor              | Major1 | Major2                                                                            | Minor2                                                                            |      |                                                                                   |       |
| Conflicting Flow All     | 158    | 0                                                                                 | -                                                                                 | 0    | 378                                                                               | 146   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 146                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 232                                                                               | -     |
| Critical Hdwy            | 4.29   | -                                                                                 | -                                                                                 | -    | 6.59                                                                              | 6.39  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    | 5.59                                                                              | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    | 5.59                                                                              | -     |
| Follow-up Hdwy           | 2.371  | -                                                                                 | -                                                                                 | -    | 3.671                                                                             | 3.471 |
| Pot Cap-1 Maneuver       | 1324   | -                                                                                 | -                                                                                 | -    | 592                                                                               | 858   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 841                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 768                                                                               | -     |
| Platoon blocked, %       |        | -                                                                                 | -                                                                                 | -    |                                                                                   |       |
| Mov Cap-1 Maneuver       | 1324   | -                                                                                 | -                                                                                 | -    | 570                                                                               | 858   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    | 570                                                                               | -     |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 809                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 768                                                                               | -     |
| Approach                 | EB     | WB                                                                                |                                                                                   | SB   |                                                                                   |       |
| HCM Control Delay, s     | 1.9    | 0                                                                                 |                                                                                   | 10.1 |                                                                                   |       |
| HCM LOS                  |        |                                                                                   |                                                                                   | B    |                                                                                   |       |
| Minor Lane/Major Mvmt    | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBLn1                                                                             |       |
| Capacity (veh/h)         | 1324   | -                                                                                 | -                                                                                 | -    | 769                                                                               |       |
| HCM Lane V/C Ratio       | 0.034  | -                                                                                 | -                                                                                 | -    | 0.086                                                                             |       |
| HCM Control Delay (s)    | 7.8    | 0                                                                                 | -                                                                                 | -    | 10.1                                                                              |       |
| HCM Lane LOS             | A      | A                                                                                 | -                                                                                 | -    | B                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | -                                                                                 | -    | 0.3                                                                               |       |



| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 9.9 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 46   | 83   | 28   | 12   | 64   | 13   | 17   | 91   | 5    | 15   | 108  | 61   |
| Future Vol, veh/h   | 46   | 83   | 28   | 12   | 64   | 13   | 17   | 91   | 5    | 15   | 108  | 61   |
| Peak Hour Factor    | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, %   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   | 26   |
| Mvmt Flow           | 50   | 90   | 30   | 13   | 70   | 14   | 18   | 99   | 5    | 16   | 117  | 66   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB   | WB  | NB  | SB   |
|----------------------------|------|-----|-----|------|
| Opposing Approach          | WB   | EB  | SB  | NB   |
| Opposing Lanes             | 1    | 1   | 1   | 1    |
| Conflicting Approach Left  | SB   | NB  | EB  | WB   |
| Conflicting Lanes Left     | 1    | 1   | 1   | 1    |
| Conflicting Approach Right | NB   | SB  | WB  | EB   |
| Conflicting Lanes Right    | 1    | 1   | 1   | 1    |
| HCM Control Delay          | 10.1 | 9.3 | 9.6 | 10.1 |
| HCM LOS                    | B    | A   | A   | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 15%   | 29%   | 13%   | 8%    |
| Vol Thru, %            | 81%   | 53%   | 72%   | 59%   |
| Vol Right, %           | 4%    | 18%   | 15%   | 33%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 113   | 157   | 89    | 184   |
| LT Vol                 | 17    | 46    | 12    | 15    |
| Through Vol            | 91    | 83    | 64    | 108   |
| RT Vol                 | 5     | 28    | 13    | 61    |
| Lane Flow Rate         | 123   | 171   | 97    | 200   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.181 | 0.249 | 0.144 | 0.28  |
| Departure Headway (Hd) | 5.317 | 5.256 | 5.35  | 5.035 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 671   | 679   | 666   | 710   |
| Service Time           | 3.386 | 3.322 | 3.423 | 3.095 |
| HCM Lane V/C Ratio     | 0.183 | 0.252 | 0.146 | 0.282 |
| HCM Control Delay      | 9.6   | 10.1  | 9.3   | 10.1  |
| HCM Lane LOS           | A     | B     | A     | B     |
| HCM 95th-tile Q        | 0.7   | 1     | 0.5   | 1.1   |

# HCM 6th Signalized Intersection Summary

## 3: 10 1/2 Avenue & Hanford Armona Road

Cumulative Year 2042 Project PM Peak

05/05/2022



| Movement                     | EBL                                                                               | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Configurations          |  |  |       |  |  |       |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 46                                                                                | 307                                                                               | 154   | 65                                                                                | 330                                                                               | 29    | 146                                                                               | 61                                                                                | 16                                                                                  | 27                                                                                  | 61                                                                                  | 64                                                                                  |
| Future Volume (veh/h)        | 46                                                                                | 307                                                                               | 154   | 65                                                                                | 330                                                                               | 29    | 146                                                                               | 61                                                                                | 16                                                                                  | 27                                                                                  | 61                                                                                  | 64                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00  | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |       | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856  | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 50                                                                                | 334                                                                               | 167   | 71                                                                                | 359                                                                               | 32    | 159                                                                               | 66                                                                                | 17                                                                                  | 29                                                                                  | 66                                                                                  | 70                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92  | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 89                                                                                | 414                                                                               | 207   | 111                                                                               | 618                                                                               | 55    | 203                                                                               | 333                                                                               | 282                                                                                 | 59                                                                                  | 182                                                                                 | 154                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.36                                                                              | 0.36  | 0.06                                                                              | 0.37                                                                              | 0.37  | 0.11                                                                              | 0.18                                                                              | 0.18                                                                                | 0.03                                                                                | 0.10                                                                                | 0.10                                                                                |
| Sat Flow, veh/h              | 1767                                                                              | 1166                                                                              | 583   | 1767                                                                              | 1679                                                                              | 150   | 1767                                                                              | 1856                                                                              | 1572                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Grp Volume(v), veh/h         | 50                                                                                | 0                                                                                 | 501   | 71                                                                                | 0                                                                                 | 391   | 159                                                                               | 66                                                                                | 17                                                                                  | 29                                                                                  | 66                                                                                  | 70                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                              | 0                                                                                 | 1749  | 1767                                                                              | 0                                                                                 | 1828  | 1767                                                                              | 1856                                                                              | 1572                                                                                | 1767                                                                                | 1856                                                                                | 1572                                                                                |
| Q Serve(g_s), s              | 1.4                                                                               | 0.0                                                                               | 12.8  | 1.9                                                                               | 0.0                                                                               | 8.5   | 4.3                                                                               | 1.5                                                                               | 0.4                                                                                 | 0.8                                                                                 | 1.6                                                                                 | 2.1                                                                                 |
| Cycle Q Clear(g_c), s        | 1.4                                                                               | 0.0                                                                               | 12.8  | 1.9                                                                               | 0.0                                                                               | 8.5   | 4.3                                                                               | 1.5                                                                               | 0.4                                                                                 | 0.8                                                                                 | 1.6                                                                                 | 2.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.33  | 1.00                                                                              |                                                                                   | 0.08  | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 89                                                                                | 0                                                                                 | 621   | 111                                                                               | 0                                                                                 | 673   | 203                                                                               | 333                                                                               | 282                                                                                 | 59                                                                                  | 182                                                                                 | 154                                                                                 |
| V/C Ratio(X)                 | 0.56                                                                              | 0.00                                                                              | 0.81  | 0.64                                                                              | 0.00                                                                              | 0.58  | 0.78                                                                              | 0.20                                                                              | 0.06                                                                                | 0.49                                                                                | 0.36                                                                                | 0.45                                                                                |
| Avail Cap(c_a), veh/h        | 179                                                                               | 0                                                                                 | 965   | 179                                                                               | 0                                                                                 | 1008  | 283                                                                               | 1088                                                                              | 922                                                                                 | 204                                                                                 | 1016                                                                                | 861                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 22.9                                                                              | 0.0                                                                               | 14.4  | 22.5                                                                              | 0.0                                                                               | 12.5  | 21.2                                                                              | 17.2                                                                              | 16.8                                                                                | 23.4                                                                                | 20.8                                                                                | 21.0                                                                                |
| Incr Delay (d2), s/veh       | 5.5                                                                               | 0.0                                                                               | 2.9   | 5.9                                                                               | 0.0                                                                               | 0.8   | 9.2                                                                               | 0.3                                                                               | 0.1                                                                                 | 6.3                                                                                 | 1.2                                                                                 | 2.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 0.0                                                                               | 4.3   | 0.9                                                                               | 0.0                                                                               | 2.8   | 2.1                                                                               | 0.6                                                                               | 0.1                                                                                 | 0.4                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 28.4                                                                              | 0.0                                                                               | 17.3  | 28.5                                                                              | 0.0                                                                               | 13.3  | 30.5                                                                              | 17.5                                                                              | 16.9                                                                                | 29.7                                                                                | 22.0                                                                                | 23.1                                                                                |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B     | C                                                                                 | A                                                                                 | B     | C                                                                                 | B                                                                                 | B                                                                                   | C                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 551                                                                               |                                                                                   | 462   |                                                                                   |                                                                                   | 242   |                                                                                   |                                                                                   | 165                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 18.3                                                                              |                                                                                   | 15.7  |                                                                                   |                                                                                   | 26.0  |                                                                                   |                                                                                   | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   | B     |                                                                                   |                                                                                   | C     |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3     | 4                                                                                 | 5                                                                                 | 6     | 7                                                                                 | 8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.8                                                                               | 13.7                                                                              | 7.3   | 22.4                                                                              | 9.9                                                                               | 9.7   | 6.7                                                                               | 23.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                             | 4.9                                                                               | * 4.2 | 4.9                                                                               | * 4.2                                                                             | * 4.9 | * 4.2                                                                             | 4.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5.7                                                                             | 28.9                                                                              | * 5   | 27.2                                                                              | * 7.9                                                                             | * 27  | * 5                                                                               | 27.2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.8                                                                               | 3.5                                                                               | 3.9   | 14.8                                                                              | 6.3                                                                               | 4.1   | 3.4                                                                               | 10.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.3                                                                               | 0.0   | 2.5                                                                               | 0.1                                                                               | 0.5   | 0.0                                                                               | 2.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 19.4 |
| HCM 6th LOS        | B    |

### Notes

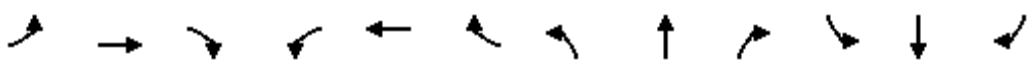
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 3.2                                                                               |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Movement                 | EBT                                                                               | EBR    | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                                |
| Lane Configurations      |  |        |  |  |  |  |
| Traffic Vol, veh/h       | 261                                                                               | 57     | 117                                                                               | 349                                                                               | 53                                                                                | 83                                                                                 |
| Future Vol, veh/h        | 261                                                                               | 57     | 117                                                                               | 349                                                                               | 53                                                                                | 83                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 2      | 2                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Sign Control             | Free                                                                              | Free   | Free                                                                              | Free                                                                              | Stop                                                                              | Stop                                                                               |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None                                                                               |
| Storage Length           | -                                                                                 | -      | 75                                                                                | -                                                                                 | 0                                                                                 | -                                                                                  |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                  |
| Peak Hour Factor         | 92                                                                                | 92     | 92                                                                                | 92                                                                                | 92                                                                                | 92                                                                                 |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                  |
| Mvmt Flow                | 284                                                                               | 62     | 127                                                                               | 379                                                                               | 58                                                                                | 90                                                                                 |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Major/Minor              | Major1                                                                            | Major2 |                                                                                   | Minor1                                                                            |                                                                                   |                                                                                    |
| Conflicting Flow All     | 0                                                                                 | 0      | 348                                                                               | 0                                                                                 | 950                                                                               | 317                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 317                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 633                                                                               | -                                                                                  |
| Critical Hdwy            | -                                                                                 | -      | 4.13                                                                              | -                                                                                 | 6.43                                                                              | 6.23                                                                               |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -                                                                                  |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -                                                                                 | -                                                                                 | 5.43                                                                              | -                                                                                  |
| Follow-up Hdwy           | -                                                                                 | -      | 2.227                                                                             | -                                                                                 | 3.527                                                                             | 3.327                                                                              |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1205                                                                              | -                                                                                 | 287                                                                               | 721                                                                                |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 736                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 527                                                                               | -                                                                                  |
| Platoon blocked, %       | -                                                                                 | -      |                                                                                   | -                                                                                 |                                                                                   |                                                                                    |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1203                                                                              | -                                                                                 | 256                                                                               | 720                                                                                |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -                                                                                 | -                                                                                 | 369                                                                               | -                                                                                  |
| Stage 1                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 735                                                                               | -                                                                                  |
| Stage 2                  | -                                                                                 | -      | -                                                                                 | -                                                                                 | 471                                                                               | -                                                                                  |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Approach                 | EB                                                                                | WB     |                                                                                   | NB                                                                                |                                                                                   |                                                                                    |
| HCM Control Delay, s     | 0                                                                                 | 2.1    |                                                                                   | 14.5                                                                              |                                                                                   |                                                                                    |
| HCM LOS                  | B                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR                                                                               | WBL                                                                               | WBT                                                                               |                                                                                    |
| Capacity (veh/h)         | 525                                                                               | -      | -                                                                                 | 1203                                                                              | -                                                                                 |                                                                                    |
| HCM Lane V/C Ratio       | 0.282                                                                             | -      | -                                                                                 | 0.106                                                                             | -                                                                                 |                                                                                    |
| HCM Control Delay (s)    | 14.5                                                                              | -      | -                                                                                 | 8.3                                                                               | -                                                                                 |                                                                                    |
| HCM Lane LOS             | B                                                                                 | -      | -                                                                                 | A                                                                                 | -                                                                                 |                                                                                    |
| HCM 95th %tile O(veh)    | 1.1                                                                               | -      | -                                                                                 | 0.4                                                                               | -                                                                                 |                                                                                    |

# HCM 6th Signalized Intersection Summary 5: 10th Avenue & Hanford Armona Road

Cumulative Year 2042 Project PM Peak

05/05/2022

|                              |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |       |       |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR   | NBL   | NBT                                                                               | NBR                                                                               | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |   |  |  |  |  |       |       |  |  |  |  |  |
| Traffic Volume (veh/h)       | 197                                                                                | 25                                                                                | 127                                                                               | 21                                                                                | 28                                                                                | 42    | 176   | 397                                                                               | 15                                                                                | 48                                                                                  | 302                                                                                 | 277                                                                                 |
| Future Volume (veh/h)        | 197                                                                                | 25                                                                                | 127                                                                               | 21                                                                                | 28                                                                                | 42    | 176   | 397                                                                               | 15                                                                                | 48                                                                                  | 302                                                                                 | 277                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0     | 0     | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99  | 1.00  |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                 |                                                                                   |                                                                                   |                                                                                   | No                                                                                |       |       |                                                                                   | No                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                               | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856                                                                              | 1856  | 1856  | 1856                                                                              | 1856                                                                              | 1856                                                                                | 1856                                                                                | 1856                                                                                |
| Adj Flow Rate, veh/h         | 207                                                                                | 26                                                                                | 134                                                                               | 22                                                                                | 29                                                                                | 44    | 185   | 418                                                                               | 16                                                                                | 51                                                                                  | 318                                                                                 | 292                                                                                 |
| Peak Hour Factor             | 0.95                                                                               | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95  | 0.95  | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 3                                                                                  | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3     | 3     | 3                                                                                 | 3                                                                                 | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 259                                                                                | 420                                                                               | 354                                                                               | 46                                                                                | 70                                                                                | 106   | 233   | 641                                                                               | 541                                                                               | 87                                                                                  | 488                                                                                 | 411                                                                                 |
| Arrive On Green              | 0.15                                                                               | 0.23                                                                              | 0.23                                                                              | 0.03                                                                              | 0.11                                                                              | 0.11  | 0.13  | 0.35                                                                              | 0.35                                                                              | 0.05                                                                                | 0.26                                                                                | 0.26                                                                                |
| Sat Flow, veh/h              | 1767                                                                               | 1856                                                                              | 1566                                                                              | 1767                                                                              | 663                                                                               | 1005  | 1767  | 1856                                                                              | 1566                                                                              | 1767                                                                                | 1856                                                                                | 1564                                                                                |
| Grp Volume(v), veh/h         | 207                                                                                | 26                                                                                | 134                                                                               | 22                                                                                | 0                                                                                 | 73    | 185   | 418                                                                               | 16                                                                                | 51                                                                                  | 318                                                                                 | 292                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1767                                                                               | 1856                                                                              | 1566                                                                              | 1767                                                                              | 0                                                                                 | 1668  | 1767  | 1856                                                                              | 1566                                                                              | 1767                                                                                | 1856                                                                                | 1564                                                                                |
| Q Serve(g_s), s              | 6.2                                                                                | 0.6                                                                               | 4.0                                                                               | 0.7                                                                               | 0.0                                                                               | 2.3   | 5.6   | 10.5                                                                              | 0.4                                                                               | 1.6                                                                                 | 8.4                                                                                 | 9.3                                                                                 |
| Cycle Q Clear(g_c), s        | 6.2                                                                                | 0.6                                                                               | 4.0                                                                               | 0.7                                                                               | 0.0                                                                               | 2.3   | 5.6   | 10.5                                                                              | 0.4                                                                               | 1.6                                                                                 | 8.4                                                                                 | 9.3                                                                                 |
| Prop In Lane                 | 1.00                                                                               |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.60  | 1.00  |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 259                                                                                | 420                                                                               | 354                                                                               | 46                                                                                | 0                                                                                 | 177   | 233   | 641                                                                               | 541                                                                               | 87                                                                                  | 488                                                                                 | 411                                                                                 |
| V/C Ratio(X)                 | 0.80                                                                               | 0.06                                                                              | 0.38                                                                              | 0.48                                                                              | 0.00                                                                              | 0.41  | 0.79  | 0.65                                                                              | 0.03                                                                              | 0.59                                                                                | 0.65                                                                                | 0.71                                                                                |
| Avail Cap(c_a), veh/h        | 379                                                                                | 1404                                                                              | 1184                                                                              | 180                                                                               | 0                                                                                 | 1061  | 347   | 1130                                                                              | 954                                                                               | 170                                                                                 | 958                                                                                 | 807                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                               | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00  | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 22.7                                                                               | 16.7                                                                              | 18.0                                                                              | 26.4                                                                              | 0.0                                                                               | 23.0  | 23.1  | 15.2                                                                              | 11.9                                                                              | 25.6                                                                                | 18.0                                                                                | 18.4                                                                                |
| Incr Delay (d2), s/veh       | 7.4                                                                                | 0.1                                                                               | 0.7                                                                               | 7.6                                                                               | 0.0                                                                               | 1.5   | 7.3   | 1.1                                                                               | 0.0                                                                               | 6.1                                                                                 | 1.5                                                                                 | 2.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.8                                                                                | 0.2                                                                               | 1.3                                                                               | 0.3                                                                               | 0.0                                                                               | 0.8   | 2.4   | 3.6                                                                               | 0.1                                                                               | 0.7                                                                                 | 3.2                                                                                 | 3.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |       |       |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 30.1                                                                               | 16.8                                                                              | 18.7                                                                              | 34.0                                                                              | 0.0                                                                               | 24.5  | 30.5  | 16.3                                                                              | 11.9                                                                              | 31.7                                                                                | 19.5                                                                                | 20.7                                                                                |
| LnGrp LOS                    | C                                                                                  | B                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | C     | C     | B                                                                                 | B                                                                                 | C                                                                                   | B                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 367                                                                                |                                                                                   |                                                                                   |                                                                                   | 95                                                                                |       |       |                                                                                   | 619                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 25.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 26.7                                                                              |       |       |                                                                                   | 20.4                                                                              |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                  |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |       |       |                                                                                   | C                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                  | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6     | 7     | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 6.9                                                                                | 24.7                                                                              | 5.6                                                                               | 17.7                                                                              | 11.5                                                                              | 20.2  | 12.3  | 11.1                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 4.2                                                                              | 5.7                                                                               | * 4.2                                                                             | * 5.3                                                                             | * 4.2                                                                             | * 5.7 | * 4.2 | 5.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 5.3                                                                              | 33.5                                                                              | * 5.6                                                                             | * 42                                                                              | * 11                                                                              | * 28  | * 12  | 35.0                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.6                                                                                | 12.5                                                                              | 2.7                                                                               | 6.0                                                                               | 7.6                                                                               | 11.3  | 8.2   | 4.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                                | 2.2                                                                               | 0.0                                                                               | 0.6                                                                               | 0.1                                                                               | 2.5   | 0.2   | 0.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 21.9 |
| HCM 6th LOS        | C    |

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| Intersection             |                                                                                   |          |                                                                                   |       |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.6                                                                               |          |                                                                                   |       |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |       |       |  |
| Traffic Vol, veh/h       | 13                                                                                | 31       | 105                                                                               | 28    | 47    | 81                                                                                |
| Future Vol, veh/h        | 13                                                                                | 31       | 105                                                                               | 28    | 47    | 81                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -     | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92    | 92    | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3     | 3                                                                                 |
| Mvmt Flow                | 14                                                                                | 34       | 114                                                                               | 30    | 51    | 88                                                                                |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |       |                                                                                   |
| Conflicting Flow All     | 319                                                                               | 129      | 0                                                                                 | 0     | 144   | 0                                                                                 |
| Stage 1                  | 129                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 190                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 672                                                                               | 918      | -                                                                                 | -     | 1432  | -                                                                                 |
| Stage 1                  | 894                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 840                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 647                                                                               | 918      | -                                                                                 | -     | 1432  | -                                                                                 |
| Mov Cap-2 Maneuver       | 647                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 1                  | 894                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Stage 2                  | 809                                                                               | -        | -                                                                                 | -     | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |       |                                                                                   |
| HCM Control Delay, s     | 9.7                                                                               | 0        | 2.8                                                                               |       |       |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |       |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 817                                                                               | 1432  | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.059                                                                             | 0.036 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 9.7                                                                               | 7.6   | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | A                                                                                 | A     | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.2                                                                               | 0.1   | -     |                                                                                   |

# HCM Signalized Intersection Capacity Analysis

## 7: 11th Avenue & Houston Avenue

Cumulative Year 2042 Project PM Peak

05/05/2022

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations               |                                                                                   |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 1                                                                                 | 61                                                                                | 269                                                                               | 52                                                                                | 35                                                                                | 229                                                                               | 82                                                                                  | 114                                                                                 | 529                                                                                 | 83                                                                                  | 55                                                                                  | 155                                                                                 |
| Future Volume (vph)               | 1                                                                                 | 61                                                                                | 269                                                                               | 52                                                                                | 35                                                                                | 229                                                                               | 82                                                                                  | 114                                                                                 | 529                                                                                 | 83                                                                                  | 55                                                                                  | 155                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                |
| Flt Protected                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Flt Permitted                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 1                                                                                 | 66                                                                                | 292                                                                               | 57                                                                                | 38                                                                                | 249                                                                               | 89                                                                                  | 124                                                                                 | 575                                                                                 | 90                                                                                  | 60                                                                                  | 168                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 40                                                                                | 0                                                                                 | 0                                                                                 | 65                                                                                  | 0                                                                                   | 0                                                                                   | 63                                                                                  | 0                                                                                   | 0                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 67                                                                                | 292                                                                               | 17                                                                                | 38                                                                                | 249                                                                               | 24                                                                                  | 124                                                                                 | 575                                                                                 | 27                                                                                  | 60                                                                                  | 168                                                                                 |
| Heavy Vehicles (%)                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Turn Type                         | Prot                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases                  | 7                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             |                                                                                   | 7.3                                                                               | 22.4                                                                              | 22.4                                                                              | 4.9                                                                               | 20.3                                                                              | 20.3                                                                                | 8.0                                                                                 | 21.9                                                                                | 21.9                                                                                | 4.9                                                                                 | 19.2                                                                                |
| Effective Green, g (s)            |                                                                                   | 7.3                                                                               | 22.4                                                                              | 22.4                                                                              | 4.9                                                                               | 20.3                                                                              | 20.3                                                                                | 8.0                                                                                 | 21.9                                                                                | 21.9                                                                                | 4.9                                                                                 | 19.2                                                                                |
| Actuated g/C Ratio                |                                                                                   | 0.10                                                                              | 0.30                                                                              | 0.30                                                                              | 0.07                                                                              | 0.27                                                                              | 0.27                                                                                | 0.11                                                                                | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.26                                                                                |
| Clearance Time (s)                |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 169                                                                               | 546                                                                               | 464                                                                               | 113                                                                               | 495                                                                               | 420                                                                                 | 185                                                                                 | 1014                                                                                | 453                                                                                 | 113                                                                                 | 468                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.04                                                                             | c0.16                                                                             |                                                                                   | 0.02                                                                              | 0.14                                                                              |                                                                                     | c0.07                                                                               | c0.17                                                                               |                                                                                     | 0.03                                                                                | 0.09                                                                                |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                   |                                                                                   | 0.02                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         |                                                                                   | 0.40                                                                              | 0.53                                                                              | 0.04                                                                              | 0.34                                                                              | 0.50                                                                              | 0.06                                                                                | 0.67                                                                                | 0.57                                                                                | 0.06                                                                                | 0.53                                                                                | 0.36                                                                                |
| Uniform Delay, d1                 |                                                                                   | 31.4                                                                              | 21.6                                                                              | 18.3                                                                              | 33.1                                                                              | 22.7                                                                              | 19.9                                                                                | 31.8                                                                                | 22.1                                                                                | 18.8                                                                                | 33.5                                                                                | 22.5                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 1.5                                                                               | 1.0                                                                               | 0.0                                                                               | 1.8                                                                               | 0.8                                                                               | 0.1                                                                                 | 9.2                                                                                 | 0.7                                                                                 | 0.1                                                                                 | 4.7                                                                                 | 0.5                                                                                 |
| Delay (s)                         |                                                                                   | 32.9                                                                              | 22.6                                                                              | 18.3                                                                              | 34.9                                                                              | 23.5                                                                              | 20.0                                                                                | 41.0                                                                                | 22.9                                                                                | 18.8                                                                                | 38.3                                                                                | 22.9                                                                                |
| Level of Service                  |                                                                                   | C                                                                                 | C                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   |                                                                                   | 23.7                                                                              |                                                                                   |                                                                                   | 23.8                                                                              |                                                                                     |                                                                                     | 25.3                                                                                |                                                                                     |                                                                                     | 25.6                                                                                |
| Approach LOS                      |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 24.7                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 74.2                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 62.2%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                        |      |
|------------------------|------|
| Movement               | SBR  |
| Lane Configurations    |      |
| Traffic Volume (vph)   | 57   |
| Future Volume (vph)    | 57   |
| Ideal Flow (vphpl)     | 1900 |
| Total Lost time (s)    | 5.3  |
| Lane Util. Factor      | 1.00 |
| Frt                    | 0.85 |
| Flt Protected          | 1.00 |
| Satd. Flow (prot)      | 1538 |
| Flt Permitted          | 1.00 |
| Satd. Flow (perm)      | 1538 |
| Peak-hour factor, PHF  | 0.92 |
| Adj. Flow (vph)        | 62   |
| RTOR Reduction (vph)   | 46   |
| Lane Group Flow (vph)  | 16   |
| Heavy Vehicles (%)     | 5%   |
| Turn Type              | Perm |
| Protected Phases       |      |
| Permitted Phases       | 6    |
| Actuated Green, G (s)  | 19.2 |
| Effective Green, g (s) | 19.2 |
| Actuated g/C Ratio     | 0.26 |
| Clearance Time (s)     | 5.3  |
| Vehicle Extension (s)  | 3.0  |
| Lane Grp Cap (vph)     | 397  |
| v/s Ratio Prot         |      |
| v/s Ratio Perm         | 0.01 |
| v/c Ratio              | 0.04 |
| Uniform Delay, d1      | 20.6 |
| Progression Factor     | 1.00 |
| Incremental Delay, d2  | 0.0  |
| Delay (s)              | 20.6 |
| Level of Service       | C    |
| Approach Delay (s)     |      |
| Approach LOS           |      |
| Intersection Summary   |      |

| Intersection             |        |                                                                                   |                                                                                   |      |                                                                                   |       |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.4    |                                                                                   |                                                                                   |      |                                                                                   |       |
| Movement                 | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBL                                                                               | SBR   |
| Lane Configurations      |        |  |  |      |  |       |
| Traffic Vol, veh/h       | 85     | 222                                                                               | 244                                                                               | 27   | 21                                                                                | 54    |
| Future Vol, veh/h        | 85     | 222                                                                               | 244                                                                               | 27   | 21                                                                                | 54    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0     |
| Sign Control             | Free   | Free                                                                              | Free                                                                              | Free | Stop                                                                              | Stop  |
| RT Channelized           | -      | None                                                                              | -                                                                                 | None | -                                                                                 | None  |
| Storage Length           | -      | -                                                                                 | -                                                                                 | -    | 0                                                                                 | -     |
| Veh in Median Storage, # | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Grade, %                 | -      | 0                                                                                 | 0                                                                                 | -    | 0                                                                                 | -     |
| Peak Hour Factor         | 93     | 93                                                                                | 93                                                                                | 93   | 93                                                                                | 93    |
| Heavy Vehicles, %        | 3      | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3     |
| Mvmt Flow                | 91     | 239                                                                               | 262                                                                               | 29   | 23                                                                                | 58    |
| Major/Minor              | Major1 | Major2                                                                            | Minor2                                                                            |      |                                                                                   |       |
| Conflicting Flow All     | 291    | 0                                                                                 | -                                                                                 | 0    | 698                                                                               | 277   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 277                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 421                                                                               | -     |
| Critical Hdwy            | 4.13   | -                                                                                 | -                                                                                 | -    | 6.43                                                                              | 6.23  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -    | 5.43                                                                              | -     |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -    | 5.43                                                                              | -     |
| Follow-up Hdwy           | 2.227  | -                                                                                 | -                                                                                 | -    | 3.527                                                                             | 3.327 |
| Pot Cap-1 Maneuver       | 1265   | -                                                                                 | -                                                                                 | -    | 405                                                                               | 759   |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 767                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 660                                                                               | -     |
| Platoon blocked, %       |        | -                                                                                 | -                                                                                 | -    |                                                                                   |       |
| Mov Cap-1 Maneuver       | 1265   | -                                                                                 | -                                                                                 | -    | 371                                                                               | 759   |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -    | 371                                                                               | -     |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -    | 703                                                                               | -     |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -    | 660                                                                               | -     |
| Approach                 | EB     | WB                                                                                |                                                                                   | SB   |                                                                                   |       |
| HCM Control Delay, s     | 2.2    | 0                                                                                 |                                                                                   | 12.1 |                                                                                   |       |
| HCM LOS                  |        |                                                                                   |                                                                                   | B    |                                                                                   |       |
| Minor Lane/Major Mvmt    | EBL    | EBT                                                                               | WBT                                                                               | WBR  | SBLn1                                                                             |       |
| Capacity (veh/h)         | 1265   | -                                                                                 | -                                                                                 | -    | 587                                                                               |       |
| HCM Lane V/C Ratio       | 0.072  | -                                                                                 | -                                                                                 | -    | 0.137                                                                             |       |
| HCM Control Delay (s)    | 8.1    | 0                                                                                 | -                                                                                 | -    | 12.1                                                                              |       |
| HCM Lane LOS             | A      | A                                                                                 | -                                                                                 | -    | B                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0.2    | -                                                                                 | -                                                                                 | -    | 0.5                                                                               |       |



| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 14.8 |
| Intersection LOS          | B    |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 102  | 96   | 25   | 8    | 161  | 51   | 38   | 282  | 8    | 43   | 151  | 89   |
| Future Vol, veh/h   | 102  | 96   | 25   | 8    | 161  | 51   | 38   | 282  | 8    | 43   | 151  | 89   |
| Peak Hour Factor    | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles, %   | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| Mvmt Flow           | 104  | 98   | 26   | 8    | 164  | 52   | 39   | 288  | 8    | 44   | 154  | 91   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB   | WB   | NB   | SB   |
|----------------------------|------|------|------|------|
| Opposing Approach          | WB   | EB   | SB   | NB   |
| Opposing Lanes             | 1    | 1    | 1    | 1    |
| Conflicting Approach Left  | SB   | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1    | 1    | 1    |
| Conflicting Approach Right | NB   | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1    | 1    | 1    |
| HCM Control Delay          | 13.8 | 13.4 | 16.6 | 14.5 |
| HCM LOS                    | B    | B    | C    | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 12%   | 46%   | 4%    | 15%   |
| Vol Thru, %            | 86%   | 43%   | 73%   | 53%   |
| Vol Right, %           | 2%    | 11%   | 23%   | 31%   |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 328   | 223   | 220   | 283   |
| LT Vol                 | 38    | 102   | 8     | 43    |
| Through Vol            | 282   | 96    | 161   | 151   |
| RT Vol                 | 8     | 25    | 51    | 89    |
| Lane Flow Rate         | 335   | 228   | 224   | 289   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.562 | 0.406 | 0.392 | 0.48  |
| Departure Headway (Hd) | 6.049 | 6.426 | 6.287 | 5.986 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 596   | 560   | 572   | 601   |
| Service Time           | 4.09  | 4.474 | 4.336 | 4.029 |
| HCM Lane V/C Ratio     | 0.562 | 0.407 | 0.392 | 0.481 |
| HCM Control Delay      | 16.6  | 13.8  | 13.4  | 14.5  |
| HCM Lane LOS           | C     | B     | B     | B     |
| HCM 95th-tile Q        | 3.5   | 2     | 1.9   | 2.6   |

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  |
| Maximum Queue (ft)    | 100 | 94  | 112 | 79  | 77  | 55 | 94  |
| Average Queue (ft)    | 58  | 51  | 47  | 38  | 34  | 29 | 55  |
| 95th Queue (ft)       | 90  | 81  | 78  | 58  | 64  | 55 | 88  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |
| Storage Blk Time (%)  |     |     |     |     | 0   |    |     |
| Queuing Penalty (veh) |     |     |     |     | 0   |    |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R   |
| Maximum Queue (ft)    | 230 | 93  | 180 | 175 | 235 | 188 | 93  |
| Average Queue (ft)    | 74  | 40  | 77  | 78  | 121 | 49  | 49  |
| 95th Queue (ft)       | 156 | 76  | 136 | 144 | 195 | 144 | 82  |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |     |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |
| Storage Bay Dist (ft) |     | 295 |     |     |     |     | 105 |
| Storage Blk Time (%)  |     |     |     |     |     | 0   | 0   |
| Queuing Penalty (veh) |     |     |     |     |     | 0   | 0   |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L  | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 89  | 169  | 58 | 212  | 137 | 75  | 65 | 31  | 89  | 52  |
| Average Queue (ft)    | 36  | 71   | 18 | 66   | 65  | 35  | 18 | 9   | 18  | 12  |
| 95th Queue (ft)       | 73  | 128  | 49 | 139  | 112 | 66  | 47 | 32  | 61  | 37  |
| Link Distance (ft)    |     | 1346 |    | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |    |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |    |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95 |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     | 0    |    | 3    | 0   |     |    |     | 0   |     |
| Queuing Penalty (veh) |     | 0    |    | 1    | 0   |     |    |     | 0   |     |

Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB |
|-----------------------|------|----|
| Directions Served     | L    | LR |
| Maximum Queue (ft)    | 31   | 74 |
| Average Queue (ft)    | 5    | 43 |
| 95th Queue (ft)       | 22   | 65 |
| Link Distance (ft)    | 1339 |    |
| Upstream Blk Time (%) |      |    |
| Queuing Penalty (veh) |      |    |
| Storage Bay Dist (ft) | 75   |    |
| Storage Blk Time (%)  |      |    |
| Queuing Penalty (veh) |      |    |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB | EB | WB  | WB | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|----|----|-----|----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T  | R  | L   | TR | L   | T   | L   | T   | R   |
| Maximum Queue (ft)    | 149 | 75 | 61 | 30  | 52 | 94  | 178 | 31  | 159 | 133 |
| Average Queue (ft)    | 86  | 5  | 21 | 4   | 19 | 37  | 59  | 8   | 65  | 46  |
| 95th Queue (ft)       | 140 | 28 | 44 | 19  | 46 | 77  | 130 | 29  | 130 | 95  |
| Link Distance (ft)    | 936 |    |    | 372 |    |     | 448 |     | 399 |     |
| Upstream Blk Time (%) |     |    |    |     |    |     |     |     |     |     |
| Queuing Penalty (veh) |     |    |    |     |    |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |    | 55 | 155 |    | 155 |     | 110 |     | 265 |
| Storage Blk Time (%)  | 4   | 0  | 0  |     |    |     | 2   |     | 1   |     |
| Queuing Penalty (veh) | 3   | 0  | 1  |     |    |     | 1   |     | 1   |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              | WB  | SB   |
|-----------------------|-----|------|
| Directions Served     | LR  | LT   |
| Maximum Queue (ft)    | 90  | 27   |
| Average Queue (ft)    | 29  | 1    |
| 95th Queue (ft)       | 59  | 9    |
| Link Distance (ft)    | 862 | 2833 |
| Upstream Blk Time (%) |     |      |
| Queuing Penalty (veh) |     |      |
| Storage Bay Dist (ft) |     |      |
| Storage Blk Time (%)  |     |      |
| Queuing Penalty (veh) |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB  | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB   |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Directions Served     | UL  | T   | R   | L   | T   | R   | L   | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 96  | 136 | 57  | 48  | 132 | 43  | 109 | 92  | 128 | 74  | 87  | 109  |
| Average Queue (ft)    | 47  | 57  | 17  | 24  | 59  | 12  | 33  | 33  | 29  | 13  | 33  | 38   |
| 95th Queue (ft)       | 94  | 117 | 45  | 47  | 111 | 31  | 77  | 67  | 82  | 39  | 71  | 82   |
| Link Distance (ft)    |     | 680 |     |     | 436 |     |     | 276 | 276 |     |     | 1524 |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |      |
| Storage Bay Dist (ft) | 165 |     | 150 | 175 |     | 175 | 175 |     |     | 100 | 250 |      |
| Storage Blk Time (%)  |     | 0   |     |     |     |     |     |     | 0   |     |     |      |
| Queuing Penalty (veh) |     | 0   |     |     |     |     |     |     | 0   |     |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 35   |
| Average Queue (ft)    | 11   |
| 95th Queue (ft)       | 27   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | EB   | SB   |
|-----------------------|------|------|
| Directions Served     | LT   | LR   |
| Maximum Queue (ft)    | 62   | 70   |
| Average Queue (ft)    | 9    | 35   |
| 95th Queue (ft)       | 36   | 62   |
| Link Distance (ft)    | 2076 | 2057 |
| Upstream Blk Time (%) |      |      |
| Queuing Penalty (veh) |      |      |
| Storage Bay Dist (ft) |      |      |
| Storage Blk Time (%)  |      |      |
| Queuing Penalty (veh) |      |      |

Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 117  | 79   | 74   | 124  |
| Average Queue (ft)    | 59   | 40   | 44   | 59   |
| 95th Queue (ft)       | 93   | 62   | 70   | 100  |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | SE  |
|-----------------------|-----|
| Directions Served     | L   |
| Maximum Queue (ft)    | 75  |
| Average Queue (ft)    | 34  |
| 95th Queue (ft)       | 66  |
| Link Distance (ft)    | 209 |
| Upstream Blk Time (%) |     |
| Queuing Penalty (veh) |     |
| Storage Bay Dist (ft) |     |
| Storage Blk Time (%)  |     |
| Queuing Penalty (veh) |     |

Network Summary

|                                 |
|---------------------------------|
| Network wide Queuing Penalty: 9 |
|---------------------------------|

Intersection: 1: Douty St & 3rd Street

| Movement              | EB  | EB  | EB  | NB  | NB  | NB | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Directions Served     | L   | T   | TR  | T   | T   | R  | LT  | T   |
| Maximum Queue (ft)    | 146 | 209 | 181 | 74  | 77  | 78 | 243 | 56  |
| Average Queue (ft)    | 75  | 91  | 89  | 39  | 40  | 26 | 104 | 20  |
| 95th Queue (ft)       | 123 | 153 | 139 | 60  | 64  | 54 | 177 | 53  |
| Link Distance (ft)    | 320 | 320 | 320 | 356 | 356 |    | 787 | 787 |
| Upstream Blk Time (%) |     |     |     |     |     |    |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |    |     |     |
| Storage Bay Dist (ft) |     |     |     |     |     | 90 |     |     |
| Storage Blk Time (%)  |     |     |     |     | 0   | 0  |     |     |
| Queuing Penalty (veh) |     |     |     |     | 0   | 0  |     |     |

Intersection: 2: 10th Avenue & 4th Street/SR-198 WB Off Ramp

| Movement              | WB  | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served     | LTR | L   | T   | T   | T   | T   | R   |
| Maximum Queue (ft)    | 223 | 345 | 488 | 463 | 345 | 283 | 225 |
| Average Queue (ft)    | 94  | 276 | 277 | 173 | 227 | 166 | 58  |
| 95th Queue (ft)       | 156 | 421 | 561 | 381 | 327 | 278 | 135 |
| Link Distance (ft)    | 775 |     | 759 | 759 | 758 | 758 |     |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |
| Storage Bay Dist (ft) |     | 295 |     |     |     |     | 105 |
| Storage Blk Time (%)  |     | 51  | 0   |     |     | 3   |     |
| Queuing Penalty (veh) |     | 256 | 0   |     |     | 6   |     |

Intersection: 3: 10 1/2 Avenue & Hanford Armona Road

| Movement              | EB  | EB   | WB  | WB   | NB  | NB  | NB | SB  | SB  | SB  |
|-----------------------|-----|------|-----|------|-----|-----|----|-----|-----|-----|
| Directions Served     | L   | TR   | L   | TR   | L   | T   | R  | L   | T   | R   |
| Maximum Queue (ft)    | 219 | 420  | 174 | 209  | 214 | 230 | 31 | 51  | 77  | 53  |
| Average Queue (ft)    | 45  | 186  | 65  | 104  | 92  | 41  | 8  | 21  | 36  | 30  |
| 95th Queue (ft)       | 143 | 324  | 140 | 186  | 149 | 108 | 29 | 49  | 72  | 57  |
| Link Distance (ft)    |     | 1346 |     | 1547 |     | 396 |    |     | 386 |     |
| Upstream Blk Time (%) |     |      |     |      |     |     |    |     |     |     |
| Queuing Penalty (veh) |     |      |     |      |     |     |    |     |     |     |
| Storage Bay Dist (ft) | 150 |      | 95  |      | 150 |     | 95 | 150 |     | 100 |
| Storage Blk Time (%)  |     | 14   | 2   | 9    | 2   | 0   |    |     |     |     |
| Queuing Penalty (veh) |     | 6    | 8   | 6    | 2   | 0   |    |     |     |     |

Intersection: 4: Jordan Way & Hanford Armona Road

| Movement              | WB   | NB |
|-----------------------|------|----|
| Directions Served     | L    | LR |
| Maximum Queue (ft)    | 75   | 96 |
| Average Queue (ft)    | 24   | 44 |
| 95th Queue (ft)       | 52   | 71 |
| Link Distance (ft)    | 1339 |    |
| Upstream Blk Time (%) |      |    |
| Queuing Penalty (veh) |      |    |
| Storage Bay Dist (ft) | 75   |    |
| Storage Blk Time (%)  | 0    |    |
| Queuing Penalty (veh) | 0    |    |

Intersection: 5: 10th Avenue & Hanford Armona Road

| Movement              | EB  | EB  | EB | WB  | WB | NB  | NB  | NB  | SB  | SB  | SB  |
|-----------------------|-----|-----|----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served     | L   | T   | R  | L   | TR | L   | T   | R   | L   | T   | R   |
| Maximum Queue (ft)    | 162 | 194 | 80 | 52  | 94 | 136 | 211 | 44  | 194 | 336 | 357 |
| Average Queue (ft)    | 93  | 21  | 28 | 17  | 44 | 86  | 111 | 4   | 42  | 133 | 86  |
| 95th Queue (ft)       | 153 | 79  | 57 | 41  | 91 | 134 | 198 | 22  | 99  | 258 | 187 |
| Link Distance (ft)    | 936 |     |    | 372 |    |     | 448 |     |     | 399 |     |
| Upstream Blk Time (%) |     |     |    |     |    |     |     |     |     |     |     |
| Queuing Penalty (veh) |     |     |    |     |    |     |     |     |     |     |     |
| Storage Bay Dist (ft) | 105 |     | 55 | 155 |    | 155 |     | 130 | 110 |     | 265 |
| Storage Blk Time (%)  | 8   | 0   | 1  |     |    | 0   | 5   |     |     | 11  |     |
| Queuing Penalty (veh) | 13  | 0   | 2  |     |    | 0   | 10  |     |     | 35  |     |

Intersection: 6: 10 1/2 Avenue & Orchard Avenue

| Movement              | WB  | SB   |
|-----------------------|-----|------|
| Directions Served     | LR  | LT   |
| Maximum Queue (ft)    | 31  | 31   |
| Average Queue (ft)    | 27  | 4    |
| 95th Queue (ft)       | 42  | 19   |
| Link Distance (ft)    | 862 | 2833 |
| Upstream Blk Time (%) |     |      |
| Queuing Penalty (veh) |     |      |
| Storage Bay Dist (ft) |     |      |
| Storage Blk Time (%)  |     |      |
| Queuing Penalty (veh) |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | EB  | EB  | EB  | WB  | WB  | WB  | NB  | NB  | NB  | NB  | SB  | SB   |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Directions Served     | UL  | T   | R   | L   | T   | R   | L   | T   | T   | R   | L   | T    |
| Maximum Queue (ft)    | 112 | 219 | 44  | 69  | 187 | 43  | 104 | 152 | 171 | 62  | 69  | 216  |
| Average Queue (ft)    | 37  | 90  | 16  | 19  | 77  | 20  | 50  | 89  | 83  | 21  | 33  | 78   |
| 95th Queue (ft)       | 76  | 162 | 36  | 50  | 165 | 38  | 83  | 149 | 143 | 43  | 70  | 172  |
| Link Distance (ft)    |     | 680 |     |     | 436 |     |     | 276 | 276 |     |     | 1524 |
| Upstream Blk Time (%) |     |     |     |     |     |     |     |     |     |     |     |      |
| Queuing Penalty (veh) |     |     |     |     |     |     |     |     |     |     |     |      |
| Storage Bay Dist (ft) | 165 |     | 150 | 175 |     | 175 | 175 |     |     | 100 | 250 |      |
| Storage Blk Time (%)  |     | 2   |     |     | 1   |     |     |     | 5   |     |     |      |
| Queuing Penalty (veh) |     | 2   |     |     | 1   |     |     |     | 4   |     |     |      |

Intersection: 7: 11th Avenue & Houston Avenue

| Movement              | SB   |
|-----------------------|------|
| Directions Served     | R    |
| Maximum Queue (ft)    | 33   |
| Average Queue (ft)    | 12   |
| 95th Queue (ft)       | 25   |
| Link Distance (ft)    | 1524 |
| Upstream Blk Time (%) |      |
| Queuing Penalty (veh) |      |
| Storage Bay Dist (ft) |      |
| Storage Blk Time (%)  |      |
| Queuing Penalty (veh) |      |

Intersection: 8: Houston Avenue & 10 1/2 Avenue

| Movement              | EB   | SB   |
|-----------------------|------|------|
| Directions Served     | LT   | LR   |
| Maximum Queue (ft)    | 52   | 74   |
| Average Queue (ft)    | 20   | 33   |
| 95th Queue (ft)       | 45   | 58   |
| Link Distance (ft)    | 2076 | 2057 |
| Upstream Blk Time (%) |      |      |
| Queuing Penalty (veh) |      |      |
| Storage Bay Dist (ft) |      |      |
| Storage Blk Time (%)  |      |      |
| Queuing Penalty (veh) |      |      |



Intersection: 9: 10th Avenue & Houston Avenue

| Movement              | EB   | WB   | NB   | SB   |
|-----------------------|------|------|------|------|
| Directions Served     | LTR  | LTR  | LTR  | LTR  |
| Maximum Queue (ft)    | 118  | 184  | 160  | 189  |
| Average Queue (ft)    | 51   | 61   | 69   | 73   |
| 95th Queue (ft)       | 84   | 119  | 119  | 138  |
| Link Distance (ft)    | 2557 | 1661 | 1092 | 4776 |
| Upstream Blk Time (%) |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |
| Storage Bay Dist (ft) |      |      |      |      |
| Storage Blk Time (%)  |      |      |      |      |
| Queuing Penalty (veh) |      |      |      |      |

Intersection: 10: 3rd Street & SR-198 EB Off Ramp

| Movement              | EB  | SE  |
|-----------------------|-----|-----|
| Directions Served     | T   | L   |
| Maximum Queue (ft)    | 75  | 243 |
| Average Queue (ft)    | 9   | 95  |
| 95th Queue (ft)       | 40  | 204 |
| Link Distance (ft)    | 361 | 209 |
| Upstream Blk Time (%) |     | 3   |
| Queuing Penalty (veh) |     | 0   |
| Storage Bay Dist (ft) |     |     |
| Storage Blk Time (%)  |     |     |
| Queuing Penalty (veh) |     |     |

Network Summary

|                                   |
|-----------------------------------|
| Network wide Queuing Penalty: 351 |
|-----------------------------------|

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                                           |
|---------------------|--------------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 556  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.72 | Total Trucks, %                  | 4.02 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.33 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52197  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44139 | PF Power Coefficient             | 0.67822 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 9.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 34.9                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.9 | Percent Followers, %              | 62.0 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 9.9  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 9.9                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                             |                      |                                           |
|---------------------|-------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                             | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                               | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                             | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 02 Hanford-Armona Road Between 10 1/2 Avenue and Jordan Way | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 353  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.74 | Total Trucks, %                  | 3.39 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.21 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43653  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48329 | PF Power Coefficient             | 0.66113 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.4     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 34.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.1 | Percent Followers, %              | 52.5 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 5.4  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.4                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                 |                      |                                           |
|---------------------|-----------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                                 | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                   | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                                 | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 03 Hanford-Armona Road<br>Between Jordan Way and<br>10th Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 23.4 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 336  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 6.25 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.20 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 39.5    |
| Speed Slope Coefficient           | 2.65189  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50451 | PF Power Coefficient             | 0.67582 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.5     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 38.1                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 38.1 | Percent Followers, %              | 51.3 |
| Segment Travel Time, minutes | 0.27 | Follower Density, followers/mi/ln | 4.5  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.5                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                |                      |                                           |
|---------------------|----------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                                | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                  | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                                | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 04 10.5 Avenue Between Hanford Armona Drive and Orchard Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 317  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.60 | Total Trucks, %                  | 9.87 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.19 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.5    |
| Speed Slope Coefficient           | 2.29128  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42068 | PF Power Coefficient             | 0.65951 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 4.9     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 31.3                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.3 | Percent Followers, %              | 48.6 |
| Segment Travel Time, minutes | 0.99 | Follower Density, followers/mi/ln | 4.9  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 4.9                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                                           |
|---------------------|----------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 176  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.42 | Total Trucks, %                  | 13.33 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.10  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.4    |
| Speed Slope Coefficient           | 2.28310  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42395 | PF Power Coefficient             | 0.65839 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 2.0     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 31.6                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.6 | Percent Followers, %              | 36.5 |
| Segment Travel Time, minutes | 0.93 | Follower Density, followers/mi/ln | 2.0  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 2.0                               | A   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                           |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 329  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.68 | Total Trucks, %                  | 21.40 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.19  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.3    |
| Speed Slope Coefficient           | 3.14891  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42118 | PF Power Coefficient             | 0.72418 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.3     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 46.6                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 46.6 | Percent Followers, %              | 47.1 |
| Segment Travel Time, minutes | 0.63 | Follower Density, followers/mi/ln | 3.3  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.3                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                           |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Cumulative Year 2042 Plus Project AM Peak |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |       |
|-------------------------------------|------|----------------------------------|-------|
| Directional Demand Flow Rate, veh/h | 224  | Opposing Demand Flow Rate, veh/h | -     |
| Peak Hour Factor                    | 0.88 | Total Trucks, %                  | 17.65 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.13  |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.3    |
| Speed Slope Coefficient           | 3.20179  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41674 | PF Power Coefficient             | 0.72668 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 1.8     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.0 | Percent Followers, %              | 38.0 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 1.8  |
| Vehicle LOS                  | A    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 1.8                               | A   |



# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                    |                      |                                              |
|---------------------|--------------------------------------------------------------------|----------------------|----------------------------------------------|
| Analyst             | C. Ayala-Magana                                                    | Date                 | 7/20/2022                                    |
| Agency              | JLB Traffic Engineering, Inc.                                      | Analysis Year        | 2022                                         |
| Jurisdiction        | City of Hanford                                                    | Time Period Analyzed | Cumulative Year 2042<br>Plus Project PM Peak |
| Project Description | 01 Hanford-Armona Road<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary                      |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2583 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 34.8 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 712  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.83 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.42 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 36.8    |
| Speed Slope Coefficient           | 2.52381  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.44159 | PF Power Coefficient             | 0.67823 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 14.0    |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2583       | -          | -                 | 34.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 34.7 | Percent Followers, %              | 68.2 |
| Segment Travel Time, minutes | 0.84 | Follower Density, followers/mi/ln | 14.0 |
| Vehicle LOS                  | D    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 14.0                              | D   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                             |                      |                                           |
|---------------------|-------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                             | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                               | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                             | Time Period Analyzed | Cumulative Year 2042 Plus Project PM Peak |
| Project Description | 02 Hanford-Armona Road Between 10 1/2 Avenue and Jordan Way | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 1556 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 67.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 464  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.85 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.27 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 35.5    |
| Speed Slope Coefficient           | 2.43724  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.48339 | PF Power Coefficient             | 0.66114 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 8.1     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 1556       | -          | -                 | 33.9                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 33.9 | Percent Followers, %              | 59.0 |
| Segment Travel Time, minutes | 0.52 | Follower Density, followers/mi/ln | 8.1  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 8.1                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                           |                      |                                           |
|---------------------|-----------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                           | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                             | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                           | Time Period Analyzed | Cumulative Year 2042 Plus Project PM Peak |
| Project Description | 03 Hanford-Armona Road Between Jordan Way and 10th Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 901  |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 6    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 17.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 469  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.97 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.28 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 41.1    |
| Speed Slope Coefficient           | 2.73635  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.50445 | PF Power Coefficient             | 0.68170 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 7.1     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 901        | -          | -                 | 39.3                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 39.3 | Percent Followers, %              | 59.3 |
| Segment Travel Time, minutes | 0.26 | Follower Density, followers/mi/ln | 7.1  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 7.1                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                                |                      |                                           |
|---------------------|----------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                                | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                  | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                                | Time Period Analyzed | Cumulative Year 2042 Plus Project PM Peak |
| Project Description | 04 10.5 Avenue Between Hanford Armona Drive and Orchard Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2735 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 50.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 368  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.75 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.22 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30368  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42275 | PF Power Coefficient             | 0.65971 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 6.1     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2735       | -          | -                 | 31.4                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.4 | Percent Followers, %              | 52.1 |
| Segment Travel Time, minutes | 0.99 | Follower Density, followers/mi/ln | 6.1  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 6.1                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                          |                      |                                           |
|---------------------|----------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                          | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                            | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                          | Time Period Analyzed | Cumulative Year 2042 Plus Project PM Peak |
| Project Description | 05 10.5 Avenue Between Orchard Avenue and Houston Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2594 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 40                  | Access Point Density, pts/mi | 52.9 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 229  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.56 | Total Trucks, %                  | 3.70 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.13 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 32.7    |
| Speed Slope Coefficient           | 2.30048  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42689 | PF Power Coefficient             | 0.65868 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.0     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2594       | -          | -                 | 31.7                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 31.7 | Percent Followers, %              | 41.7 |
| Segment Travel Time, minutes | 0.93 | Follower Density, followers/mi/ln | 3.0  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.0                               | B   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                           |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Cumulative Year 2042 Plus Project PM Peak |
| Project Description | 06 Houston Avenue<br>Between 11th Avenue and<br>10 1/2 Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2567 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 50                  | Access Point Density, pts/mi | 20.6 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 458  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.89 | Total Trucks, %                  | 3.75 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.27 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 48.9    |
| Speed Slope Coefficient           | 3.18076  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.42061 | PF Power Coefficient             | 0.72351 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 5.4     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2567       | -          | -                 | 46.9                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 46.9 | Percent Followers, %              | 55.4 |
| Segment Travel Time, minutes | 0.62 | Follower Density, followers/mi/ln | 5.4  |
| Vehicle LOS                  | C    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 5.4                               | C   |

# HCS7 Two-Lane Highway Report

## Project Information

|                     |                                                               |                      |                                           |
|---------------------|---------------------------------------------------------------|----------------------|-------------------------------------------|
| Analyst             | C. Ayala-Magana                                               | Date                 | 7/20/2022                                 |
| Agency              | JLB Traffic Engineering, Inc.                                 | Analysis Year        | 2022                                      |
| Jurisdiction        | City of Hanford                                               | Time Period Analyzed | Cumulative Year 2042 Plus Project PM Peak |
| Project Description | 07 Houston Avenue<br>Between 10 1/2 Avenue<br>and 10th Avenue | Unit                 | United States Customary                   |

## Segment 1

## Vehicle Inputs

|                   |                     |                              |      |
|-------------------|---------------------|------------------------------|------|
| Segment Type      | Passing Constrained | Length, ft                   | 2570 |
| Lane Width, ft    | 12                  | Shoulder Width, ft           | 2    |
| Speed Limit, mi/h | 55                  | Access Point Density, pts/mi | 45.2 |

## Demand and Capacity

|                                     |      |                                  |      |
|-------------------------------------|------|----------------------------------|------|
| Directional Demand Flow Rate, veh/h | 354  | Opposing Demand Flow Rate, veh/h | -    |
| Peak Hour Factor                    | 0.90 | Total Trucks, %                  | 3.00 |
| Segment Capacity, veh/h             | 1700 | Demand/Capacity (D/C)            | 0.21 |

## Intermediate Results

|                                   |          |                                  |         |
|-----------------------------------|----------|----------------------------------|---------|
| Segment Vertical Class            | 1        | Free-Flow Speed, mi/h            | 49.8    |
| Speed Slope Coefficient           | 3.22823  | Speed Power Coefficient          | 0.41674 |
| PF Slope Coefficient              | -1.41606 | PF Power Coefficient             | 0.72608 |
| In Passing Lane Effective Length? | No       | Total Segment Density, veh/mi/ln | 3.6     |
| %Improved % Followers             | 0.0      | % Improved Avg Speed             | 0.0     |

## Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|--------------|------------|------------|-------------------|---------------------|
| 1 | Tangent      | 2570       | -          | -                 | 48.0                |

## Vehicle Results

|                              |      |                                   |      |
|------------------------------|------|-----------------------------------|------|
| Average Speed, mi/h          | 48.0 | Percent Followers, %              | 48.7 |
| Segment Travel Time, minutes | 0.61 | Follower Density, followers/mi/ln | 3.6  |
| Vehicle LOS                  | B    |                                   |      |

## Facility Results

| T | Follower Density, followers/mi/ln | LOS |
|---|-----------------------------------|-----|
| 1 | 3.6                               | B   |

Cumulative Year 2042 Plus Project AM Peak W/ Additional Project Trips  
 HCM Signalized Intersection Capacity Analysis  
 7: 11th Avenue & Houston Avenue

08/04/2022

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |   |  |  |  |  |  |
| Traffic Volume (vph)              | 96                                                                                | 131                                                                               | 46                                                                                | 38                                                                                | 104                                                                               | 41                                                                                | 34                                                                                 | 144                                                                                 | 41                                                                                  | 44                                                                                  | 99                                                                                  | 40                                                                                  |
| Future Volume (vph)               | 96                                                                                | 131                                                                               | 46                                                                                | 38                                                                                | 104                                                                               | 41                                                                                | 34                                                                                 | 144                                                                                 | 41                                                                                  | 44                                                                                  | 99                                                                                  | 40                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                               | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                               | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                              | 1681                                                                              | 1429                                                                              | 1597                                                                               | 3195                                                                                | 1429                                                                                | 1597                                                                                | 1681                                                                                | 1429                                                                                |
| Peak-hour factor, PHF             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)                   | 100                                                                               | 136                                                                               | 48                                                                                | 40                                                                                | 108                                                                               | 43                                                                                | 35                                                                                 | 150                                                                                 | 43                                                                                  | 46                                                                                  | 103                                                                                 | 42                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 35                                                                                | 0                                                                                 | 0                                                                                 | 35                                                                                | 0                                                                                  | 0                                                                                   | 30                                                                                  | 0                                                                                   | 0                                                                                   | 28                                                                                  |
| Lane Group Flow (vph)             | 100                                                                               | 136                                                                               | 13                                                                                | 40                                                                                | 108                                                                               | 8                                                                                 | 35                                                                                 | 150                                                                                 | 13                                                                                  | 46                                                                                  | 103                                                                                 | 14                                                                                  |
| Heavy Vehicles (%)                | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                               | 13%                                                                                | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 | 13%                                                                                 |
| Turn Type                         | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             | 9.7                                                                               | 18.4                                                                              | 18.4                                                                              | 3.6                                                                               | 12.6                                                                              | 12.6                                                                              | 3.6                                                                                | 20.3                                                                                | 20.3                                                                                | 6.0                                                                                 | 23.1                                                                                | 23.1                                                                                |
| Effective Green, g (s)            | 9.7                                                                               | 18.4                                                                              | 18.4                                                                              | 3.6                                                                               | 12.6                                                                              | 12.6                                                                              | 3.6                                                                                | 20.3                                                                                | 20.3                                                                                | 6.0                                                                                 | 23.1                                                                                | 23.1                                                                                |
| Actuated g/C Ratio                | 0.14                                                                              | 0.27                                                                              | 0.27                                                                              | 0.05                                                                              | 0.18                                                                              | 0.18                                                                              | 0.05                                                                               | 0.30                                                                                | 0.30                                                                                | 0.09                                                                                | 0.34                                                                                | 0.34                                                                                |
| Clearance Time (s)                | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                               | 4.2                                                                                | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                | 226                                                                               | 452                                                                               | 384                                                                               | 84                                                                                | 309                                                                               | 263                                                                               | 84                                                                                 | 948                                                                                 | 424                                                                                 | 140                                                                                 | 567                                                                                 | 482                                                                                 |
| v/s Ratio Prot                    | c0.06                                                                             | c0.08                                                                             |                                                                                   | 0.03                                                                              | 0.06                                                                              |                                                                                   | 0.02                                                                               | 0.05                                                                                |                                                                                     | c0.03                                                                               | c0.06                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                    |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |
| v/c Ratio                         | 0.44                                                                              | 0.30                                                                              | 0.03                                                                              | 0.48                                                                              | 0.35                                                                              | 0.03                                                                              | 0.42                                                                               | 0.16                                                                                | 0.03                                                                                | 0.33                                                                                | 0.18                                                                                | 0.03                                                                                |
| Uniform Delay, d1                 | 26.9                                                                              | 19.9                                                                              | 18.4                                                                              | 31.5                                                                              | 24.3                                                                              | 22.9                                                                              | 31.4                                                                               | 17.7                                                                                | 17.1                                                                                | 29.3                                                                                | 16.0                                                                                | 15.2                                                                                |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             | 1.4                                                                               | 0.4                                                                               | 0.0                                                                               | 4.2                                                                               | 0.7                                                                               | 0.0                                                                               | 3.3                                                                                | 0.1                                                                                 | 0.0                                                                                 | 1.4                                                                                 | 0.2                                                                                 | 0.0                                                                                 |
| Delay (s)                         | 28.3                                                                              | 20.3                                                                              | 18.5                                                                              | 35.7                                                                              | 25.0                                                                              | 22.9                                                                              | 34.7                                                                               | 17.8                                                                                | 17.1                                                                                | 30.7                                                                                | 16.1                                                                                | 15.2                                                                                |
| Level of Service                  | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   | 26.8                                                                              |                                                                                   |                                                                                    | 20.3                                                                                |                                                                                     |                                                                                     | 19.4                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            | 22.3                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio | 0.30                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         | 68.4                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                   | 20.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization | 40.7%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                   | A                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



Cumulative Year 2042 Plus Project PM Peak W/ Additional Project Trips  
 HCM Signalized Intersection Capacity Analysis  
 7: 11th Avenue & Houston Avenue

08/04/2022

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations               |                                                                                   |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 1                                                                                 | 61                                                                                | 275                                                                               | 52                                                                                | 36                                                                                | 232                                                                               | 82                                                                                  | 114                                                                                 | 529                                                                                 | 85                                                                                  | 56                                                                                  | 155                                                                                 |
| Future Volume (vph)               | 1                                                                                 | 61                                                                                | 275                                                                               | 52                                                                                | 36                                                                                | 232                                                                               | 82                                                                                  | 114                                                                                 | 529                                                                                 | 85                                                                                  | 56                                                                                  | 155                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Lane Util. Factor                 |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 1.00                                                                                |
| Flt Protected                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Flt Permitted                     |                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 1719                                                                              | 1810                                                                              | 1538                                                                              | 1719                                                                              | 1810                                                                              | 1538                                                                                | 1719                                                                                | 3438                                                                                | 1538                                                                                | 1719                                                                                | 1810                                                                                |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 1                                                                                 | 66                                                                                | 299                                                                               | 57                                                                                | 39                                                                                | 252                                                                               | 89                                                                                  | 124                                                                                 | 575                                                                                 | 92                                                                                  | 61                                                                                  | 168                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 40                                                                                | 0                                                                                 | 0                                                                                 | 65                                                                                  | 0                                                                                   | 0                                                                                   | 65                                                                                  | 0                                                                                   | 0                                                                                   |
| Lane Group Flow (vph)             | 0                                                                                 | 67                                                                                | 299                                                                               | 17                                                                                | 39                                                                                | 252                                                                               | 24                                                                                  | 124                                                                                 | 575                                                                                 | 27                                                                                  | 61                                                                                  | 168                                                                                 |
| Heavy Vehicles (%)                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Turn Type                         | Prot                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases                  | 7                                                                                 | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                     | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             |                                                                                   | 7.3                                                                               | 22.6                                                                              | 22.6                                                                              | 4.9                                                                               | 20.5                                                                              | 20.5                                                                                | 8.0                                                                                 | 22.0                                                                                | 22.0                                                                                | 4.9                                                                                 | 19.3                                                                                |
| Effective Green, g (s)            |                                                                                   | 7.3                                                                               | 22.6                                                                              | 22.6                                                                              | 4.9                                                                               | 20.5                                                                              | 20.5                                                                                | 8.0                                                                                 | 22.0                                                                                | 22.0                                                                                | 4.9                                                                                 | 19.3                                                                                |
| Actuated g/C Ratio                |                                                                                   | 0.10                                                                              | 0.30                                                                              | 0.30                                                                              | 0.07                                                                              | 0.28                                                                              | 0.28                                                                                | 0.11                                                                                | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.26                                                                                |
| Clearance Time (s)                |                                                                                   | 4.2                                                                               | 6.0                                                                               | 6.0                                                                               | 4.2                                                                               | 5.7                                                                               | 5.7                                                                                 | 4.2                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 4.2                                                                                 | 5.3                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 168                                                                               | 549                                                                               | 466                                                                               | 113                                                                               | 498                                                                               | 423                                                                                 | 184                                                                                 | 1015                                                                                | 454                                                                                 | 113                                                                                 | 468                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.04                                                                             | c0.17                                                                             |                                                                                   | 0.02                                                                              | 0.14                                                                              |                                                                                     | c0.07                                                                               | c0.17                                                                               |                                                                                     | 0.04                                                                                | 0.09                                                                                |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.01                                                                              |                                                                                   |                                                                                   | 0.02                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         |                                                                                   | 0.40                                                                              | 0.54                                                                              | 0.04                                                                              | 0.35                                                                              | 0.51                                                                              | 0.06                                                                                | 0.67                                                                                | 0.57                                                                                | 0.06                                                                                | 0.54                                                                                | 0.36                                                                                |
| Uniform Delay, d1                 |                                                                                   | 31.5                                                                              | 21.7                                                                              | 18.3                                                                              | 33.3                                                                              | 22.7                                                                              | 19.9                                                                                | 32.0                                                                                | 22.2                                                                                | 18.8                                                                                | 33.7                                                                                | 22.5                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 1.6                                                                               | 1.1                                                                               | 0.0                                                                               | 1.8                                                                               | 0.8                                                                               | 0.1                                                                                 | 9.4                                                                                 | 0.7                                                                                 | 0.1                                                                                 | 4.9                                                                                 | 0.5                                                                                 |
| Delay (s)                         |                                                                                   | 33.1                                                                              | 22.8                                                                              | 18.3                                                                              | 35.1                                                                              | 23.5                                                                              | 19.9                                                                                | 41.3                                                                                | 22.9                                                                                | 18.9                                                                                | 38.6                                                                                | 23.0                                                                                |
| Level of Service                  |                                                                                   | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | B                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay (s)                |                                                                                   |                                                                                   | 23.8                                                                              |                                                                                   |                                                                                   | 23.9                                                                              |                                                                                     |                                                                                     | 25.4                                                                                |                                                                                     |                                                                                     | 25.8                                                                                |
| Approach LOS                      |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 74.5                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 62.5%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Cumulative Year 2042 Plus Project PM Peak W/ Additional Project Trips  
 HCM Signalized Intersection Capacity Analysis  
 7: 11th Avenue & Houston Avenue

08/04/2022

|                        |      |
|------------------------|------|
| Movement               | SBR  |
| Lane Configurations    |      |
| Traffic Volume (vph)   | 57   |
| Future Volume (vph)    | 57   |
| Ideal Flow (vphpl)     | 1900 |
| Total Lost time (s)    | 5.3  |
| Lane Util. Factor      | 1.00 |
| Frt                    | 0.85 |
| Flt Protected          | 1.00 |
| Satd. Flow (prot)      | 1538 |
| Flt Permitted          | 1.00 |
| Satd. Flow (perm)      | 1538 |
| Peak-hour factor, PHF  | 0.92 |
| Adj. Flow (vph)        | 62   |
| RTOR Reduction (vph)   | 46   |
| Lane Group Flow (vph)  | 16   |
| Heavy Vehicles (%)     | 5%   |
| Turn Type              | Perm |
| Protected Phases       |      |
| Permitted Phases       | 6    |
| Actuated Green, G (s)  | 19.3 |
| Effective Green, g (s) | 19.3 |
| Actuated g/C Ratio     | 0.26 |
| Clearance Time (s)     | 5.3  |
| Vehicle Extension (s)  | 3.0  |
| Lane Grp Cap (vph)     | 398  |
| v/s Ratio Prot         |      |
| v/s Ratio Perm         | 0.01 |
| v/c Ratio              | 0.04 |
| Uniform Delay, d1      | 20.7 |
| Progression Factor     | 1.00 |
| Incremental Delay, d2  | 0.0  |
| Delay (s)              | 20.7 |
| Level of Service       | C    |
| Approach Delay (s)     |      |
| Approach LOS           |      |
| Intersection Summary   |      |

## Appendix I: Traffic Signal Warrants



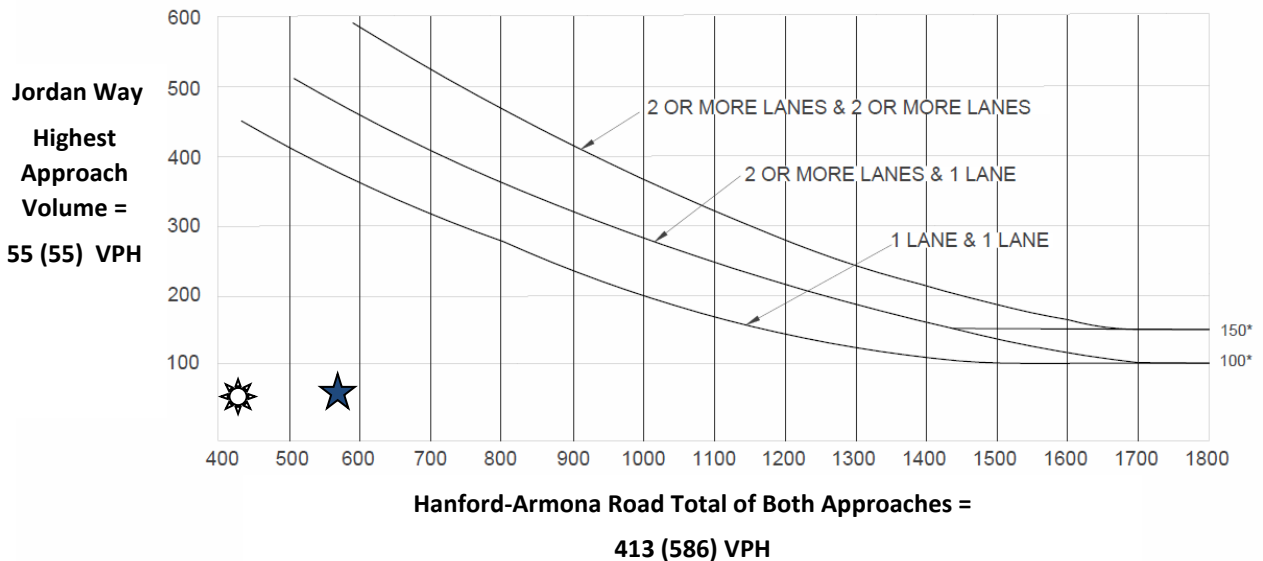
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*A p p | I*

### Warrant 3: Peak Hour (Urban)

**Existing Traffic Conditions**  
**4. Jordan Way / Hanford-Armona Road**  
**AM (PM) Peak Hour**



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



**AM Peak Hour – Signal Warrant is Not Met**



**PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)  
Chapter 4C: Traffic Control Signal Needs Studies  
Part 4: Highway Traffic Signals  
November 7, 2014



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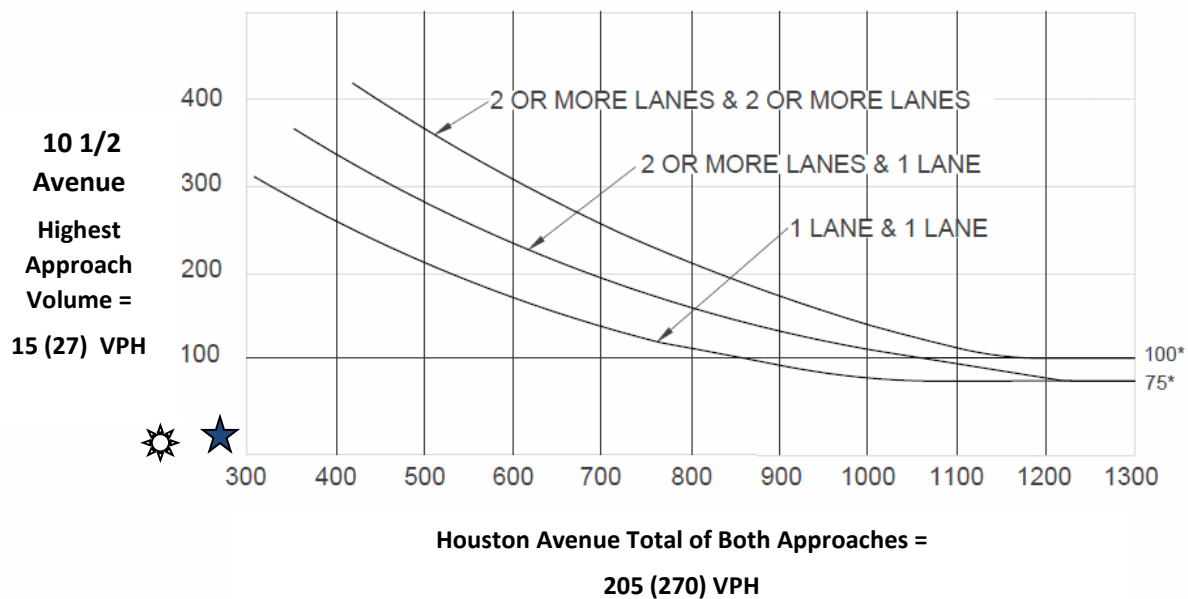
### Warrant 3: Peak Hour (Rural)

Existing Traffic Conditions

8. 10 1/2 Avenue / Houston Avenue

AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)  
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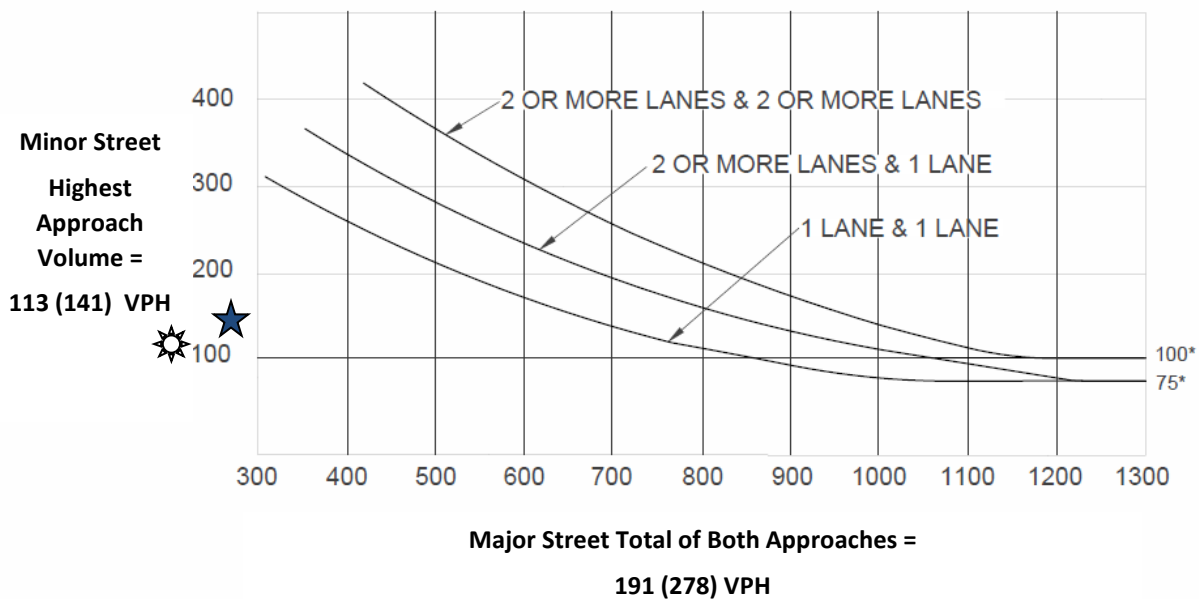
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### Warrant 3: Peak Hour (Rural)

Existing Traffic Conditions  
9. 10<sup>th</sup> Avenue / Houston Avenue  
AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☀ AM Peak Hour – Signal Warrant is Not Met  
★ PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)  
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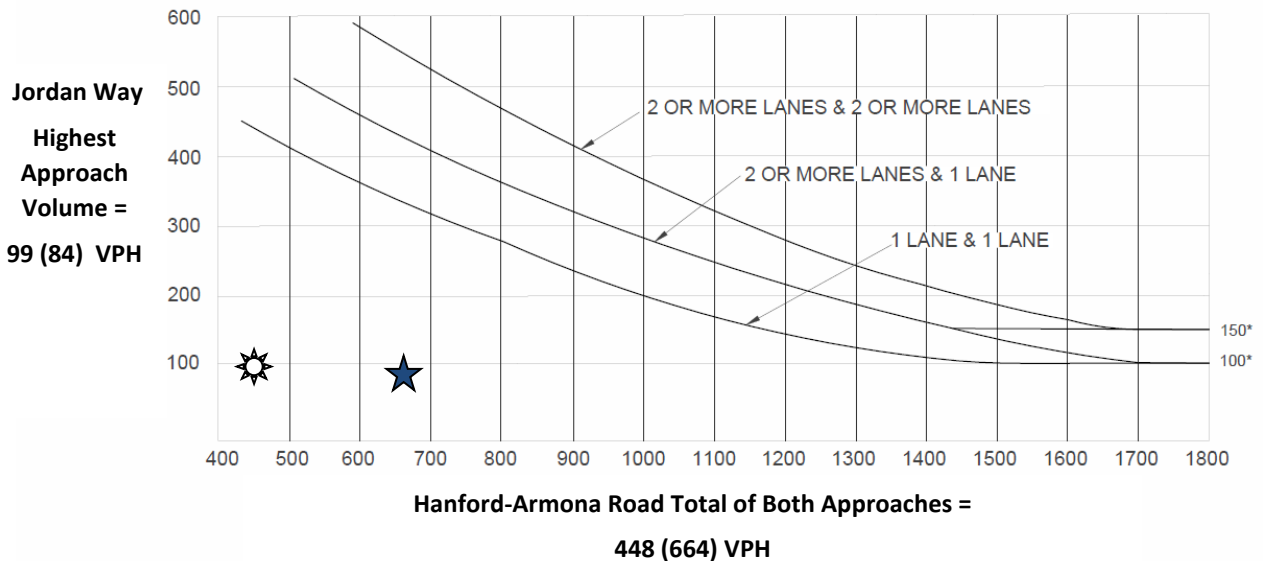
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### Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

4. Jordan Way / Hanford-Armona Road

AM (PM) Peak Hour



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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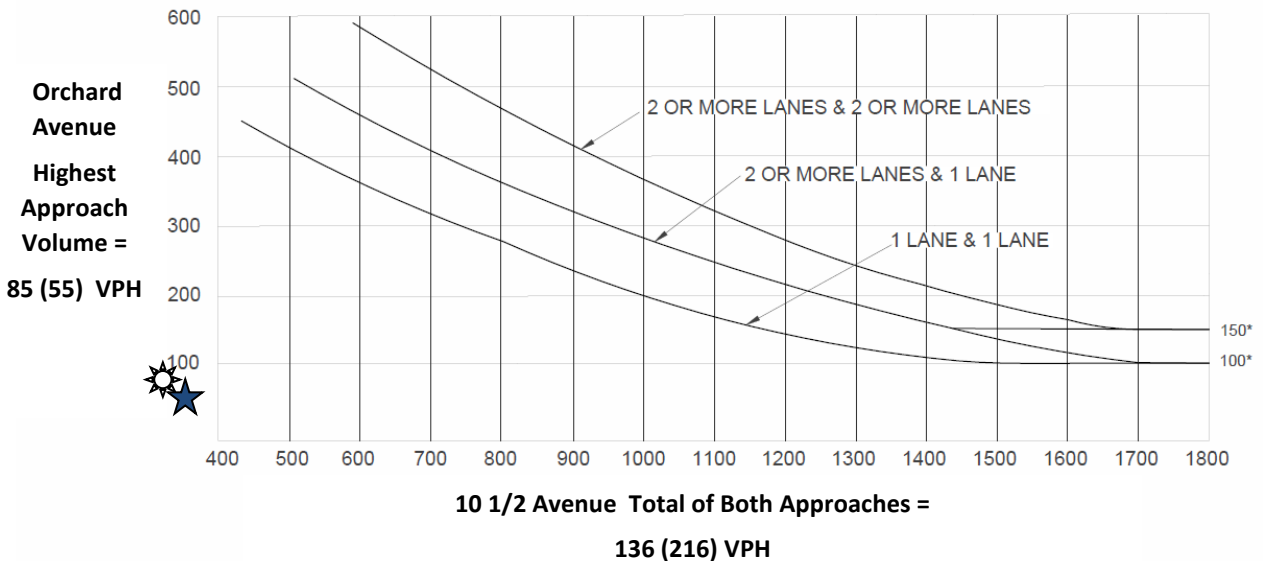
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### Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions

6. 10 1/2 Avenue / Orchard Avenue

AM (PM) Peak Hour



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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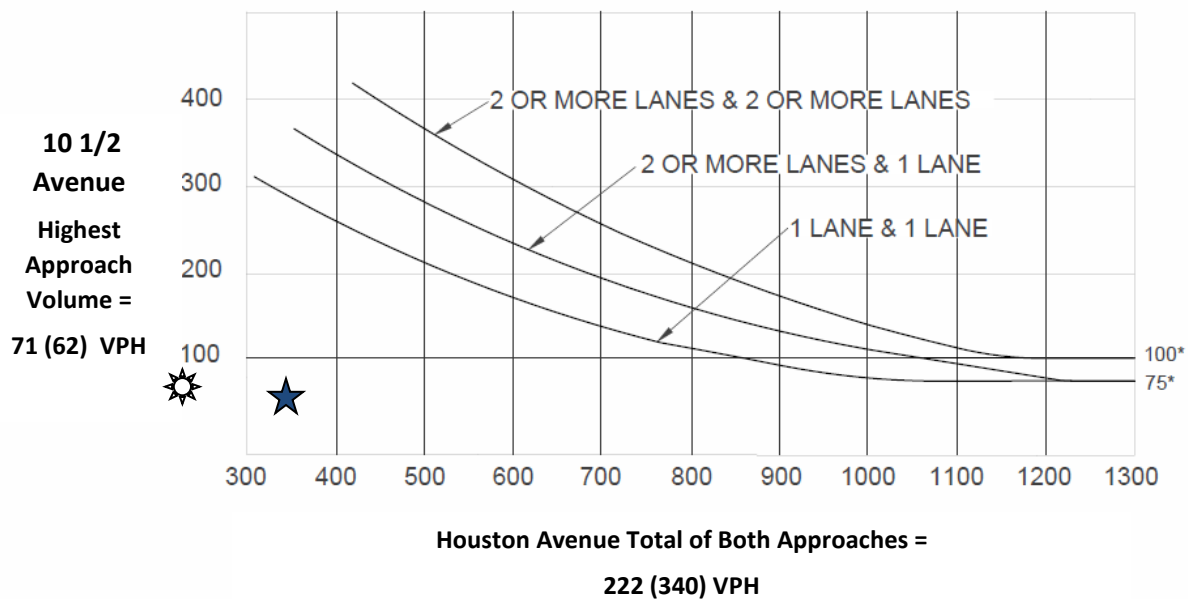
### Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions

8. 10 1/2 Avenue / Houston Avenue

AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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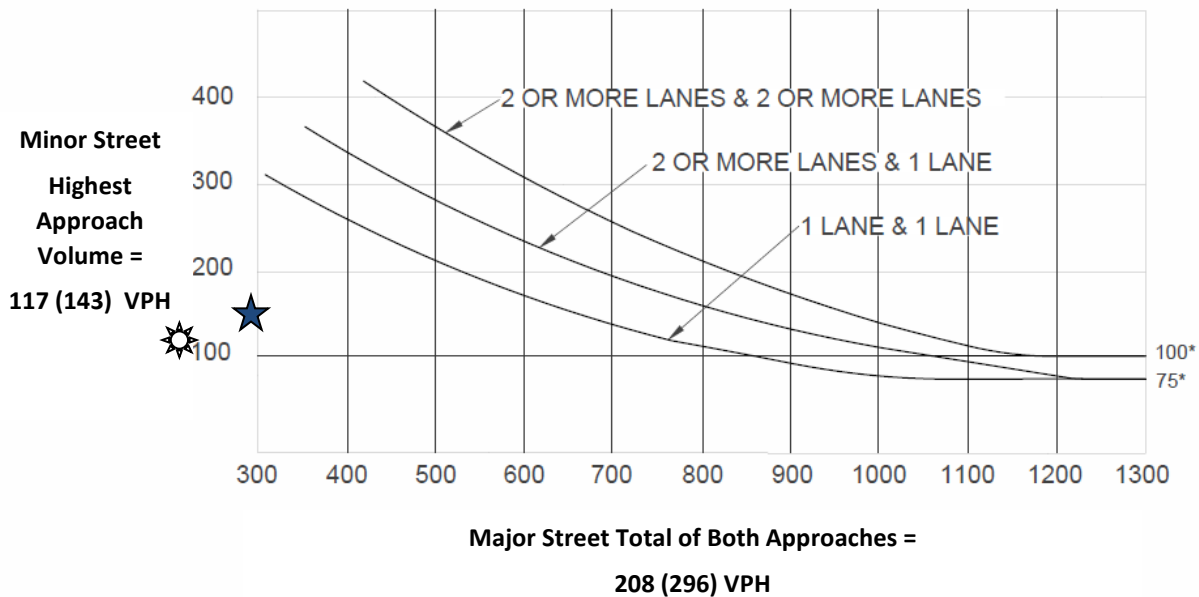
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### Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions  
9. 10<sup>th</sup> Avenue / Houston Avenue  
AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

- ☀ AM Peak Hour – Signal Warrant is Not Met
- ★ PM Peak Hour – Signal Warrant is Not Met

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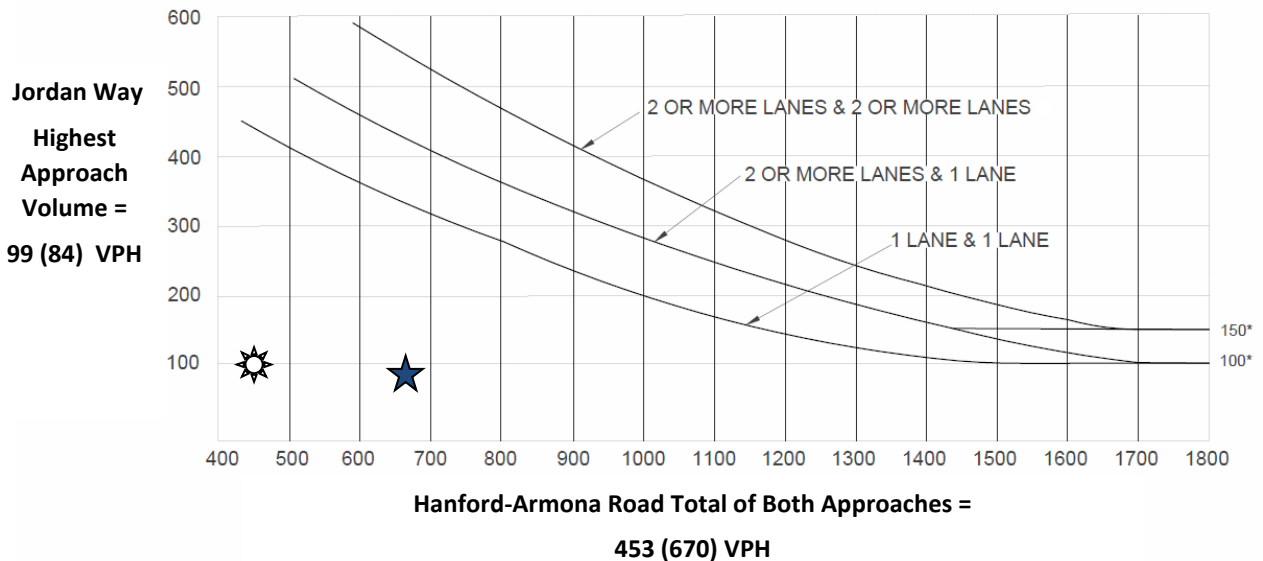
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### Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

4. Jordan Way / Hanford-Armona Road

AM (PM) Peak Hour



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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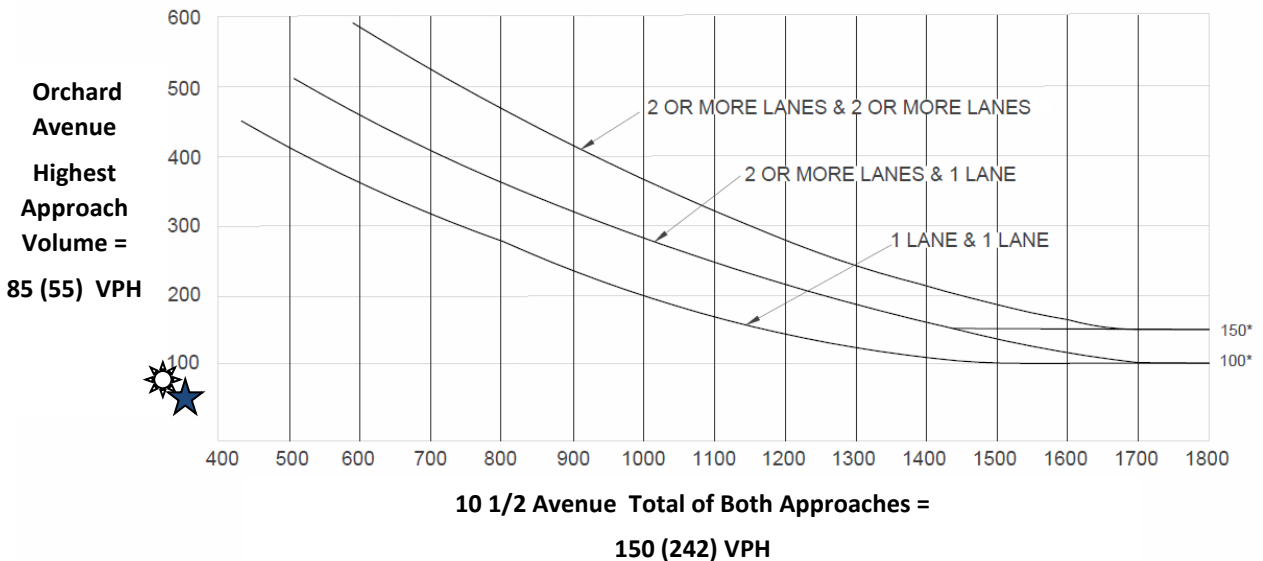
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### Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions

6. 10 1/2 Avenue / Orchard Avenue

AM (PM) Peak Hour



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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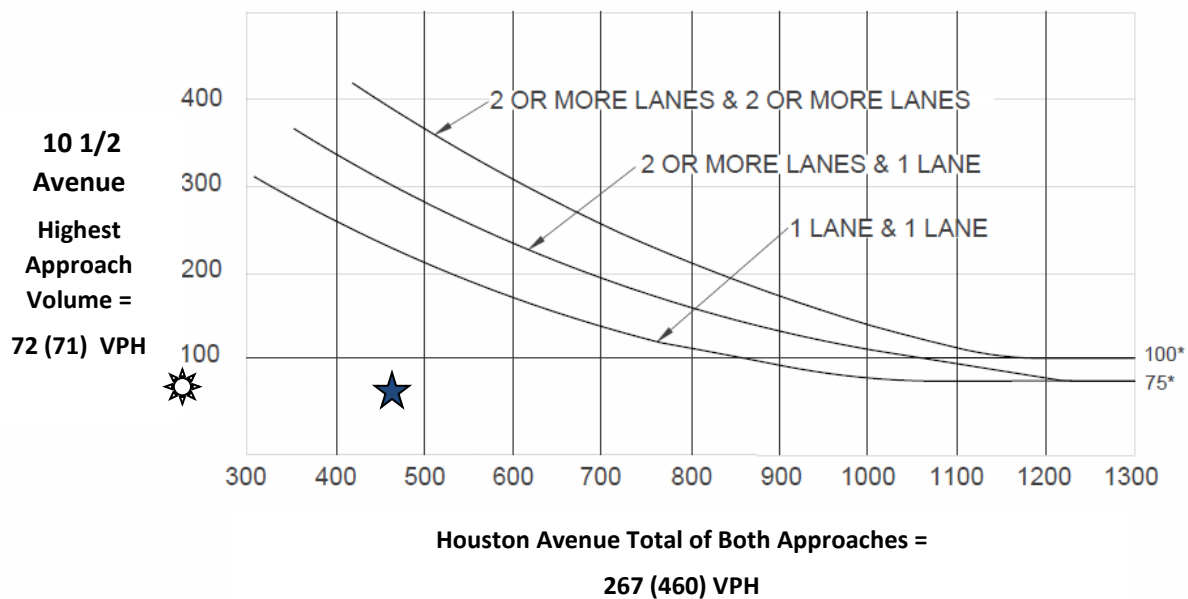
### Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions

8. 10 1/2 Avenue / Houston Avenue

AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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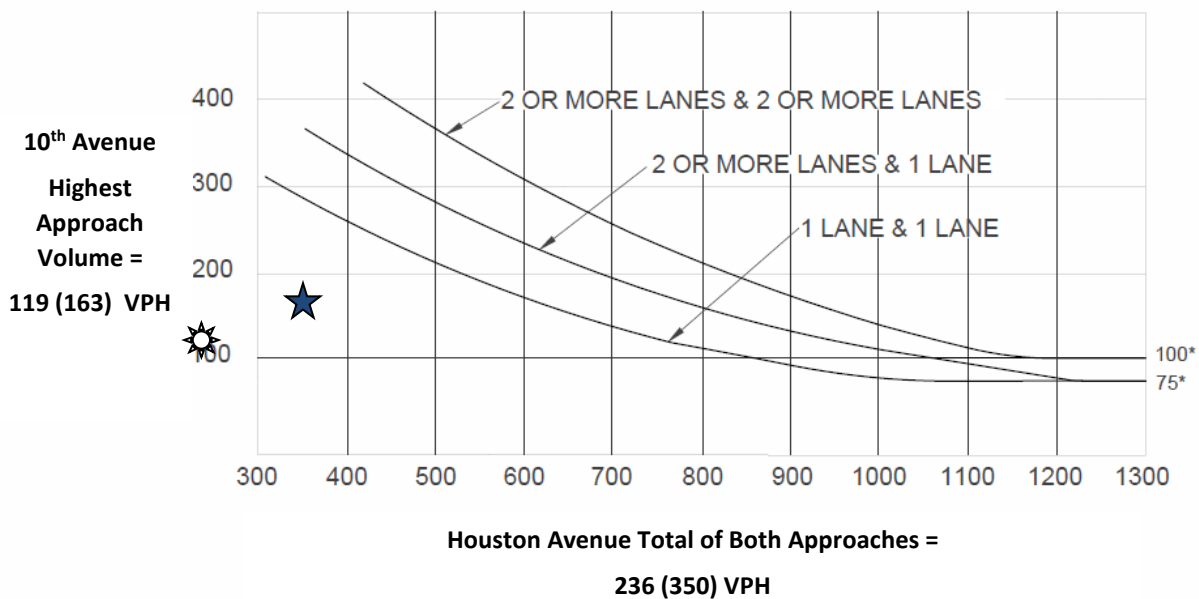
### Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions

9. 10<sup>th</sup> Avenue / Houston Avenue

AM (PM) Peak Hour

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\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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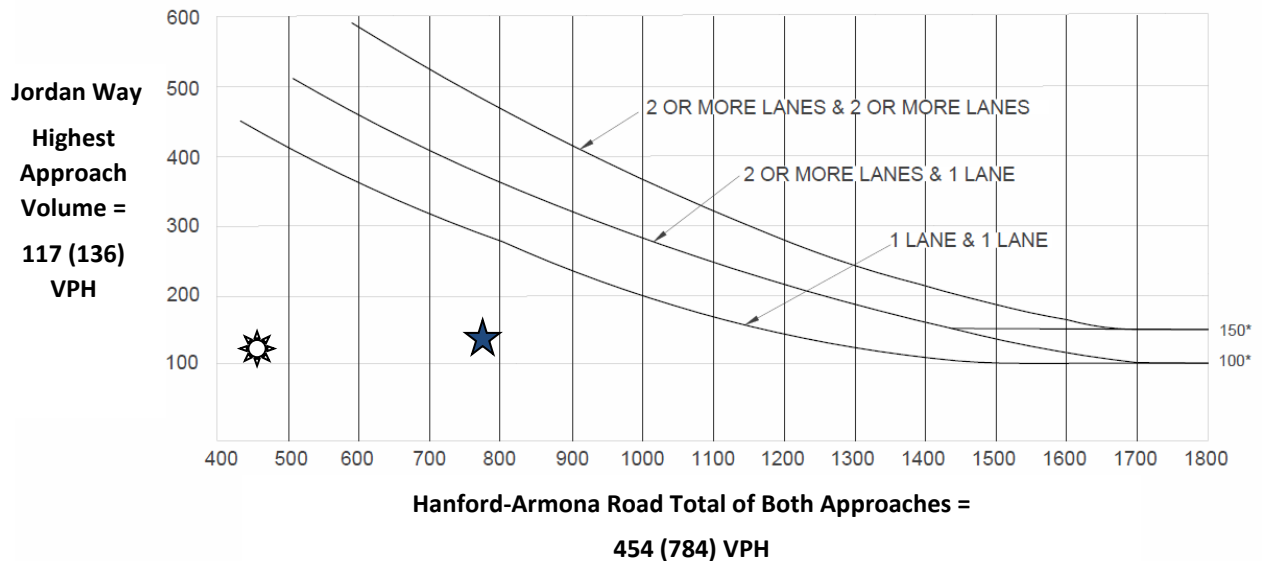
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### Warrant 3: Peak Hour (Urban)

Cumulative Year 2042 plus Project Traffic Conditions

4. Jordan Way / Hanford-Armona Road

AM (PM) Peak Hour



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



**AM Peak Hour – Signal Warrant is Not Met**



**PM Peak Hour – Signal Warrant is Not Met**

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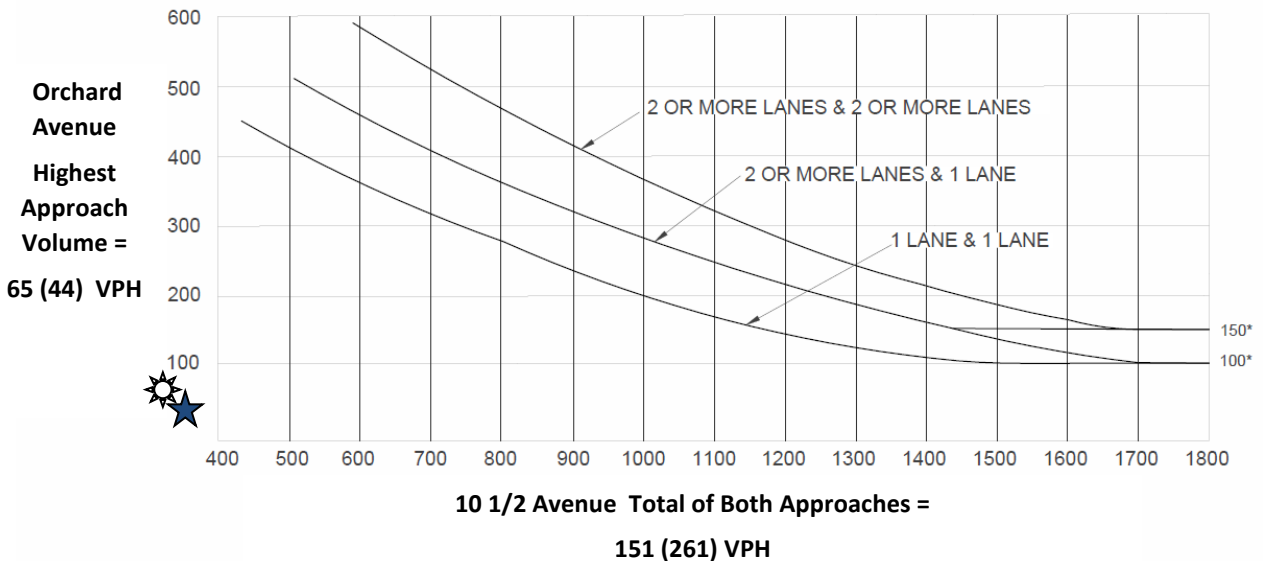
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### Warrant 3: Peak Hour (Urban)

Cumulative Year 2042 plus Project Traffic Conditions

6. 10 1/2 Avenue / Orchard Avenue

AM (PM) Peak Hour



\*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



AM Peak Hour – Signal Warrant is Not Met



PM Peak Hour – Signal Warrant is Not Met

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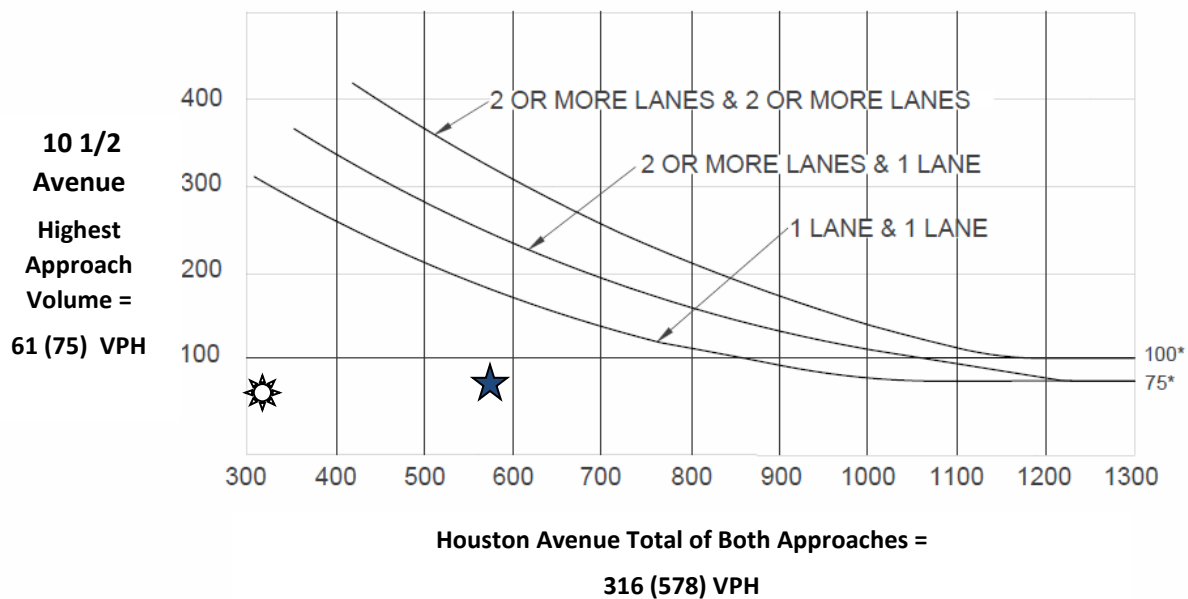
### Warrant 3: Peak Hour (Rural)

Cumulative Year 2042 plus Project Traffic Conditions

8. 10 1/2 Avenue / Houston Avenue

AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.



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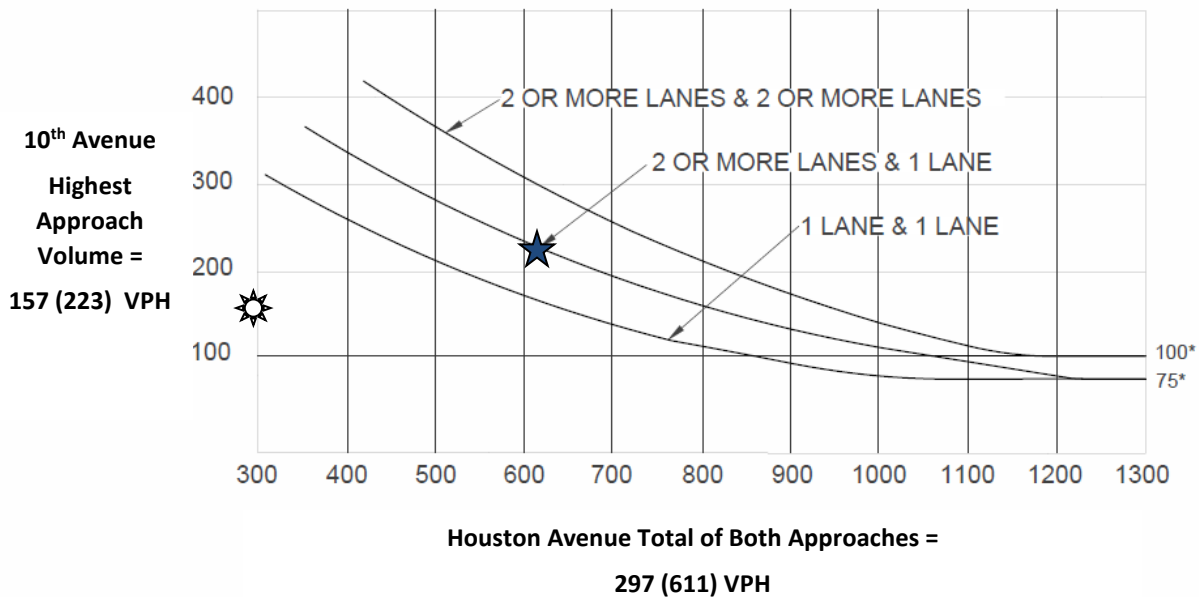
### Warrant 3: Peak Hour (Rural)

Cumulative Year 2042 plus Project Traffic Conditions

9. 10<sup>th</sup> Avenue / Houston Avenue

AM (PM) Peak Hour

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