Draft Traffic Impact Analysis

Lacey Ranch Development

Located on the Southeast Corner of
Lemoore Avenue and Lacey Boulevard

In the City of Lemoore, California

Prepared for:
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June 23, 2021

Project No. 039-003

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This Draft Traffic Impact Analysis 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:

_____

Jose Luis Benavides, PE, TE

President

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Introduction and Summary

Introduction

This report describes a Draft Traffic Impact Analysis (TIA) prepared by JLB Traffic Engineering, Inc. (JLB) for the Lacey Ranch Development (Project) located on the southeast corner of Lemoore Avenue and Lacey Boulevard in the City of Lemoore. The Project proposes to develop approximately 156-acres with single family residential units, multifamily units and parks. The project description states this development will be limited to a maximum of 825 housing units. Based on information provided to JLB, the Project will go through the preparation of an Environmental Impact Report through the City of Lemoore. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of this TIA 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. 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 Lemoore, County of Kings 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) policy of the City of Lemoore and County of Kings.

Existing Traffic Conditions

- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- The Project proposes to develop approximately 156-acres with single family residential units, multifamily units and parks.
- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- The proposed Project is estimated to generate a maximum of 7,362 daily trips, 554 AM peak hour trips and 730 PM peak hour trips.
- It is recommended that the Project implement a Class II Bike Lane along its frontages to Lemoore Avenue, Lacey Boulevard, Street 'S' and Mary Drive between Street 'I' and Lacey Boulevard in order to encourage multi modal transportation and reduce VMT.
- It is recommended that the Project implement ADA compliant walkways along its frontages to Lemoore Avenue, Lacey Boulevard and the Project's internal streets in order to encourage multi model transportation and reduce VMT.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 16,621 daily trips, 1,625 AM peak hour trips and 1,455 PM peak hour trips.
- Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, the modification of the traffic control mechanism is recommended. Additional details as to the recommended improvement are presented later in this Report.

Cumulative Year 2042 No Project Traffic Conditions

- Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, the modification of the traffic control mechanism is recommended. Additional details as to the recommended improvement are presented later in this Report.

Cumulative Year 2042 plus Project Traffic Conditions

- Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during both peak periods. To improve the LOS at this intersection, the modification of the traffic control mechanism is recommended. Additional details as to the recommended improvement are presented later in this Report.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Scope of Work

The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On July 7, 2020, a Draft Scope of Work for the preparation of a Traffic Impact Analysis for this Project was provided to the City of Lemoore, County of Kings and Caltrans for their review and comment. Any comments to the Draft Scope of Work were to be provided by July 28, 2020.

On August 5, 2020 the County of Kings accepted the Draft Scope of Work as presented. On August 6, 2020 the City of Lemoore responded to the Draft Scope of Work commenting to verify the inclusion of a vehicle miles traveled (VMT) analysis and editing the list of near term projects in the city. On August 31, 2020 Caltrans responded to the Draft Scope of Work with no comments pertaining to the contents of the Draft Scope of Work; however, Caltrans did suggest the Project proponent work further with the City of Lemoore in order to reduce VMT by offering different modes of transportation. These suggestions for different modes of transportation in the vicinity of the Project.

Based on comments received, this TIA includes a VMT analysis and the near term projects requested by the City. Suggestions for different modes of transportation from Caltrans will be noted as well. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The study focused on evaluating traffic conditions at the existing study intersections that may potentially be impacted by the proposed Project. The COVID-19 situation impacted traffic volumes in Lemoore for which new physical counts would not be representative to typical conditions. For this reason, JLB obtained historic and current turning movement counts for the study intersections of 19th Avenue and Hanford-Armona Road and Liberty Drive and Hanford-Armona Road. The historic turning movement counts were conducted in May 2019 and the new turning movement counts were conducted in October 2020. All of the intersection turning movement counts include pedestrian and bicycles volumes. When the historical and current counts were compared, the historical count had higher volumes. In order to properly analyze the study intersections, an expansion factor between historic and current traffic counts was determined for each peak period based on methodology agreed upon with the City. The expansion factors were calculated to be 48% in the AM peak period and 8% in the PM peak period. All of the current traffic counts were then expanded by these factors in their respective peaks. The volumes resulting from this process were used as the Existing turning movement volumes. The traffic counts for the existing study intersections are contained in Appendix B.

Study Intersections

1. 18 ¾ Avenue / Lacey Boulevard
2. Lemoore Avenue / Lacey Boulevard
3. Mary Drive / Lacey Boulevard
4. 17th Avenue (North Leg) / Lacey Boulevard
5. 17th Avenue (South Leg) / Lacey Boulevard
6. Lemoore Avenue / Project Driveway
7. Lemoore Avenue / Glendale Avenue
8. Lemoore Avenue / Spruce Avenue
9. 19th Avenue / Hanford-Armona Road
10. Liberty Drive / Hanford-Armona Road
11. Cinnamon Drive / Hanford-Armona Road

Project Only Trip Assignment to State Facilities

1. State Route 41 / Lacey Boulevard
2. State Route 41 / Hanford-Armona Road

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 October 2020. The Existing traffic volumes were based on current traffic counts conducted in October 2020 and expanded by a factor of 48% for the AM peak and 8% for the PM peak. These factors were determined by comparing the current traffic counts to traffic counts conducted in May 2019.

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 the Kings CAG Select Zone, existing travel patterns, the existing roadway network, engineering judgement, data provided by the developer, knowledge of the study area, existing residential and commercial densities, anticipated school boundaries and the City of Lemoore's 2030 General Plan Circulation Element in the vicinity of the Project site.

Near Term plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term plus Project Traffic Conditions. The Near Term plus Project traffic volumes were obtained by adding the near term related trips to the Existing plus Project Traffic Conditions scenario.

Cumulative Year 2042 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2042 No Project Traffic Conditions. The Cumulative Year 2042 No Project traffic volumes were obtained by subtracting the Project Only Trips from the Cumulative Year 2042 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. JLB utilized the Kings County Association of Governments (KCAG) Base Year 2021 and Cumulative Year 2042 models to determine the increment, as recommended by the Model Steering Committee, to determine the Cumulative Year 2042 plus Project traffic volumes. The Kings CAG model results are contained in Appendix C.

Level of Service Analysis 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. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix D.

Criteria of Significance

The City of Lemoore 2030 General Plan does not currently have any adopted LOS standard. However, recent traffic studies have utilized LOS D as the acceptable level of traffic congestion. Therefore, LOS D is used to evaluate the potential significant of LOS impacts to City of Lemoore roadway facilities.

The County of Kings 2035 General Plan has established a minimum LOS standard within the County, which shall be no lower than LOS E for urban areas and LOS D for rural areas. For this TIA, LOS D is used to evaluate the potential significance of LOS impacts to intersections within the County of Kings.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies* dated December 2002. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. In this TIA, all study facilities fall within either the City of Lemoore or the County of Kings boundaries. Therefore, the City of Lemoore and the County of Kings rural LOS threshold of LOS D is utilized to evaluate the potential significance of LOS impacts.

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 of Uniform Traffic Control Devices (CA MUTCD) based on approach speeds
- 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
- All new or modified signals utilize protective left-turn phasing
- The existing intersection heavy vehicle factor was used in its respective peak analysis.
- An average of 10 pedestrian calls per hour at signalized intersections
- The number of observed pedestrians at existing intersections was utilized under all study scenarios
- At existing intersections, the observed approach Peak Hour Factor (PHF) is utilized in all scenarios

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.

State Route (SR) 41 is an existing north-south two- to four-lane expressway adjacent to the proposed Project. State Route 41 serves as the principal connection to various metropolitan areas within the Central San Joaquin Valley and the California Central Coast. In this area, State Route 41 connects to Hanford-Armona Road.

19th Avenue is an existing north-south two-lane arterial divided by a two-way left-turn lane in the vicinity of the proposed Project. In this area, 19th Avenue is a two-lane arterial divided by a two-way left-turn lane between Hanford-Armona Road and Noble Street and a two-lane undivided arterial between Noble Street and Cinnamon Drive. The City of Lemoore 2030 General Plan aims to extend 19th Avenue north of Hanford-Armona Road as a two-lane collector connecting to Lemoore Avenue and designates 19th Avenue as a four-lane arterial between Hanford-Armona Road and Idaho Avenue.

Liberty Drive (18 ¾ Avenue) is an existing north-south undivided two-lane local roadway in the vicinity of the proposed Project. In this area, Liberty Drive (18 ¾ Avenue) is an undivided two-lane local roadway between Lacey Boulevard and Hanford-Armona Road and a two-lane collector divided by a two-way left-turn lane between Hanford-Armona Road and Cinnamon Drive. The City of Lemoore 2030 General Plan designates Liberty Drive as a four-lane collector between Lacey Boulevard and Cinnamon Drive.

Lemoore Avenue is an existing north-south undivided two-lane local roadway adjacent to the proposed Project. In this area, Lemoore Avenue is a two-lane undivided arterial north of Glendale Avenue through the City of Lemoore SOI and a two-lane arterial divided by a two-way left-turn lane between Glendale Avenue and Cinnamon Drive. The City of Lemoore 2030 General Plan designates Lemoore Avenue as an arterial north of Hanford-Armona Road through the City of Lemoore SOI and a four-lane arterial between Hanford Armona Road and Cinnamon Drive.

17th Avenue is an existing north-south undivided two-lane local roadway in the vicinity of the proposed Project. In this area, 17th Avenue is an undivided local roadway that runs through the City of Lemoore SOI. The City of Lemoore 2030 General Plan designates 17th Avenue as a two-lane local roadway throughout the City of Lemoore SOI.

Cinnamon Drive is an existing two-lane undivided collector in the vicinity of the proposed Project. In this area, Cinnamon Drive extends east of its connection to 19 ½ Avenue and changes orientation to intersect Hanford-Armona Road. Cinnamon Drive is a two-lane collector divided by a two-way left-turn lane between 19½ Avenue and Lemoore Avenue and a two-lane undivided collector east of Lemoore Avenue and south of Hanford-Armona Road. The City of Lemoore 2030 General Plan designates Cinnamon Drive as a four-lane collector between 19 ½ Avenue and Lemoore Avenue and a two-lane collector between Lemoore Avenue and Hanford-Armona Road.

Lacey Boulevard is an existing east-west two-lane local roadway adjacent to the proposed Project. In this area, Lacey Boulevard is a two-lane undivided major collector through the County of Kings. The County of Kings 2035 General Plan designates Lacey Boulevard as a local major collector through the County of Kings.

Glendale Avenue is an existing east-west two-lane undivided local roadway in the vicinity of the proposed Project. In this area, Glendale Avenue is a two-lane undivided local roadway that exists between Deodar Drive and Quandt Drive. The City of Lemoore 2030 General Plan designates Glendale Avenue as a local roadway through the City of Lemoore SOI.

Spruce Avenue is an existing east-west two-lane undivided local roadway in the vicinity of the proposed Project. In this area, Spruce Avenue is a two-lane undivided local roadway that exists between Spring Lane and Ashland Drive. The City of Lemoore 2030 General Plan designates Spruce Avenue as a local roadway through the City of Lemoore SOI.

Hanford-Armona Road is an existing east-west two-lane arterial in the vicinity of the proposed Project. In this area, Hanford-Armona Road is a two-lane undivided local roadway west of SR 41, a two- to three-lane arterial divided by a two-way left-turn lane between SR 41 and Lemoore Avenue, a four-lane undivided arterial between Lemoore Avenue and Cinnamon Drive and a two-lane undivided arterial east of Cinnamon Drive. The City of Lemoore 2030 General Plan designates Hanford-Armona Road as a four- to six-lane arterial between College Drive and Bennington 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" (California Department of Transportation, 2020b).

If traffic signal warrants are satisfied when an 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. Since installation of a traffic signal control typically requires construction of additional lanes, an attempt was first 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 were prepared for the unsignalized intersections under the Existing Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, the intersections of 19th Avenue and Hanford-Armona Road and Cinnamon Drive and Hanford-Armona Road currently meet the peak hour warrant during the PM peak period only. The remaining unsignalized study intersections do not satisfy the peak hour signal warrant during any peak period. Based on the signal warrants and engineering judgement, signalization of these intersections is not recommended, especially since these intersections operate at an acceptable LOS during both peak periods.

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.

At present, all study intersections operate at an acceptable LOS during both peak periods.

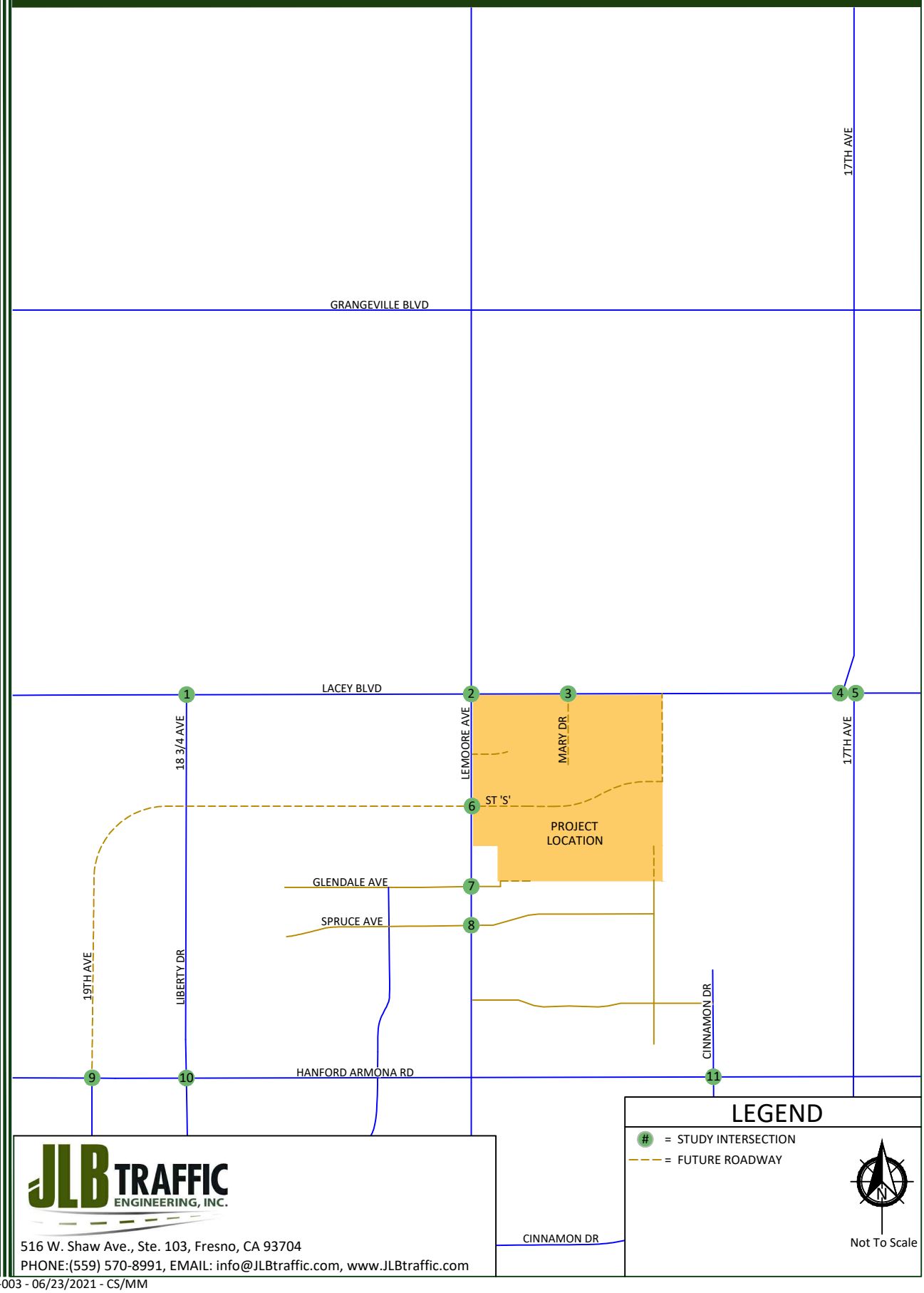
Table I: Existing Intersection LOS Results

ID	Intersection	Intersection Control	AM (7-9) Peak Hour		PM (4-6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	18 ¾ Avenue / Lacey Boulevard	One-Way Stop	10.6	B	9.8	A
2	Lemoore Avenue / Lacey Boulevard	All-Way Stop	10.8	B	11.2	B
3	Mary Drive / Lacey Boulevard	Does Not Exist	N/A	N/A	N/A	N/A
4	17th Avenue (NL) / Lacey Boulevard	One-Way Stop	10.2	B	11.1	B
5	17th Avenue (SL) / Lacey Boulevard	One-Way Stop	10.3	B	10.6	B
6	Lemoore Avenue / Street 'S'	Does Not Exist	N/A	N/A	N/A	N/A
7	Lemoore Avenue / Glendale Avenue	Two-Way Stop	13.9	B	12.4	B
8	Lemoore Avenue / Spruce Avenue	Two-Way Stop	16.7	C	13.7	B
9	19th Avenue / Hanford-Armona Road	One-Way Stop	11.6	B	12.4	B
10	Liberty Drive / Hanford-Armona Road	One-Way Stop	21.1	C	18.8	C
11	Cinnamon Drive/ Hanford-Armona Road	One-Way Stop	15.9	C	20.0	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.

Lacey Ranch - City of Lemoore
Vicinity Map

Figure 1



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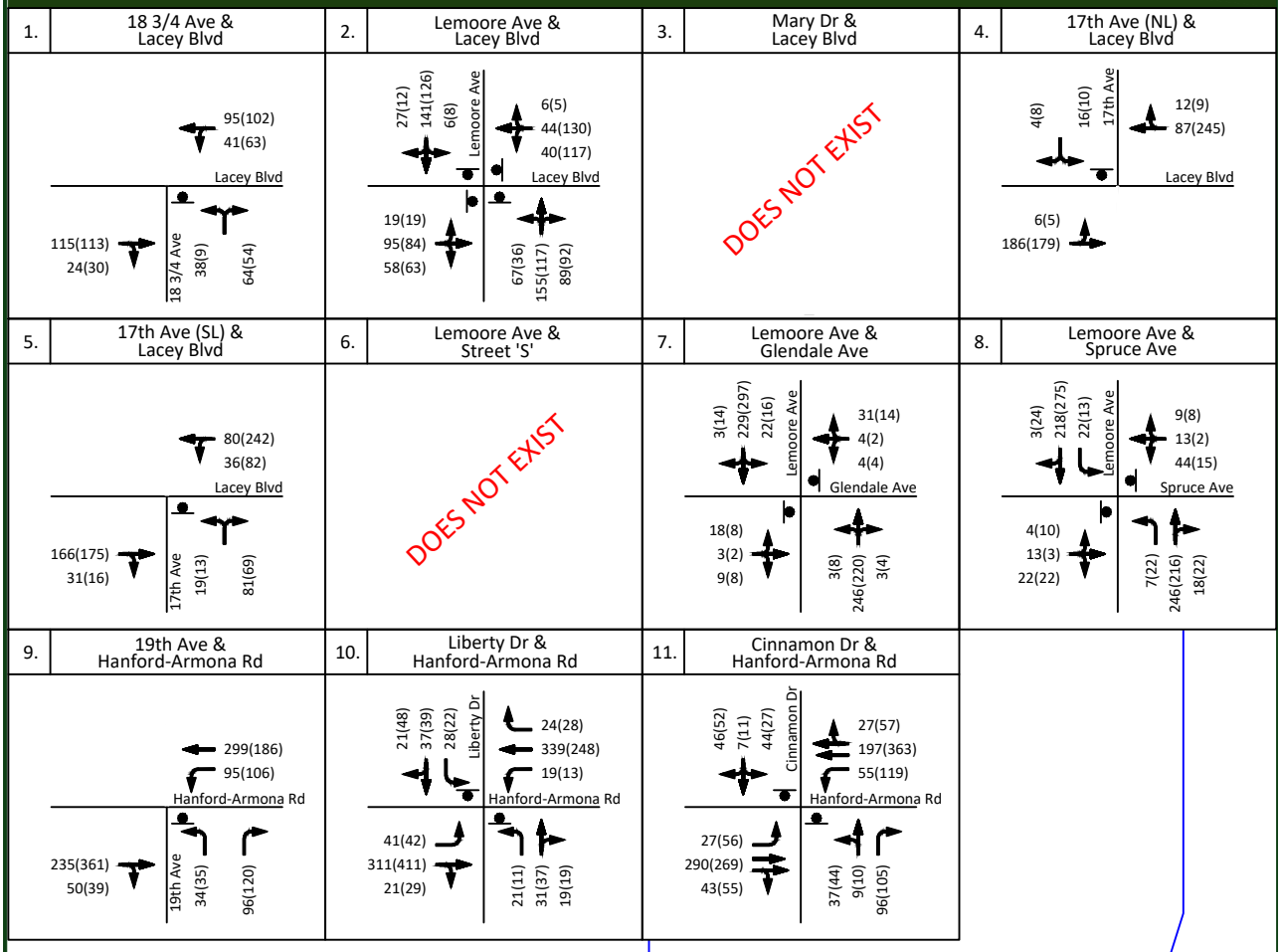
Lacey Ranch - City of Lemoore
Existing - Traffic Volumes, Geometrics and Controls

Figure 2



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Existing plus Project Traffic Conditions

Project Description

The Project proposes to develop a 156-acre site on the southeast corner of Lemoore Avenue and Lacey Boulevard with single-family residential units, multifamily units and parks. Information within the project description declares that the project will be limited to 825 housing units. Based on information provided to JLB, the Project will go through the preparation of an Environmental Impact Report through the City of Lemoore. 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 eight (8) main access points in total. Two (2) of the access points will be located along the south side of Lacey Boulevard approximately 1,300 and 2,600 feet east of Lemoore Avenue and are proposed as full access. The eastmost of these two access points will initially act as an emergency access only, but will be built out as a local roadway upon completion of phase II of the Project. Three (3) of the access points will be located along the east side of Lemoore Avenue approximately 820, 1,535 and 1,885 feet south of Lacey Boulevard and are all currently proposed as full access points. One (1) of the access points will be located along the north side of Glendale approximately 345 feet east of Lemoore Avenue and is proposed as full access. One (1) of the access points will be on the south side of the Project through existing Ashland Drive. A ninth access point will be located along the east side of the Project, but will not be connected to any exterior roads at initial Project buildout. JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network

Trip Generation

Trip generation rates for the proposed Project were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table II presents the trip generation for the proposed Project with trip generation rates for Single-Family Detached Housing (210), Multifamily Housing (Low-Rise) (220) and Public Park (411). As can be seen in Table II, the proposed Project is estimated to generate a maximum of 7,362 daily trips, 554 AM peak hour trips and 730 PM peak hour trips.

Table II: 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)	621	d.u.	9.44	5,862	0.74	25	75	115	345	460	0.99	63	37	387	228	615
Multifamily Housing (Low-Rise) (220)	204	d.u.	7.32	1,493	0.46	23	77	22	72	94	0.56	63	37	72	42	114
Public Park (411)	9.540	acres	0.78	7	0.02	59	41	0	0	0	0.11	55	45	1	0	1
Total Project Trips				**7,362**				**137**	**417**	**554**				**460**	**270**	**730**

Note: d.u. = Dwelling Units

Trip Distribution

The trip distribution assumptions were developed based on the Kings CAG Select Zone, existing travel patterns, the existing roadway network, engineering judgement, data provided by the developer, knowledge of the study area, existing residential and commercial densities, anticipated school boundaries and the City of Lemoore's 2030 General Plan Circulation Element in the vicinity of the Project site. Figure 4 illustrates the Project Only Trips to the study intersections.

Bikeways

Currently, Class II Bike Lanes exist in the vicinity of the proposed Project site along Hanford-Armona Road, 19th Avenue, Lemoore Avenue, Liberty Drive and Cinnamon Drive. The City of Lemoore 2030 General Plan and the 2011 Kings County Regional Bicycle Plan combined propose Bike Lanes on Spruce Avenue, Cinnamon Drive where they do not exist, Hanford-Armona Road where they do not exist east of SR 41 and on the entirety of the 19th Avenue expansion north of Hanford-Armona Road. Therefore, it is recommended that the Project implement a Class II bike lane along its frontages to Lemoore Avenue, Lacey Boulevard, Street 'S' and Mary Drive between Street 'I' and Lacey Boulevard. By implementing this recommendation, the City will be promoting alternative modes of transportation to and from the Project as well as reduce VMT.

Walkways

Currently, walkways exist in the vicinity of the proposed Project site along Hanford-Armona Road, the south side of Glendale Avenue, Spruce Avenue, 19th Avenue, Liberty Drive, Lemoore Avenue and Cinnamon Drive. A goal of the 2011 Kings County Regional Bicycle Plan is to provide for pedestrian-friendly zones in conjunction with the development, redevelopment, and design of mixed-use neighborhood core areas, the Downtown area, schools, parks, and other high use areas. Therefore, it is recommended that the Project implement ADA compliant walkways along its frontages to Lemoore Avenue, Lacey Boulevard and the Project's internal roads. By implementing this recommendation, the City will be promoting alternative modes of transportation to and from the Project as well as reduce VMT.

Transit

Kings Area Rural Transit (KART), the transit operator in the City of Lemoore, provides fixed-route service. At present, there are no KART fixed routes that operate in the vicinity of the proposed Project. The closest is KART Route 20 – Lemoore, which runs on Hanford-Armona Road, approximately 0.71 miles to the southwest corner of the proposed Project. Route 20 operates at 30-minute intervals on Monday through Friday from 6:05 AM to 5:35 PM and 30-minute intervals on Saturday from 9:35 AM to 3:35 PM. The nearest stop to the Project site is located on the north side of Hanford-Armona Road approximately 575 feet east of Lemoore Avenue. This Route provides a direct connection to the KART Transit Center, Armona Senior Center, Heritage Park, Pioneer Square, Lemoore High School, City Park, Lemoore Depot and Liberty Middle school. Retention of the existing and expansion of future transit routes is dependent of transit ridership demand and available funding.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix J.

Under this scenario, the intersections of Lemoore Avenue and Lacey Boulevard, Lemoore Avenue and Street "S", Liberty Drive and Hanford-Armona Road and Cinnamon Drive and Hanford-Armona Road are projected to meet the peak hour warrant during the PM peak period only. The intersection of 19th Avenue and Hanford-Armona Road is projected meet the peak hour warrant during both peak periods. The remaining unsignalized study intersections do not satisfy the peak hour signal warrant during any peak period.

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 are projected to operate at an acceptable LOS during both peak periods under stop sign control. It is worth noting that the CA MUTCD states “satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal.” Therefore, it is recommended that prior to the installation of a traffic signal, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Existing plus Project Level of Service Analysis

The Existing plus Project Traffic Conditions scenario assumes that internal streets including Mary Drive and Street 'S' get added to the roadway network. It is also assumed that additions include a westbound left-turn lane at the intersection of Mary Drive and Lacey Boulevard and a two-way left-turn lane along Lemoore Avenue between Lacey Boulevard and approximately 600 feet north of Glendale Avenue. 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 III presents a summary of the Existing plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

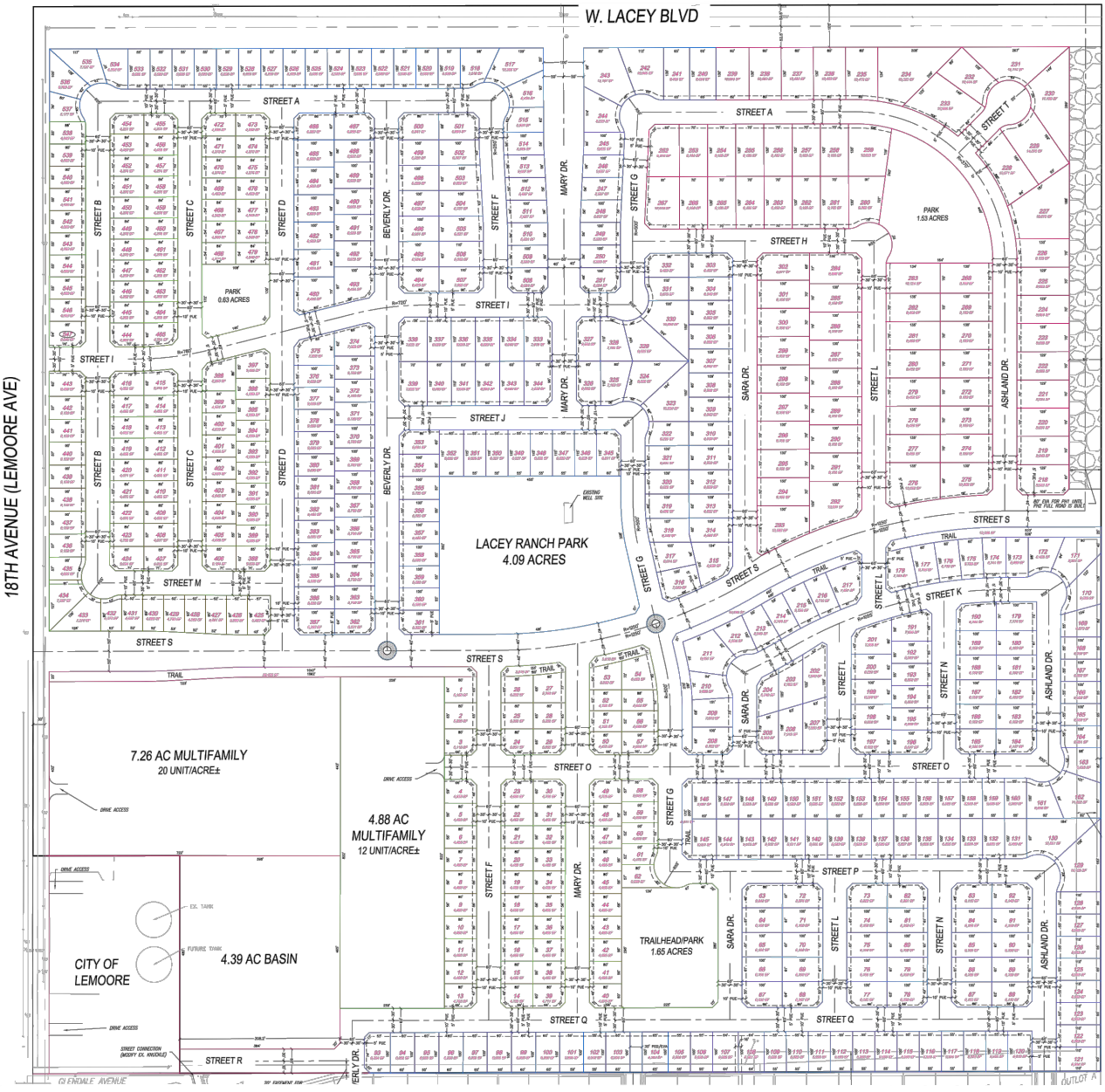
Table III: Existing plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7-9) Peak Hour		PM (4-6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	18 ¾ Avenue / Lacey Boulevard	One-Way Stop	10.7	B	9.9	A
2	Lemoore Avenue / Lacey Boulevard	All-Way Stop	11.4	B	12.3	B
3	Mary Drive / Lacey Boulevard	One-Way Stop	10.1	B	10.4	B
4	17th Avenue / Lacey Boulevard (North Leg)	One-Way Stop	11.0	B	12.5	B
5	17th Avenue / Lacey Boulevard (South Leg)	One-Way Stop	11.2	B	11.9	B
6	Lemoore Avenue / Street S	One-Way Stop	13.7	B	14.5	B
7	Lemoore Avenue / Glendale Avenue	Two-Way Stop	21.2	C	23.0	C
8	Lemoore Avenue / Spruce Avenue	Two-Way Stop	30.2	D	23.8	C
9	19th Avenue / Hanford-Armona Road	One-Way Stop	11.8	B	12.9	B
10	Liberty Drive / Hanford-Armona Road	Two-Way Stop	23.9	C	20.6	C
11	Cinnamon Drive / Hanford-Armona Road	Two-Way Stop	16.4	C	20.6	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.

Lacey Ranch - City of Lemoore
Project Site Plan

Figure 3



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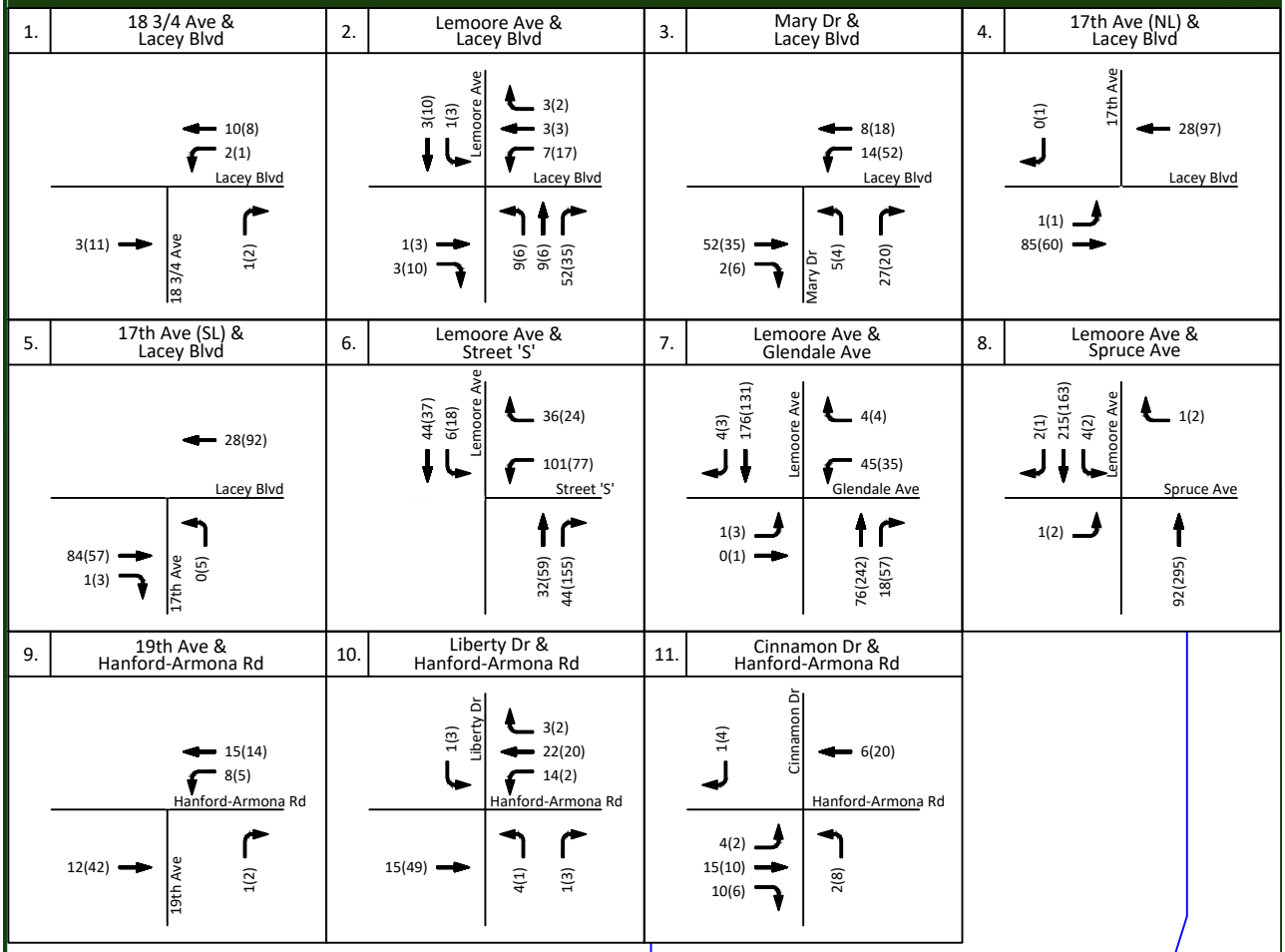
Not To Scale

Lacey Ranch - City of Lemoore
Project Only Trips

Figure 4



LEGEND

- # = STUDY INTERSECTION
- = FUTURE ROADWAY
- XX = AM PROJECT ONLY TRIPS
- (XX) = PM PROJECT ONLY TRIPS

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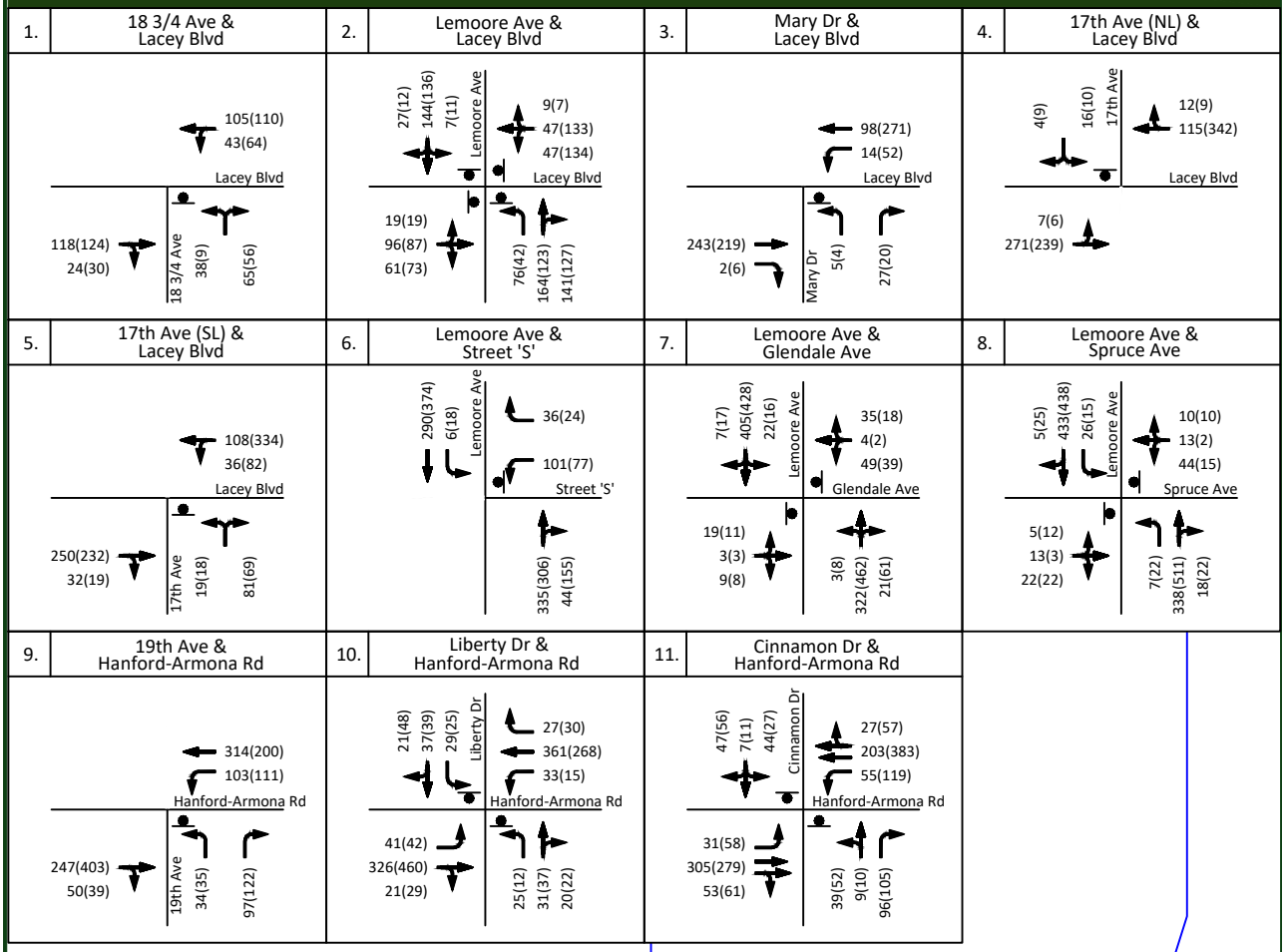
Lacey Ranch - City of Lemoore
Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



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Near Term plus Project Traffic Conditions

Description of Approved and Pipeline Projects

Approved and Pipeline Projects consist of developments 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 Lemoore, County of Kings and Caltrans staff were consulted throughout the preparation of this TIA regarding approved and/or known projects that could potentially impact the study intersections. JLB staff conducted a reconnaissance of the surrounding area to confirm the Near Term Projects. Subsequently, it was agreed that the projects listed in Table IV were approved, near approval, or in the pipeline within the proximity of the proposed Project.

The trip generation listed in Table IV is that which is anticipated to be added to the streets and highways by these projects between the time of the preparation of this report and five years after buildout of the proposed Project. As shown in Table IV, the total trip generation for the Near Term Projects is 16,621 daily trips, 1,625 AM peak hour trips and 1,455 PM peak hour trips. Figure 6 illustrates the location of the approved, near approval, or pipeline projects and their combined trip assignment to the study intersections under the Near Term plus Project Traffic Conditions scenario.

Table IV: Near Term Projects' Trip Generation

Approved Project Location	*Approved or Pipeline Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
A	Cinnamon Villas II	104	6	7
B	Dutch Bros.	707	77	37
C	Hanford-Armona Commercial	6,775	471	488
D	New Elementary School	1,323	469	119
E	Tract 848	3,417	268	358
F	Tract 920	963	75	101
G	Master Storage	159	15	19
H	Silva Estates #11	539	38	50
I	Victory Village	2,634	206	276
Total Approved and Pipeline Project Trips		**16,621**	**1,625**	**1,455**

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on JLB Traffic Engineering, Inc. Traffic Impact Analysis Report

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Near Term plus Project Traffic Conditions scenario. These warrants are found in Appendix J.

Under this scenario, the intersections of Lemoore Avenue and Lacey Boulevard, Lemoore Avenue and Street "S" and Cinnamon Drive and Hanford-Armona Road are projected to meet the peak hour warrant during the PM peak period only. The intersections of 19th Avenue and Hanford-Armona Road and Liberty Drive and Hanford-Armona Road satisfy the peak hour signal warrant during both peak periods. The remaining unsignalized study intersections do not satisfy the peak hour signal warrant during any peak period.

Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the City consider implementing traffic signal controls at the intersection of Liberty Drive and Hanford-Armona Road considering it is project to operate at an unacceptable LOS during the AM peak period. However, it is not recommended that the City consider implementing traffic signal controls at any of the other unsignalized study intersections especially since they are projected to operate at an acceptable LOS during both peak periods under stop sign control. It is worth noting that the CA MUTCD states, "satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal," Therefore, it is recommended that prior to the installation of a traffic signal, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Near Term plus Project Level of Service Analysis

The Near Term plus Project Traffic Conditions scenario assumes that the Existing plus Project roadway geometrics and traffic controls will remain in place. 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 V presents a summary of the Near Term plus Project peak hour LOS at the study intersections.

Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvement be implemented.

- Liberty Drive / Hanford-Armona Road
  - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

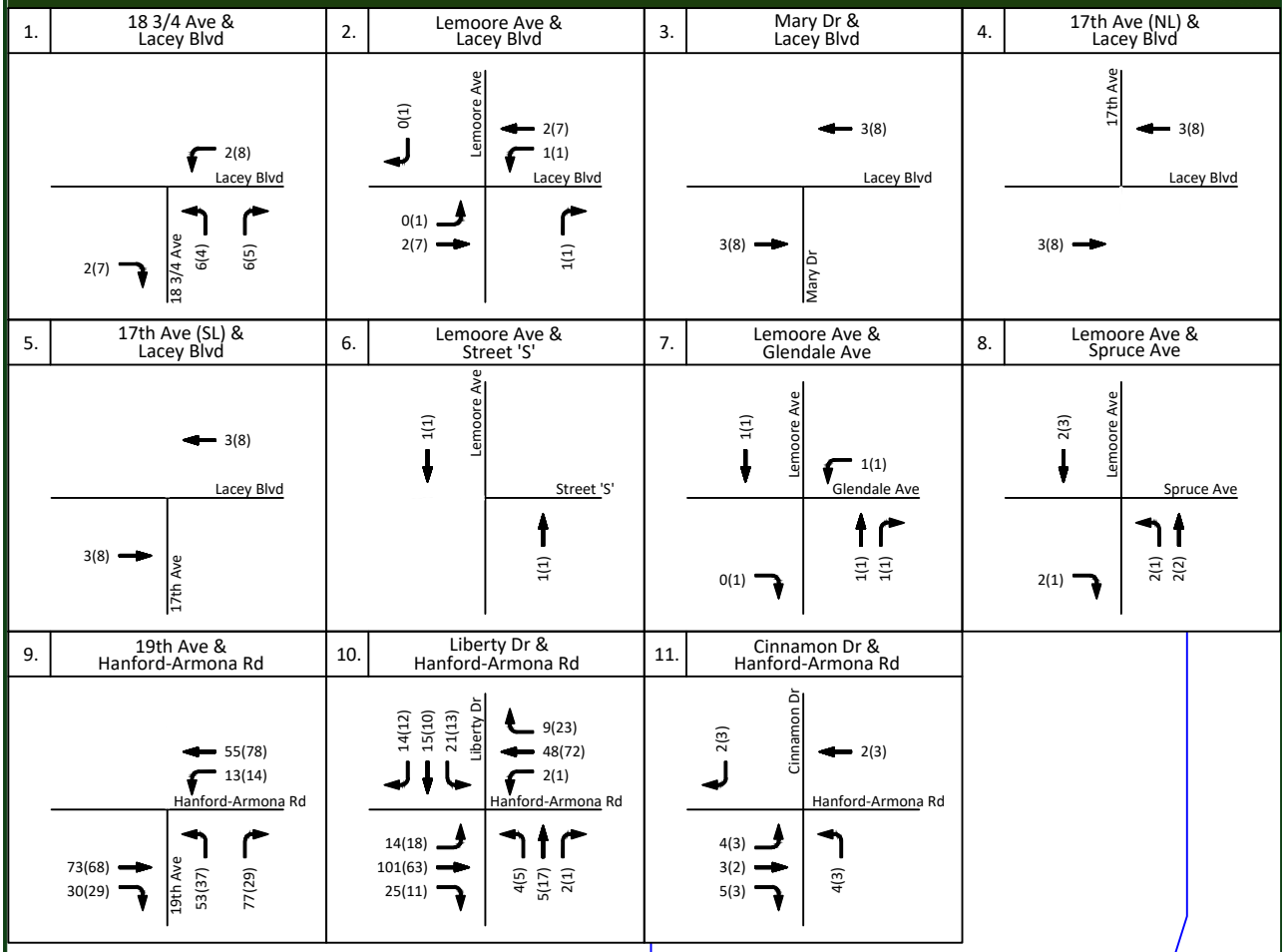
Table V: Near Term plus Project Intersection LOS Results

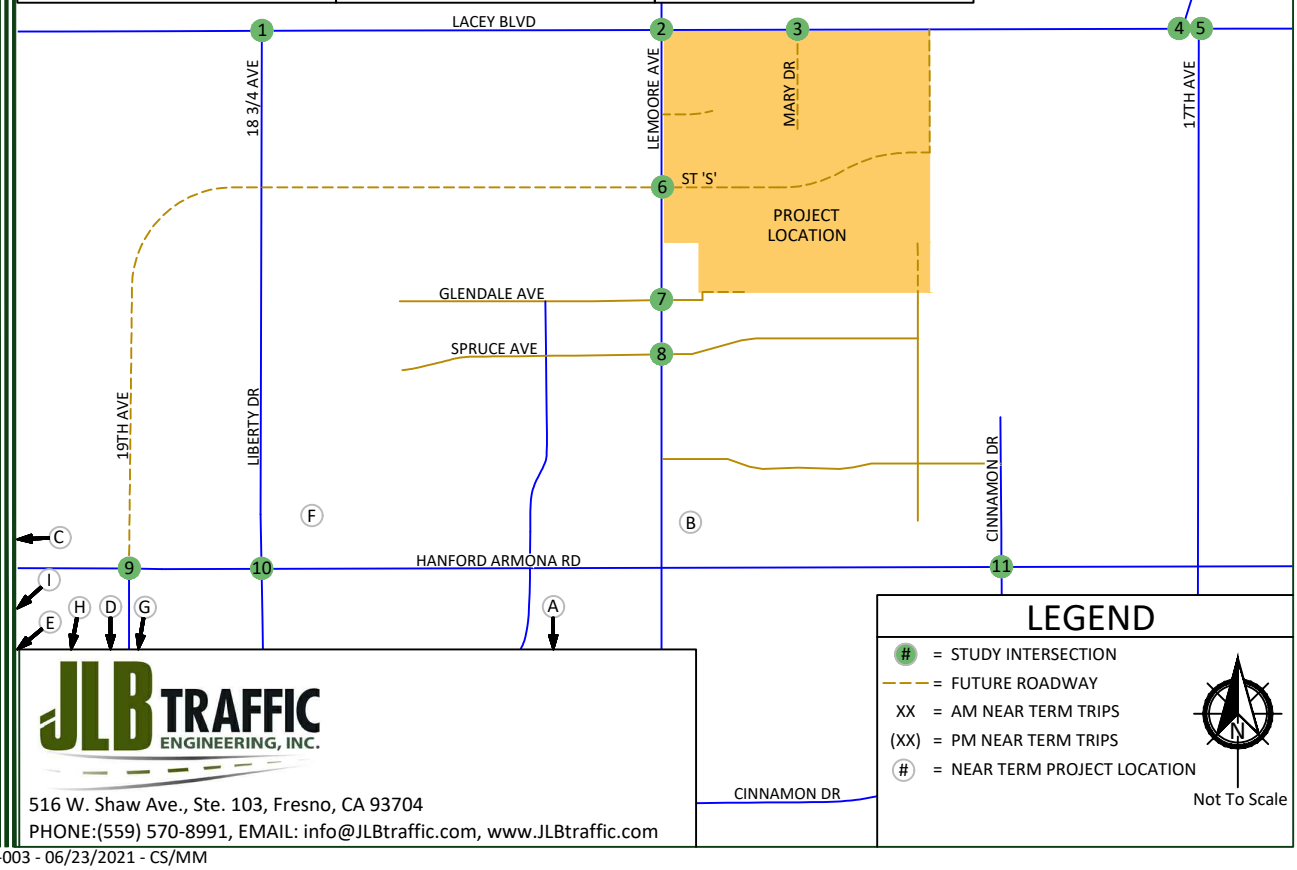
ID	*Intersection*	*Intersection Control*	*AM (7-9) Peak Hour*		*PM (4-6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	18 ¾ Avenue / Lacey Boulevard	One-Way Stop	10.9	B	10.2	B
2	Lemoore Avenue / Lacey Boulevard	All-Way Stop	11.5	B	12.6	B
3	Mary Drive / Lacey Boulevard	One-Way Stop	10.2	B	10.6	B
4	17th Avenue / Lacey Boulevard (North Leg)	One-Way Stop	11.1	B	12.7	B
5	17th Avenue / Lacey Boulevard (South Leg)	One-Way Stop	11.3	B	12.0	B
6	Lemoore Avenue / Street S	One-Way Stop	13.7	B	14.5	B
7	Lemoore Avenue / Glendale Avenue	Two-Way Stop	21.4	C	23.3	C
8	Lemoore Avenue / Spruce Avenue	Two-Way Stop	31.1	D	24.1	C
9	19th Avenue / Hanford-Armona Road	One-Way Stop	15.1	C	15.5	C
10	Liberty Drive / Hanford-Armona Road	Two-Way Stop	**46.5**	**E**	32.5	D
		Signalized (Improved)	17.1	B	16.3	B
11	Cinnamon Drive / Hanford-Armona Road	Two-Way Stop	16.7	C	20.8	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.

Lacey Ranch - City of Lemoore
Near Term Project Trips' Assignment

Figure 6





LEGEND

- (#) = STUDY INTERSECTION
- = FUTURE ROADWAY
- XX = AM NEAR TERM TRIPS
- (XX) = PM NEAR TERM TRIPS
- (#) = NEAR TERM PROJECT LOCATION

Not To Scale

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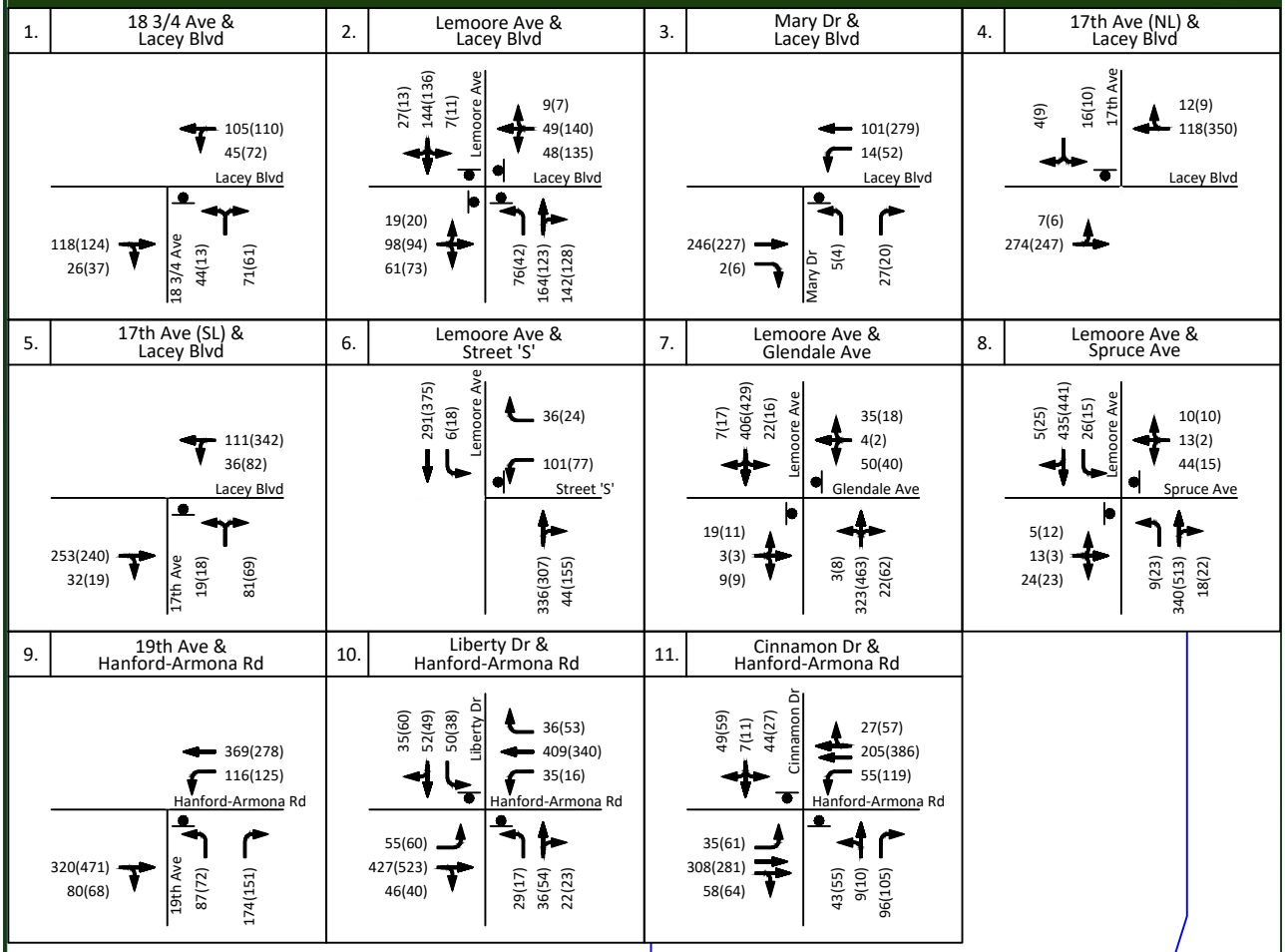
Lacey Ranch - City of Lemoore
Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



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Cumulative Year 2042 No Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2042 No Project Traffic Conditions scenario. These warrants are found in Appendix J.

Under this scenario, the intersections of Lemoore Avenue and Lacey Boulevard and Cinnamon Drive and Hanford-Armona Road are projected to satisfy the peak hour warrant during the PM peak period only. The intersections of 19th Avenue and Hanford-Armona Road and Liberty Drive and Hanford-Armona Road are projected to satisfy the peak hour signal warrant during both peak periods. The remaining unsignalized study intersections do not satisfy the peak hour signal warrant during any peak period.

Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the City consider implementing traffic signal controls at the intersection of Liberty Drive and Hanford-Armona Road considering it is projected to operate at an unacceptable LOS during the AM peak periods under stop sign control. However, it is not recommended that the City consider implementing traffic signal controls at any of the other unsignalized study intersections especially since they are projected to operate at an acceptable LOS during both peak periods under stop sign control. It is worth noting that the CA MUTCD states, "satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic control the installation of a traffic signal," Therefore, it is recommended that prior to the installation of a traffic signal, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Cumulative Year 2042 No Project Level of Service Analysis

The Cumulative Year 2042 No Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 8 illustrates the Cumulative Year 2042 No Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2042 No Project Traffic Conditions scenario are provided in Appendix H. Table VI presents a summary of the Cumulative Year 2042 No Project peak hour LOS at the study intersections.

Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvement be implemented.

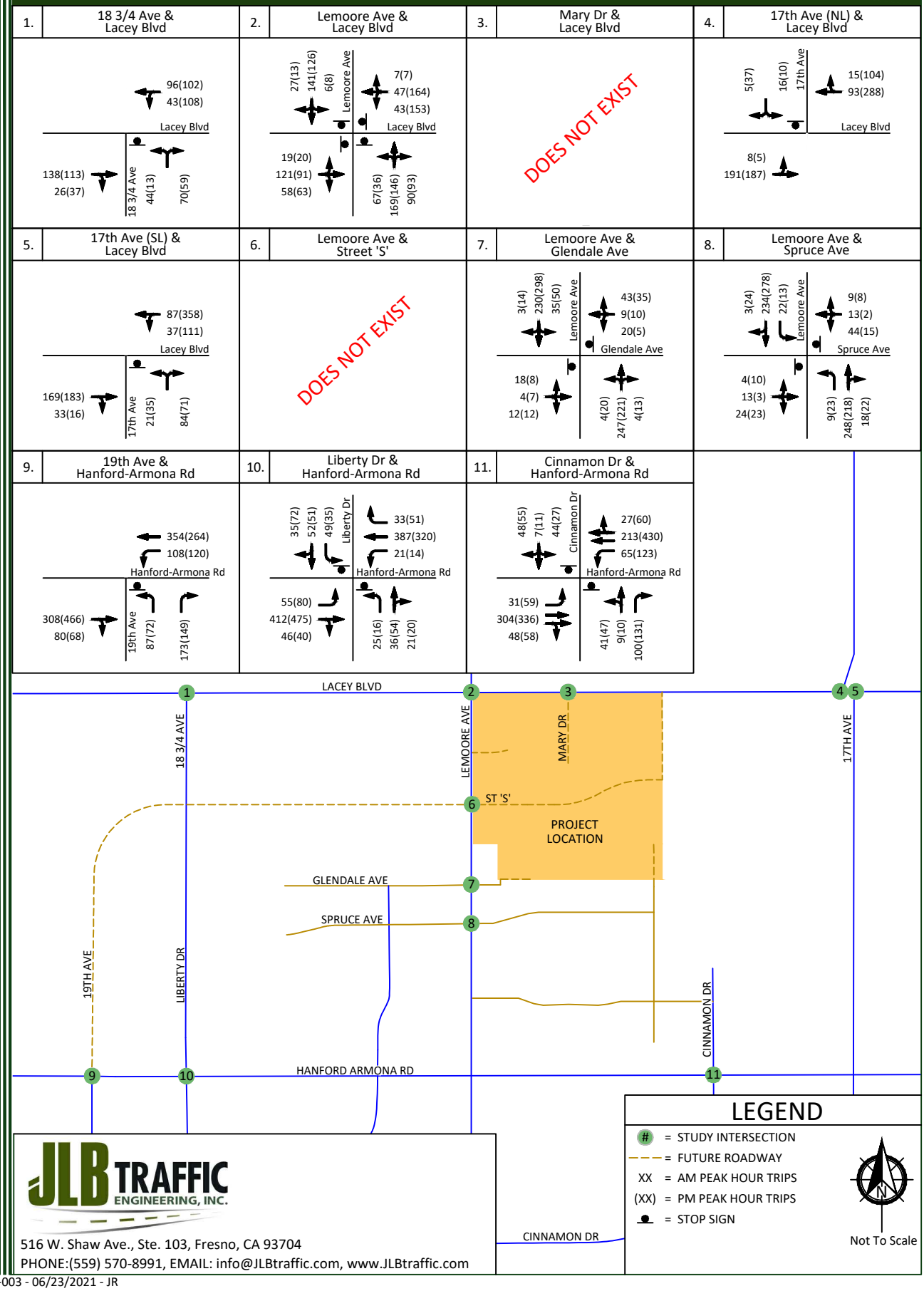
- Liberty Drive / Hanford-Armona Road
  - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Table VI: Cumulative Year 2042 No 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
1	18 ¾ Avenue / Lacey Boulevard	One-Way Stop	11.1	B	10.3	B
2	Lemoore Avenue / Lacey Boulevard	All-Way Stop	11.3	B	13.0	B
3	Mary Drive / Lacey Boulevard	Does Not Exist	N/A	N/A	N/A	N/A
4	17th Avenue / Lacey Boulevard (North Leg)	One-Way Stop	10.2	B	11.6	B
5	17th Avenue / Lacey Boulevard (South Leg)	One-Way Stop	10.5	B	13.5	B
6	Lemoore Avenue / Street S	Does Not Exist	N/A	N/A	N/A	N/A
7	Lemoore Avenue / Glendale Avenue	Two-Way Stop	14.5	B	14.0	B
8	Lemoore Avenue / Spruce Avenue	Two-Way Stop	17.4	C	13.8	B
9	19th Avenue / Hanford-Armona Road	One-Way Stop	14.6	B	15.2	C
10	Liberty Drive / Hanford-Armona Road	Two-Way Stop	**37.3**	**E**	31.5	D
		Signalized (Improved)	18.1	B	16.1	B
11	Cinnamon Drive / Hanford-Armona Road	Two-Way Stop	17.2	C	24.7	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Lacey Ranch - City of Lemoore
Figure 8
Cumulative Year 2042 No Project - Traffic Volumes, Geometrics and Controls



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Cumulative Year 2042 plus Project Traffic Conditions

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2042 plus Project Traffic Conditions scenario. These warrants are found in Appendix J.

Under this scenario, the intersections of 17th Avenue (South Leg) and Lacey Boulevard, Lemoore Avenue and Street "S" and Cinnamon Drive and Hanford-Armona Road are projected to meet the peak hour warrant during the PM peak period only. Under this scenario, the intersections of Lemoore Avenue and Lacey Boulevard, Lemoore Avenue and Glendale Avenue, 19th Avenue and Hanford-Armona Road and Liberty Drive and Hanford Armona-Road are projected to satisfy the peak hour signal warrant during both peak periods. The remaining unsignalized study intersections do not satisfy the peak hour signal warrant during any peak period.

Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the City consider implementing traffic signal controls at the intersection of Liberty Drive and Hanford-Armona Road considering it is projected to operate at an unacceptable LOS during both peak periods. However, it is not recommended that the City consider implementing traffic signal controls at any of the other unsignalized study intersections especially since they are projected to operate at an acceptable LOS during both peak periods under stop sign control. It is worth noting that the CA MUTCD states "satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal," Therefore, it is recommended that prior to the installation of a traffic signal, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Cumulative Year 2042 plus Project Level of Service Analysis

The Cumulative Year 2042 plus Project Traffic Conditions scenario assumes that the existing plus Project roadway geometrics and traffic controls will remain in place. Figure 9 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 I. Table VII presents a summary of the Cumulative Year 2042 plus Project peak hour LOS at the study intersections.

Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during both peak periods. To improve the LOS at this intersection, it is recommended that the following improvement be implemented.

- Liberty Drive / Hanford-Armona Road
  - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Project Only Trip Assignment to State Facilities

Figure 10 illustrates the Project Only Trips to the State Route 41 at Lacey Boulevard interchange. Similarly, Figure 11 illustrates the Project Only trips to the State Route 41 at Hanford-Armona Road Interchange.

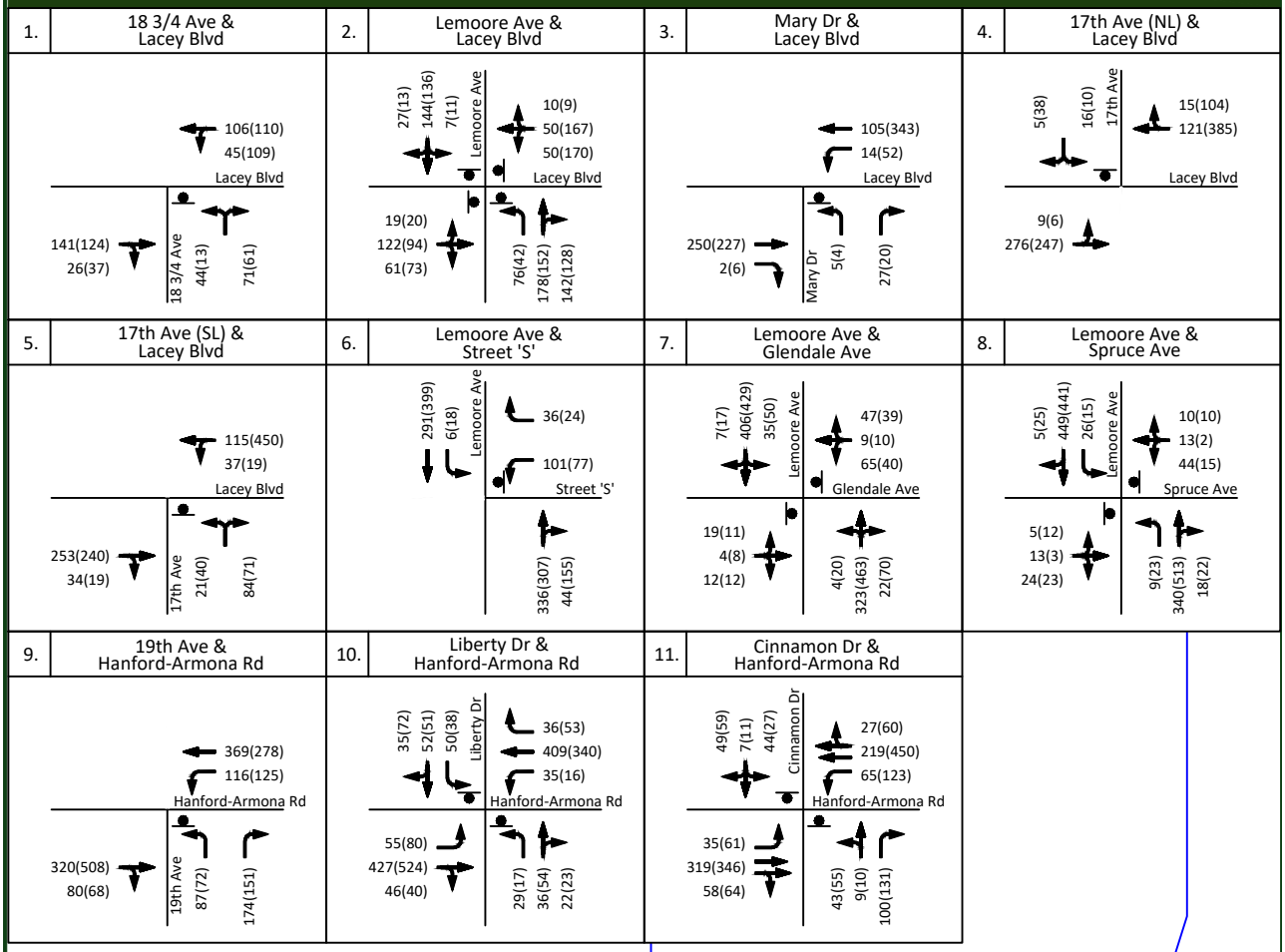
Table VII: Cumulative Year 2042 plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7-9) Peak Hour		PM (4-6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	18 ¾ Avenue / Lacey Boulevard	One-Way Stop	11.2	B	10.4	B
2	Lemoore Avenue / Lacey Boulevard	All-Way Stop	12.1	B	15.2	C
3	Mary Drive / Lacey Boulevard	One-Way Stop	10.2	B	10.7	B
4	17th Avenue / Lacey Boulevard (North Leg)	One-Way Stop	11.1	B	13.0	B
5	17th Avenue / Lacey Boulevard (South Leg)	One-Way Stop	11.4	B	16.2	C
6	Lemoore Avenue / Street S	One-Way Stop	13.7	B	14.8	B
7	Lemoore Avenue / Glendale Avenue	Two-Way Stop	27.1	D	28.8	D
8	Lemoore Avenue / Spruce Avenue	Two-Way Stop	32.3	D	24.1	C
9	19th Avenue / Hanford-Armona Road	One-Way Stop	15.1	C	16.1	C
10	Liberty Drive / Hanford-Armona Road	Two-Way Stop	**46.5**	**E**	**36.0**	**E**
		Signalized (Improved)	17.1	B	19.6	B
11	Cinnamon Drive / Hanford-Armona Road	Two-Way Stop	17.9	C	25.9	D

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Lacey Ranch - City of Lemoore
Cumulative Year 2042 plus Project - Traffic Volumes, Geometrics and Controls

Figure 9



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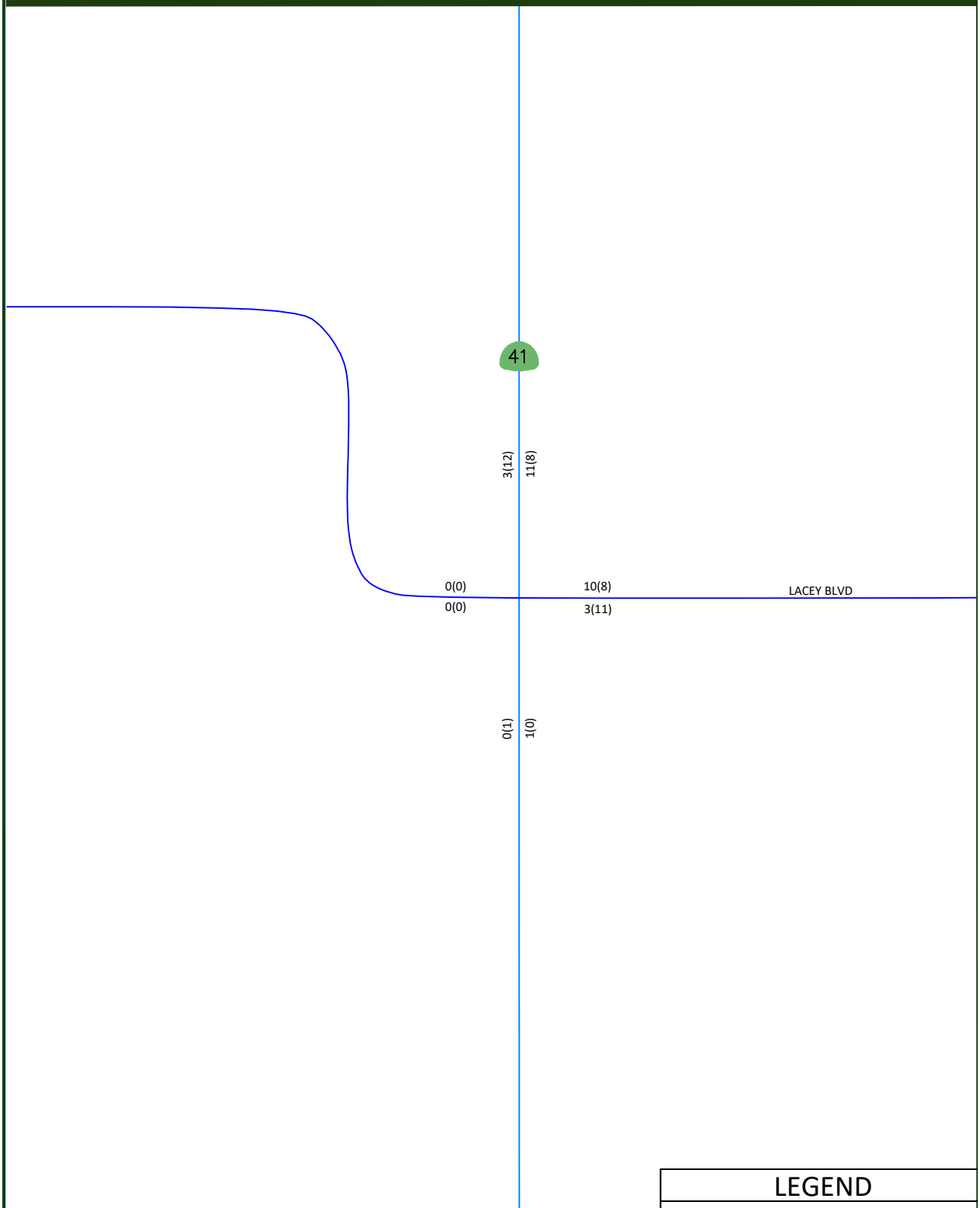
Lacey Ranch - City of Lemoore
State Route 41 and Lacey Boulevard - Project Only Trips

Figure 10



LEGEND

XX = AM PROJECT ONLY TRIPS
(XX) = PM PROJECT ONLY TRIPS

Not To Scale

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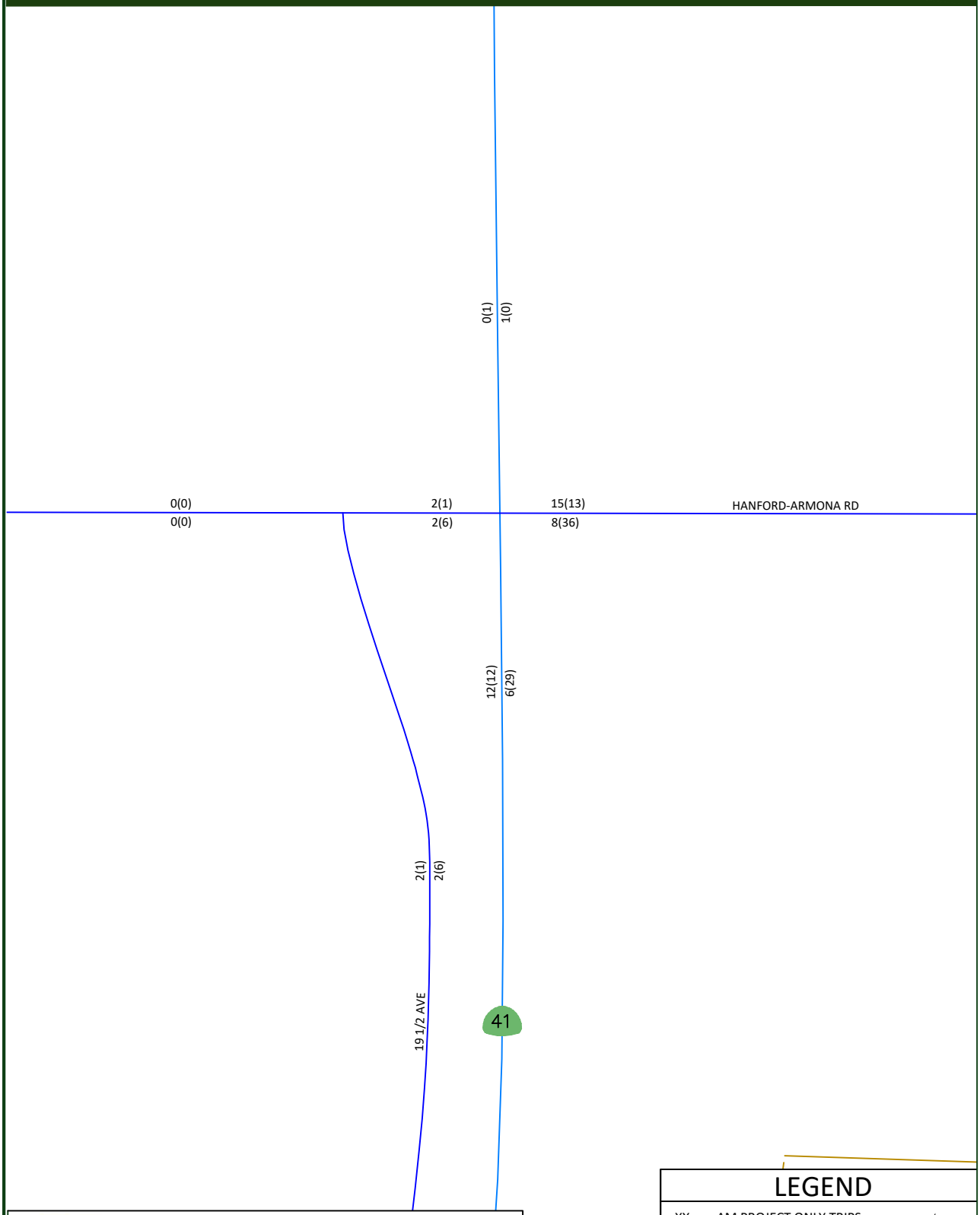
Lacey Ranch - City of Lemoore
State Route 41 and Hanford-Armona Road - Project Only Trips

Figure 11



LEGEND

XX = AM PROJECT ONLY TRIPS

(XX) = PM PROJECT ONLY TRIPS

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Queuing Analysis

Table VIII 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 Sim Traffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the Synchro manual, "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." The queues shown on Table VIII are the 95th percentile queue lengths for the respective lane movements.

The Highway Design Manual (HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. Per the HDM criteria, "tapers for right-turn lanes are usually un-necessary since the 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." Therefore, a bay taper length pursuant to the Caltrans HDM would need to be added, as necessary, to the recommended storage lengths presented in Table VIII.

Based on the SimTraffic output files and engineering judgement, it is recommended that the storage capacity for the following be considered for the Cumulative Year 2042 plus Project Traffic Conditions. At the remaining approaches, the existing storage capacity will be sufficient to accommodate the maximum queue.

- 19th Avenue / Cinnamon Drive
  - Consider increasing the storage capacity of the southbound left-turn lane to 150 feet.

Table VIII: Queuing Analysis

ID	*Intersection*	*Existing Queue Storage Length (ft.)*		*Existing*		*Existing plus Project*		*Near Term plus Project*		*Cumulative Year 2042 No Project*		*Cumulative Year 2042 plus Project*	
				AM	*PM*	*AM*	*PM*	*AM*	*AM*	*AM*	*PM*	*AM*	*PM*
1	18 ¾ Avenue / Lacey Boulevard	EB TR	>500	0	0	0	0	0	0	0	0	0	0
		WB LT	>500	17	32	15	28	16	21	25	33	22	43
		NB LR	>500	37	45	59	38	43	41	57	46	50	45
2	Lemoore Avenue / Lacey Boulevard	EB LTR	>500	60	59	61	65	60	60	64	54	64	63
		WB LTR	>500	46	76	49	73	48	77	47	78	57	88
		NB L	*	*	*	51	45	48	43	*	*	47	45
		NB TR	*	*	*	78	61	68	66	*	*	88	82
		NB LTR	>500	85	63	*	*	*	*	75	62	*	*
		SB LTR	>500	58	54	56	60	64	55	66	46	74	68
3	Mary Drive / Lacey Boulevard	EB TR	*	*	*	0	0	0	0	*	*	0	0
		WB L	*	*	*	12	31	17	31	*	*	12	30
		WB T	*	*	*	0	0	0	0	*	*	0	0
		NB L	*	*	*	8	18	22	16	*	*	18	11
		NB R	*	*	*	31	30	32	29	*	*	30	28

Note: * = Does not exist or is not projected to exist

Table VIII: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2042 No Project		Cumulative Year 2042 plus Project	
				AM	PM	AM	PM	AM	AM	AM	PM	AM	PM
4	17th Avenue (NL) / Lacey Boulevard	EB LT	>500	0	0	0	8	8	8	0	15	8	8
		WB TR	>500	0	0	0	0	0	0	0	0	0	0
		SB LR	>500	20	18	22	19	17	24	22	31	16	33
5	17th Avenue (SL) / Lacey Boulevard	EB TR	>500	0	0	0	0	0	0	0	0	0	0
		WB LT	>500	46	35	27	49	33	48	28	67	36	67
		NB LR	>500	56	35	47	41	57	45	42	64	52	64
6	Lemoore Avenue / Street 'S'	WB L	*	*	*	75	57	74	57	*	*	62	51
		WB R	*	*	*	48	42	46	53	*	*	56	42
		NB TR	*	*	*	0	6	0	0	*	*	0	7
		SB L	*	*	*	10	29	0	39	*	*	17	21
		SB T	*	0	0	0	0	0	0	0	0	0	0
7	Lemoore Avenue / Glendale Avenue	EB LTR	>500	56	43	49	47	57	48	47	37	44	48
		WB LTR	>500	56	45	64	58	64	57	53	51	68	110
		NB LTR	>300	10	15	23	25	14	21	12	22	9	45
		SB LTR	>500	9	18	43	31	24	29	38	24	44	77
8	Lemoore Avenue / Spruce Avenue	EB LTR	>500	53	40	59	57	62	53	58	45	55	50
		WB LTR	>500	52	42	66	49	63	51	60	48	81	47
		NB L	250	0	26	14	20	14	25	10	19	27	35
		NB TR	>500	0	0	0	6	0	0	0	0	0	0
		SB L	250	20	17	25	27	32	30	14	0	30	25
		SB TR	>300	0	0	0	0	0	0	0	0	0	0
9	19th Avenue / Hanford-Armona Road	EB TR	>500	0	0	7	0	7	7	10	14	16	7
		WB L	250	48	46	58	54	79	60	52	69	67	62
		WB T	>500	0	0	0	0	0	0	0	0	0	0
		NB L	250	41	47	51	45	136	96	117	83	75	77
		NB R	>300	62	61	70	60	84	68	83	84	73	84
10	Liberty Drive / Hanford-Armona Road	EB L	250	33	38	43	38	90	61	75	77	71	81
		EB TR	>500	6	0	8	9	217	195	233	210	160	201
		WB L	200	32	25	29	28	53	44	42	44	70	50
		WB T	>500	0	10	10	0	197	179	165	162	172	164
		WB R	200	0	0	7	0	47	48	38	48	40	42
		NB L	180	56	35	44	35	55	42	44	41	55	35
		NB TR	>500	62	65	63	54	72	82	74	82	71	82
		SB L	50	34	33	29	25	46	43	68	46	67	79
		SB TR	>500	42	50	37	49	68	52	59	60	71	86

Note: * = Does not exist or is not projected to exist

Table VIII: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2042 No Project		Cumulative Year 2042 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
11	Cinnamon Drive / Hanford-Armona Road	EB L	200	19	37	19	41	15	48	17	33	20	37
		EB T	>500	0	0	0	7	9	0	8	0	0	0
		EB TR	>500	5	5	0	6	7	8	0	7	0	5
		WB L	100	34	42	29	44	25	53	45	47	44	45
		WB T	>500	0	0	0	0	0	0	0	14	0	0
		WB TR	>500	0	12	0	20	0	0	0	12	0	0
		NB LT	>500	47	52	53	59	49	63	49	68	52	67
		NB R	120	46	48	67	44	51	48	55	59	51	57
		SB LTR	>500	74	71	67	79	66	64	73	74	64	73

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.

Existing plus Project Traffic Conditions

- The Project proposes to develop approximately 156-acres with single family residential units, multifamily units and parks
- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- The proposed Project is estimated to generate a maximum of 7,362 daily trips, 554 AM peak hour trips and 730 PM peak hour trips.
- It is recommended that the Project implement a Class II Bike Lane along its frontages to Lemoore Avenue, Lacey Boulevard, Street 'S' and Mary Drive between Street "I" and Lacey Boulevard in order to encourage multi modal transportation and reduce VMT.
- It is recommended that the Project implement ADA compliant walkways along its frontages to Lemoore Avenue, Lacey Boulevard and the Project's internal streets in order to encourage multi modal transportation and reduce VMT.
- Under this scenario, all study intersections are projected operate at an acceptable LOS during both peak periods.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 16,621 daily trips, 1,625 AM peak hour trips and 1,455 PM peak hour trips.
- Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvement be implemented.
    - Liberty Drive / Hanford-Armona Road
        - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Cumulative Year 2042 No Project Traffic Conditions

- Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during the AM peak period. To improve the LOS at this intersection, it is recommended that the following improvement be implemented.
    - Liberty Drive / Hanford-Armona Road
        - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Cumulative Year 2042 plus Project Traffic Conditions

- Under this scenario, the study intersection of Liberty Drive and Hanford-Armona Road is projected to operate at an unacceptable LOS during both peak periods. To improve the LOS at this intersection, it is recommended that the following improvement be implemented.
  - Liberty Drive / Hanford-Armona Road
    - Signalize the intersection with protective left-turn phasing in all directions while retaining the existing lane geometrics.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

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