DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
1010 10TH Street, Suite 3400, Modesto, CA 95354
Planning Phone: (209) 525-6330 Fax: (209) 525-5911
Building Phone: (209) 525-6557 Fax: (209) 525-7759

Referral
Early Consultation

Date: **January 27, 2022**

To: **Distribution List (See Attachment A)**

From: **Avleen K. Aujla, Assistant Planner**
Planning and Community Development

Subject: **USE PERMIT APPLICATION NO. PLN2021-0105 – MODESTO'S NEIGHBORHOOD CHURCH**

Respond By: **February 11, 2022**

****PLEASE REVIEW REFERRAL PROCESS POLICY****

The Stanislaus County Department of Planning and Community Development is soliciting comments from responsible agencies under the Early Consultation process to determine a) whether or not the project is subject to CEQA and b) if specific conditions should be placed upon project approval.

Therefore, please contact this office by the response date if you have any comments pertaining to the proposal. Comments made identifying potential impacts should be as specific as possible and should be based on supporting data (e.g., traffic counts, expected pollutant levels, etc.). Your comments should emphasize potential impacts in areas which your agency has expertise and/or jurisdictional responsibilities.

These comments will assist our Department in preparing the conditions for a Staff Approval. Therefore, please list any conditions that you wish to have included as well as any other comments you may have. Please return all comments and/or conditions as soon as possible or no later than the response date referenced above.

Thank you for your cooperation. Please call (209) 525-6330 if you have any questions.

Applicant: **Neighborhood Church, Lance Lowell**

Project Location: **4909 and 4919 Morrow Road, at the southwest corner of Morrow Road and Kiernan Avenue (SR 219), in the Modesto area.**

APN: **078-016-001**

Williamson Act Contract: **N/A**

General Plan: **Urban Transition (UT)**

Current Zoning: **General Agriculture (A-2-10)**

Project Description: **Request to construct and operate a church, called Neighborhood Church, on an 8.54± acre parcel located in the General Agriculture (A-2-10) zoning district. The request includes the construction of two new structures of 18,000± square feet each, to be constructed in two phases. Phase One includes construction of an 18,000-square-foot pre-engineered metal building, approximately 30± feet in height, which will include a sanctuary with seating capacity of 350, a foyer, five offices, two classrooms, two conference rooms, a kitchen, four designated children's rooms for child care during church services, bathroom facilities, three general storage rooms, and a server/electrical room. Phase Two of the project proposes an additional 18,000± square feet of multi-purpose space, which will be used for Bible studies, Sunday school classrooms, office space, and restrooms. The site will also be developed with 135 parking spaces in Phase One and 109 parking spaces in Phase Two, which will include lighting and landscaping. The project also proposes to develop the site with a storm water basin, perimeter landscaping, a children's play area,**

and a large grassy multi-use field. Religious services, occasional weddings (estimated 3-4 per year), and special events will be held inside the proposed buildings without an amplified sound system. The church will operate Monday through Friday from 8:00am to 5:00pm with approximately five full-time employees. Around 100 church members will attend Wednesday evening services from 6:30pm to 8:30pm. On Sunday mornings, there are two services at 9:00am and 10:45am attended by approximately 200 church members per service. Other evening and weekend special church related events for church members, including seminars and special holiday productions (e.g., Good Friday service, Christmas Eve service, etc.), are proposed to occur indoors on occasion throughout the year. The church proposes up to six special outside events per year, including but not limited to a trunk or treat or Easter egg hunt. These outdoor events will be limited to church members and will not include the use of amplified sound or acoustic music. The site will utilize a private well and septic system and proposes to take access from Morrow Road. The site is currently planted in a walnut orchard and is located within the City of Modesto's LAFCO adopted Sphere of Influence. Parking lot lighting, signage, and landscaping will be designed to comply with City of Modesto standards. A Traffic Impact Analysis (TIA) was prepared by KD Anderson and Associates, Inc. on October 8, 2021, which is attached to this project referral. The TIA analysis considered an average of 323 daily trips at maximum build out.

Full document with attachments available for viewing at:
http://www.stancounty.com/planning/pl/act-projects.shtm

USE PERMIT APPLICATION NO. PLN2021-0105 – MODESTO'S NEIGHBORHOOD CHURCH
Attachment A

Distribution List

	CA DEPT OF CONSERVATION Land Resources / Mine Reclamation		STAN CO ALUC
X	CA DEPT OF FISH & WILDLIFE		STAN CO ANIMAL SERVICES
	CA DEPT OF FORESTRY (CAL FIRE)	X	STAN CO BUILDING PERMITS DIVISION
X	CA DEPT OF TRANSPORTATION DIST 10	X	STAN CO CEO
X	CA OPR STATE CLEARINGHOUSE		STAN CO CSA
X	CA RWQCB CENTRAL VALLEY REGION	X	STAN CO DER
	CA STATE LANDS COMMISSION	X	STAN CO ERC
	CEMETERY DISTRICT	X	STAN CO FARM BUREAU
	CENTRAL VALLEY FLOOD PROTECTION	X	STAN CO HAZARDOUS MATERIALS
X	CITY OF: MODESTO	X	STAN CO PARKS & RECREATION
	COMMUNITY SERVICES/SANITARY DIST	X	STAN CO PUBLIC WORKS
X	COOPERATIVE EXTENSION		STAN CO RISK MANAGEMENT
	COUNTY OF:	X	STAN CO SHERIFF
X	FIRE PROTECTION DIST: SALIDA	X	STAN CO SUPERVISOR DIST 3: Terry Withrow
	HOSPITAL DIST:	X	STAN COUNTY COUNSEL
X	IRRIGATION DIST: MODESTO		StanCOG
X	MOSQUITO DIST: EASTSIDE	X	STANISLAUS FIRE PREVENTION BUREAU
X	MOUNTIAN VALLEY EMERGENCY MEDICAL SERVICES	X	STANISLAUS LAFCO
	MUNICIPAL ADVISORY COUNCIL:	X	STATE OF CA SWRCB DIVISION OF DRINKING WATER DIST. 10
X	PACIFIC GAS & ELECTRIC		SURROUNDING LAND OWNERS (on file w/the Clerk to the Board of Supervisors)
	POSTMASTER:	X	TELEPHONE COMPANY: AT&T
X	RAILROAD: UNION PACIFIC		TRIBAL CONTACTS (CA Government Code §65352.3)
X	SAN JOAQUIN VALLEY APCD		US ARMY CORPS OF ENGINEERS
X	SCHOOL DIST 1: STANISLAUS UNION	X	US FISH & WILDLIFE
X	SCHOOL DIST 2: MODESTO UNION		US MILITARY (SB 1462) (7 agencies)
	STAN ALLIANCE		USDA NRCS
X	STAN CO AG COMMISSIONER		WATER DIST:
	TUOLUMNE RIVER TRUST		

STANISLAUS COUNTY
CEQA REFERRAL RESPONSE FORM

TO: **Stanislaus County Planning & Community Development**
1010 10th Street, Suite 3400
Modesto, CA 95354

FROM: _____

SUBJECT: USE PERMIT APPLICATION NO. PLN2021-0105 – MODESTO'S NEIGHBORHOOD CHURCH

Based on this agency's particular field(s) of expertise, it is our position the above described project:

_____ Will not have a significant effect on the environment.
_____ May have a significant effect on the environment.
_____ No Comments.

Listed below are specific impacts which support our determination (e.g., traffic general, carrying capacity, soil types, air quality, etc.) – (attach additional sheet if necessary)

1.
2.
3.
4.

Listed below are possible mitigation measures for the above-listed impacts: *PLEASE BE SURE TO INCLUDE WHEN THE MITIGATION OR CONDITION NEEDS TO BE IMPLEMENTED (PRIOR TO RECORDING A MAP, PRIOR TO ISSUANCE OF A BUILDING PERMIT, ETC.):*

1.
2.
3.
4.

In addition, our agency has the following comments (attach additional sheets if necessary).

_____

_____

Response prepared by:

_____

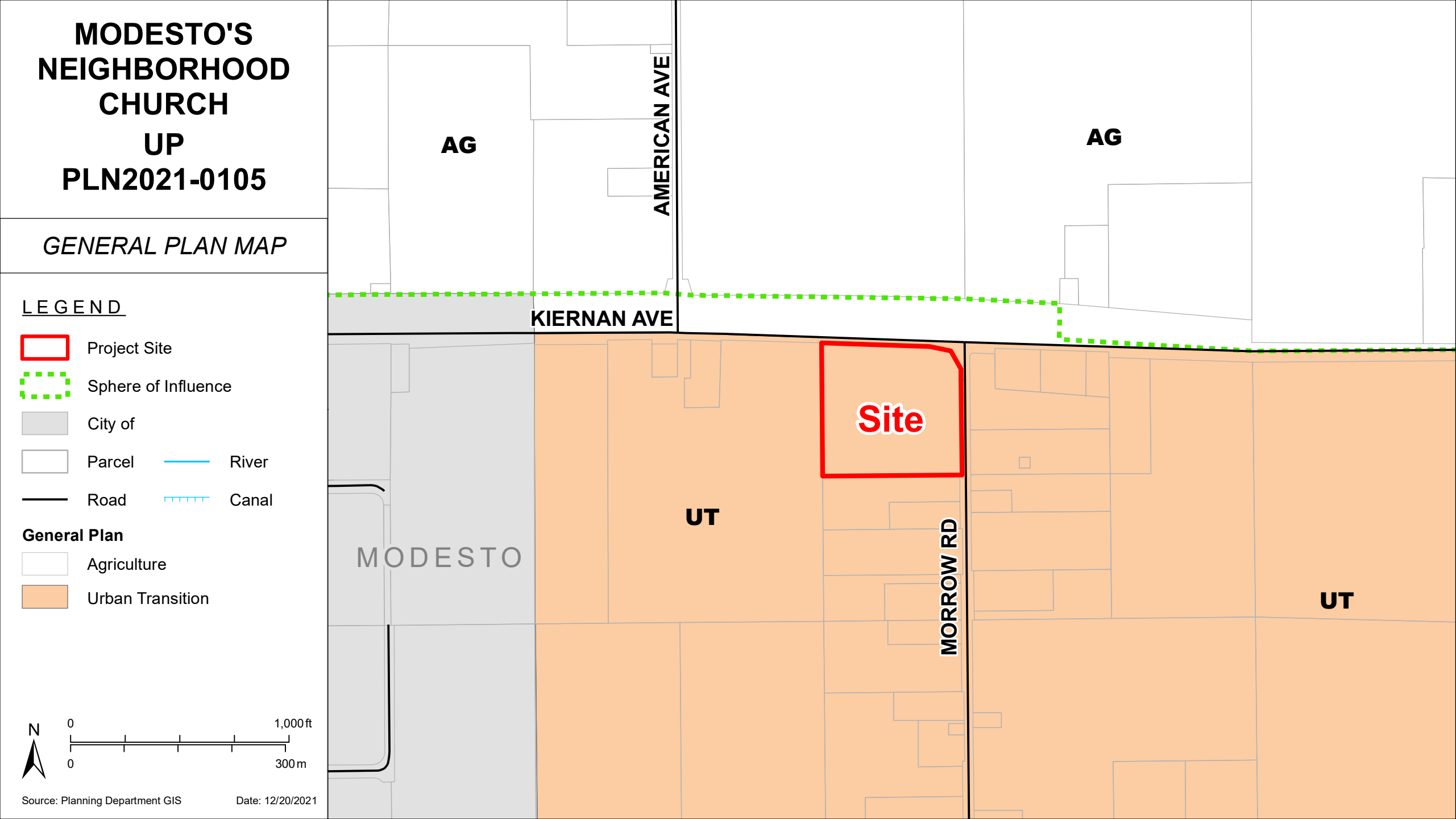
Name Title Date

MODESTO'S NEIGHBORHOOD CHURCH UP PLN2021-0105

AREA MAP

MODESTO'S NEIGHBORHOOD CHURCH
UP
PLN2021-0105

GENERAL PLAN MAP



LEGEND

- Project Site
- Sphere of Influence
- City of
- Parcel
- River
- Road
- Canal

General Plan

- Agriculture
- Urban Transition

N

0 1,000 ft

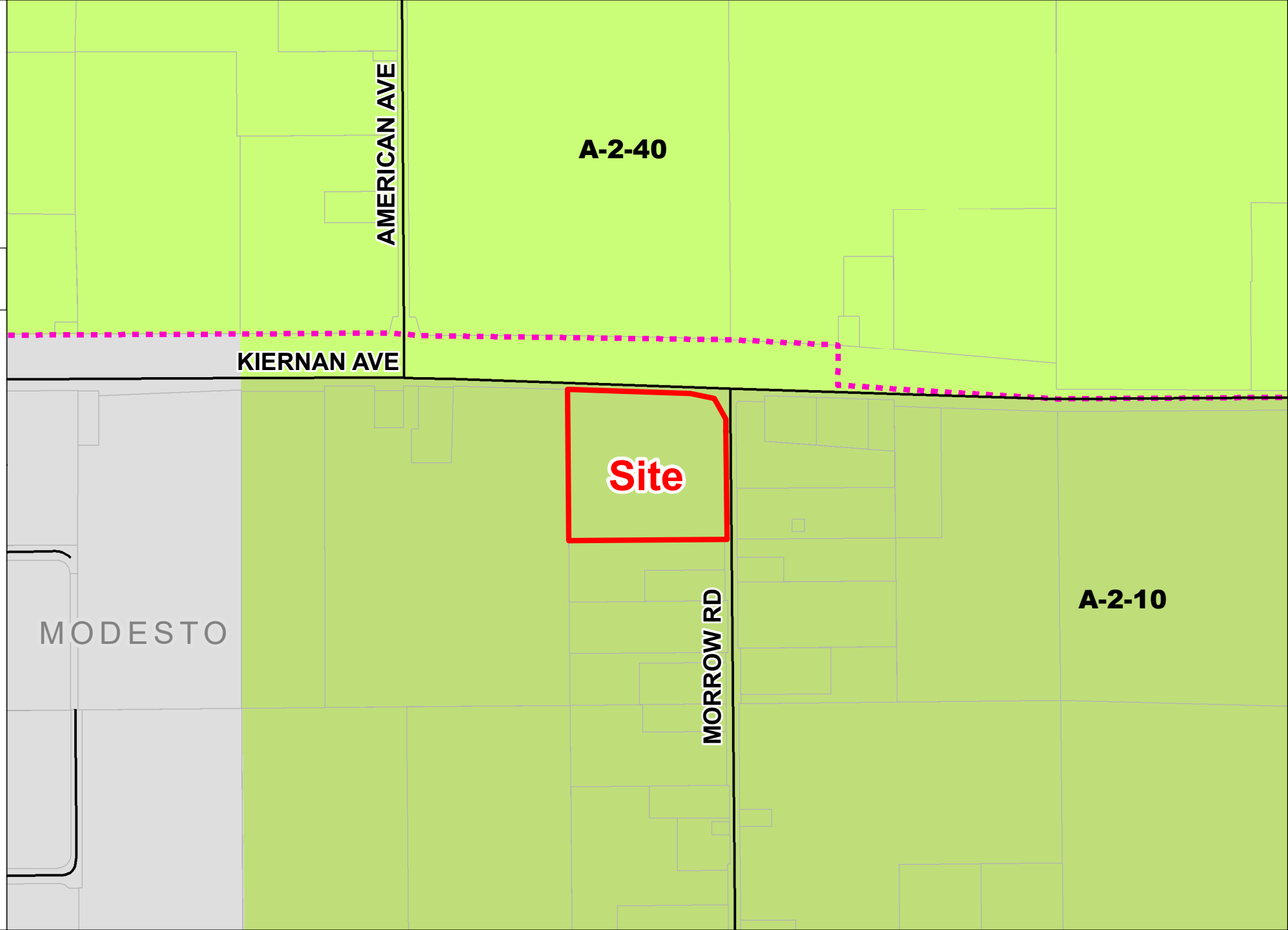
0 300 m

Source: Planning Department GIS

Date: 12/20/2021

MODESTO'S NEIGHBORHOOD CHURCH
UP
PLN2021-0105

ZONING MAP



LEGEND

- Project Site
- Sphere of Influence
- City of
- Parcel
- River
- Road
- Canal

Zoning Designation

- General Agriculture 10 Acre
- General Agriculture 40 Acre

N

0 1,000 ft

0 300 m

Source: Planning Department GIS

Date: 12/20/2021

MODESTO'S NEIGHBORHOOD CHURCH
UP
PLN2021-0105

2021 AERIAL AREA MAP

LEGEND

- Project Site
- Sphere of Influence
- Road

N

0 1,000 ft

0 300 m

Source: Planning Department GIS

Date: 12/20/2021

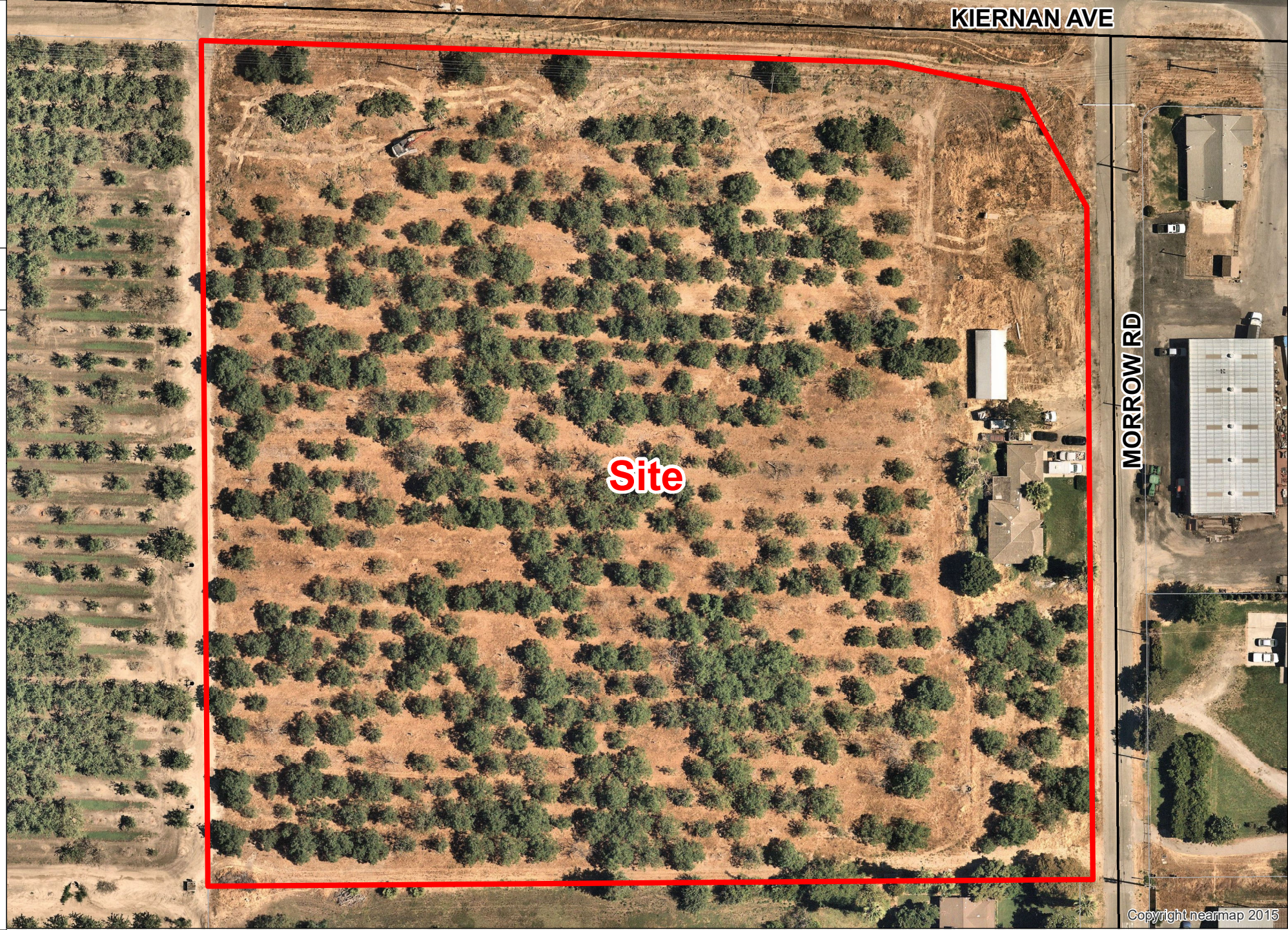
MODESTO'S NEIGHBORHOOD CHURCH
UP
PLN2021-0105

2017 AERIAL SITE MAP

LEGEND

Project Site

Road



N

0 100 ft

0 25 m

Source: Planning Department GIS

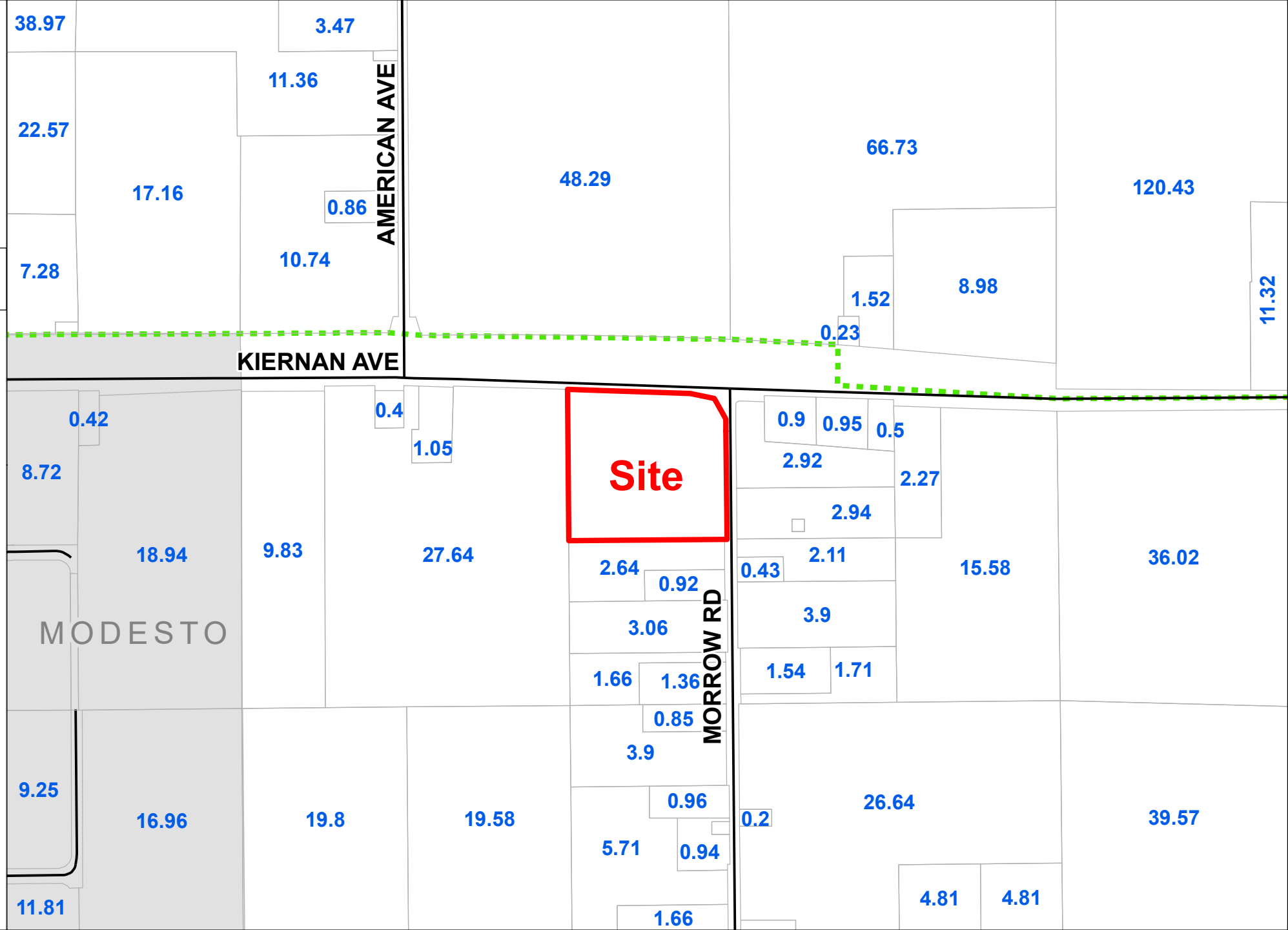
Date: 12/20/2021

MODESTO'S NEIGHBORHOOD CHURCH
UP PLN2021-0105

ACREAGE MAP

LEGEND

- Project Site
- Sphere of Influence
- City of
- # Parcel/Acres
- Road



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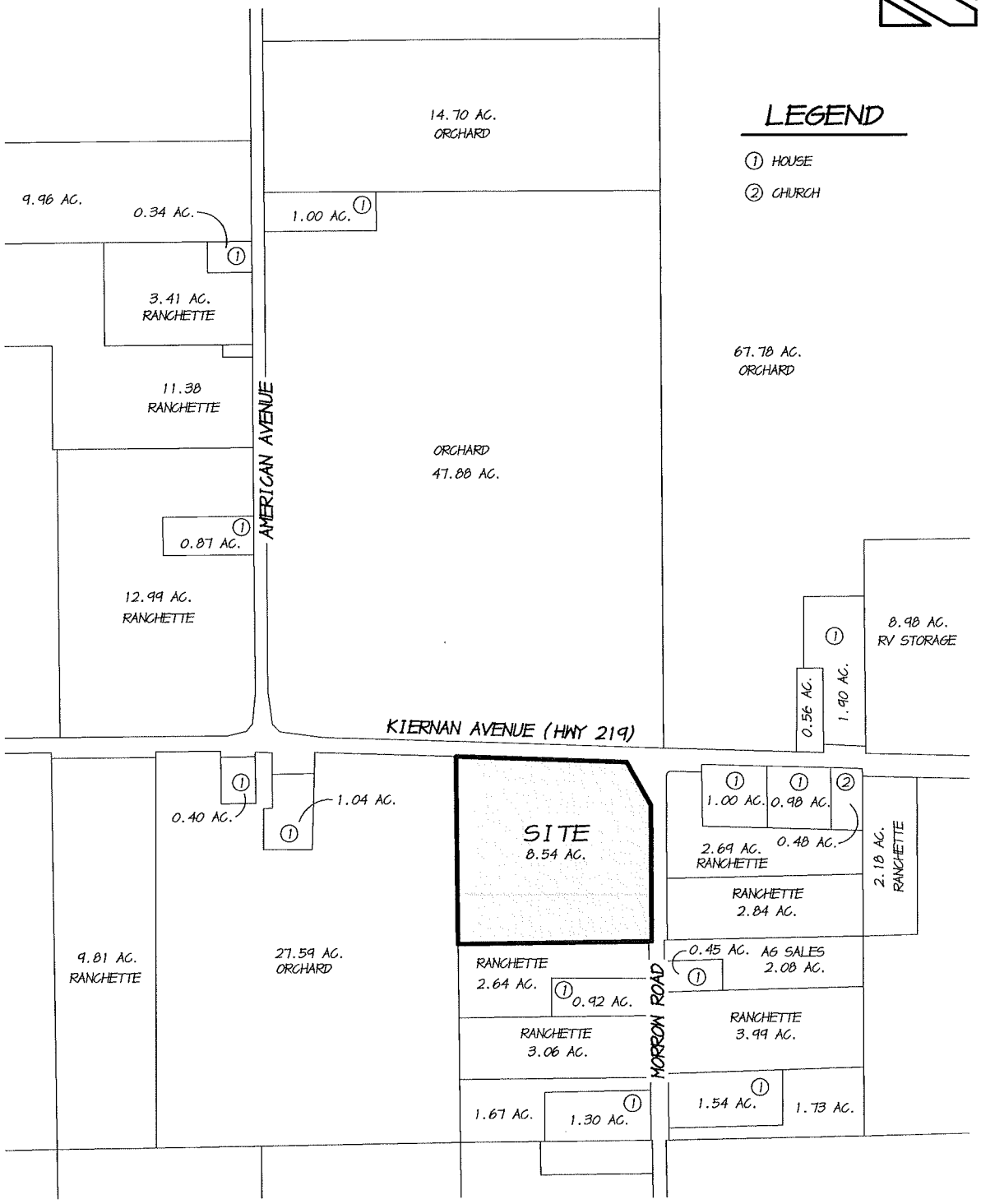
0 300 m

Source: Planning Department GIS

Date: 12/20/2021



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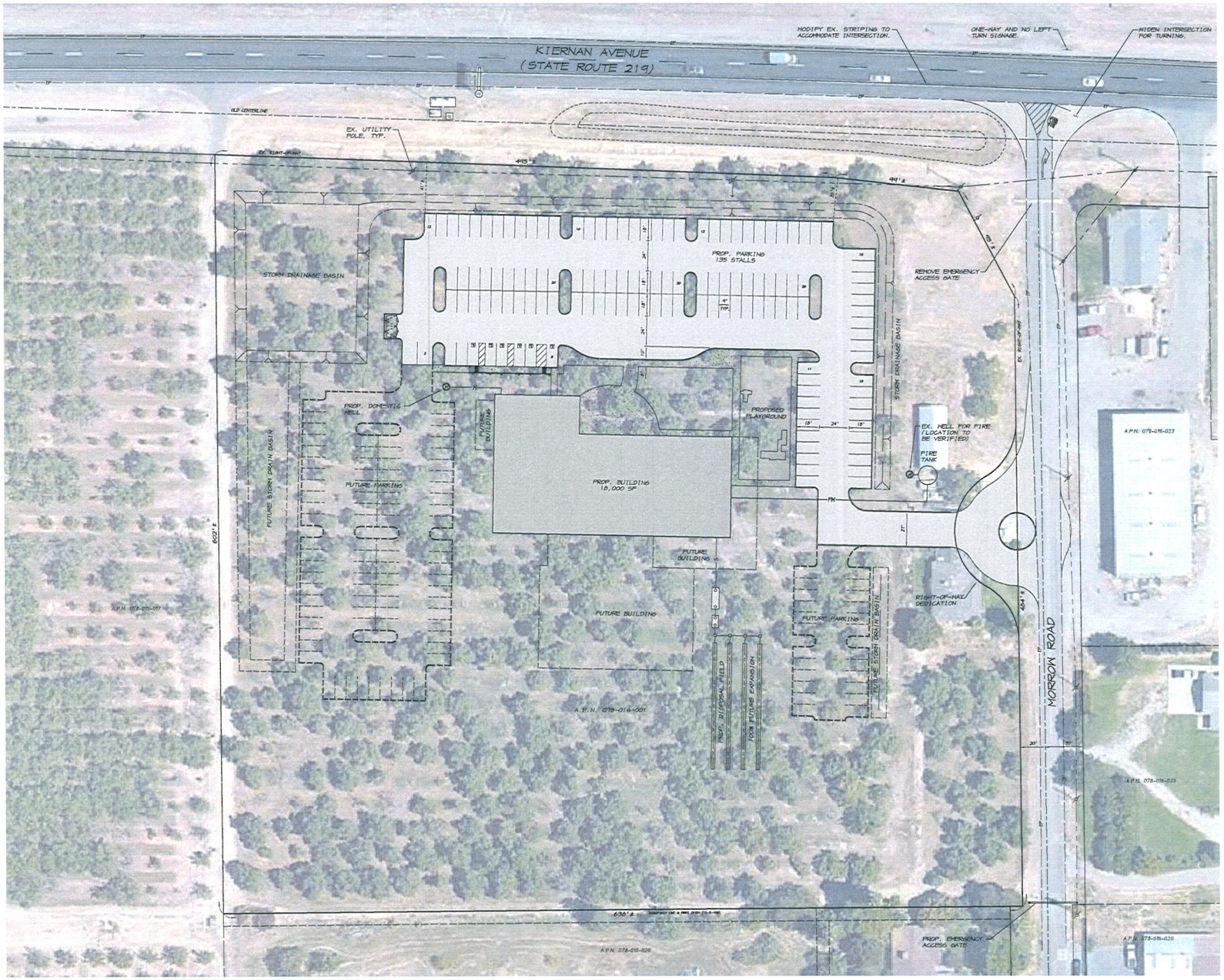
DATE:	10/28/21 11:11
SCALE:	1"=500'
JOB #:	1439-21
DWG:	1439-AREA MAP

AREA MAP

NEIGHBORHOOD CHURCH
A.P.N. 078-016-001
STANISLAUS COUNTY CALIFORNIA

ASSOCIATED ENGINEERING GROUP
4206 TECHNOLOGY DRIVE, SUITE 4, MODESTO, CA 95356
PHONE: (209) 545-3390 FAX: (209) 545-3875 www.assoceng.com



ASSOCIATED ENGINEERING GROUP
4206 TECHNOLOGY DRIVE, SUITE 4, MODESTO, CA. 95356
PHONE (209) 543-0300 FAX (209) 543-0840 www.aegcorp.com

CONCEPTUAL SITE PLAN
NEIGHBORHOOD CHURCH
STANISLAUS COUNTY CALIFORNIA

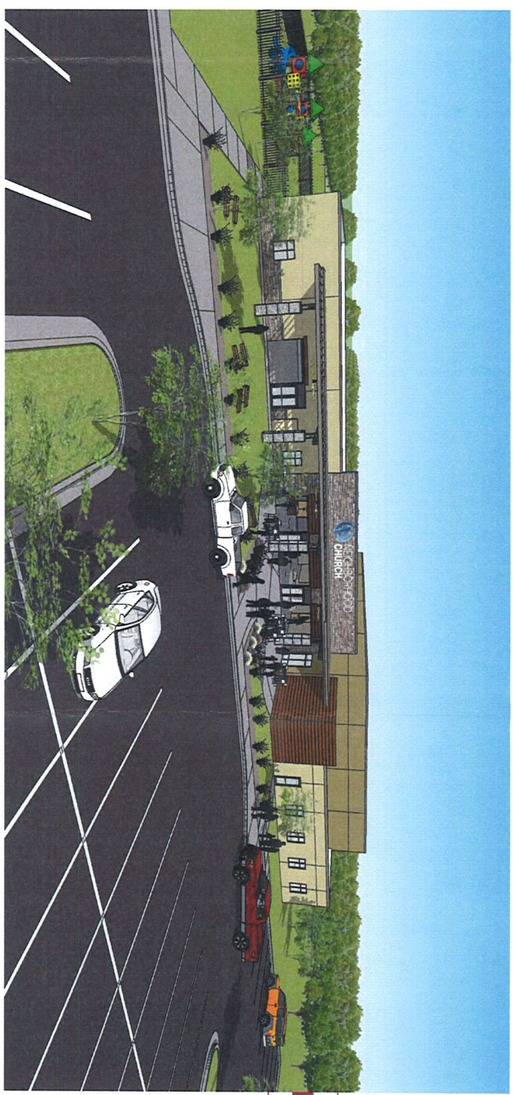
RYAN CHANEL, R.C.E. 61619
DAVE BIDEMORE, L.S. 7126

DRAWN BY: J.T.S.
DATE: 8/30/21 3:04
SCALE: 1"=30'
DWG: 1494-SITE
CHECKED: R.D.C.
JOB #: 1494-21

SHEET 1 OF 1


NEIGHBORHOOD
CHURCH


NEIGHBORHOOD
CHURCH


NEIGHBORHOOD
CHURCH

TRANSPORTATION IMPACT ANALYSIS

For

NEIGHBORHOOD CHURCH RELOCATION

Stanislaus County, CA

Prepared For:

Neighborhood Church
5921 Stoddard Road
Modesto, CA 95356

Prepared By:

KD Anderson & Associates, Inc.
3853 Taylor Road, Suite G
Loomis, CA 95650
(916) 660-1555

October 8, 2021

4712-A-001

Neighborhood Church 10.8.21.rpt

TRANSPORTATION IMPACT ANALYSIS FOR NEIGHBORHOOD CHURCH RELOCATION

Stanislaus County, CA

TABLE OF CONTENTS

October 8, 2021

KDA

TRANSPORTATION IMPACT ANALYSIS FOR
NEIGHBORHOOD CHURCH RELOCATION
Stanislaus County, CA

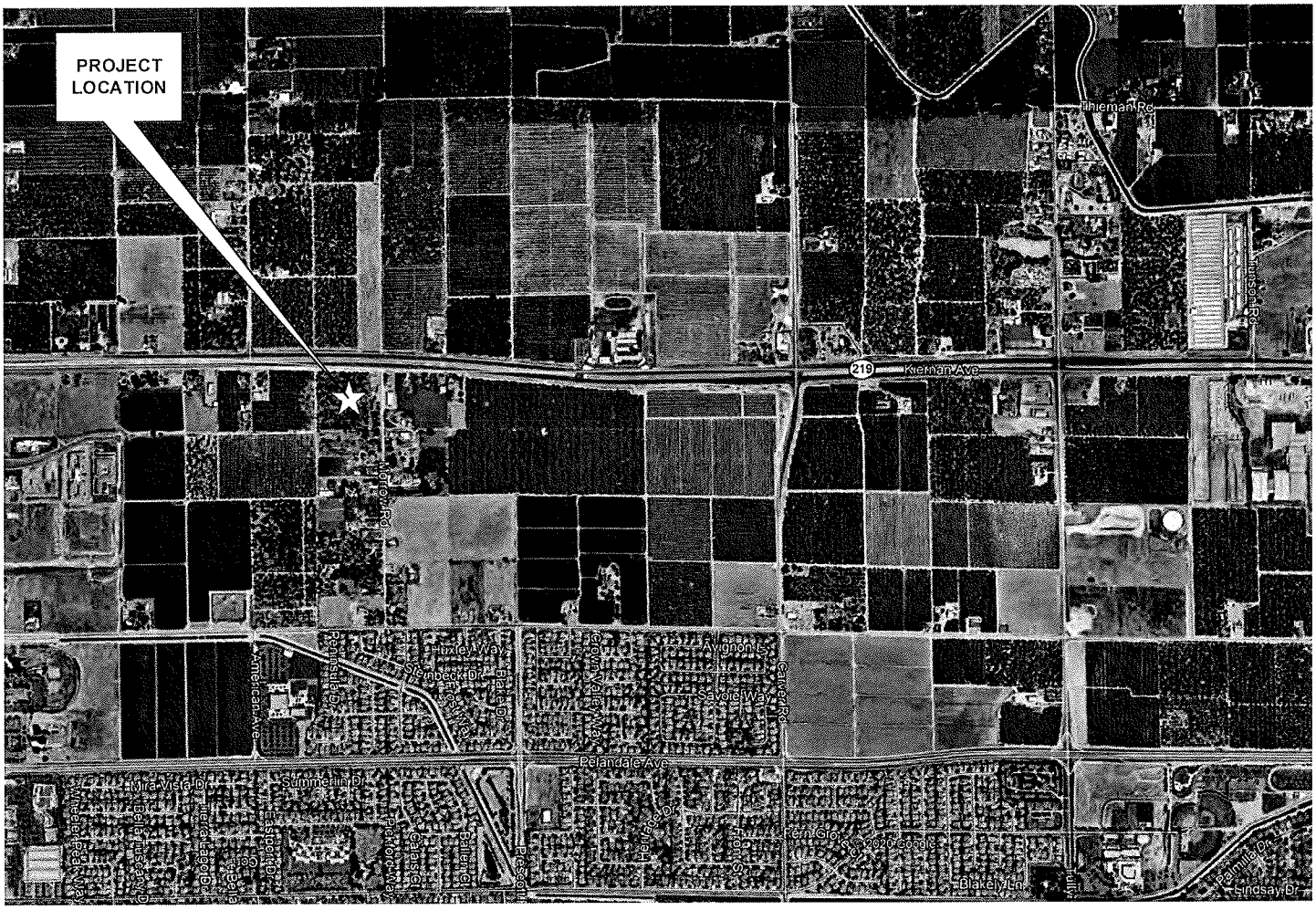
INTRODUCTION

This report summarizes **KD Anderson & Associates'** analysis of the potential traffic operational impacts associated with the **Neighborhood Church Relocation** Project in Stanislaus County, California. The proposed project is a church to be located on an 8± acre site at the southwest corner of the intersection of Kiernan Avenue (SR 219) and Morrow Road within the City of Modesto sphere of influence, as noted in Figure 1

The project would ultimately construct a 36,000 sf facility, although the initial phase is a 18,000 sf church. The project replaces an existing facility on Stoddard Road in Salida. The Neighborhood Church would host two Sunday services beginning at 9:00 a.m. and 10:45 a.m., with lesser functions occurring on weekdays, primarily during off-peak traffic hours.

The project proposes one point of access, as noted in Figure 2. A new driveway will be constructed on Morrow Road about 280 feet south of Kiernan Avenue. Today Morrow Road is closed and gated. The existing gate on Morrow Road will be moved southerly beyond the church access to maintain the current limitation on Kiernan Avenue access to the neighborhood south of the site.

Study Scope. This report identifies project impacts with regards to current traffic conditions as well as cumulative conditions that assume occupancy of other approved projects or long-term traffic growth. Current traffic conditions that are representative of Year 2020 without the effects of COVID-19 have been identified. Project automobile trip generation has been estimated, and the effects of the project on that background condition have been determined. The project's effects have been assessed within the context of a short-term cumulative condition that reflects occupancy of approved projects in the City of Modesto and Stanislaus County, as well as under 2040 conditions that are consistent with the North County Corridor (NCC) EIR traffic model. The extent of local circulation system improvements needed to accommodate project access and to result in conditions that are consistent with City and County General Plan policy requirements have been identified.

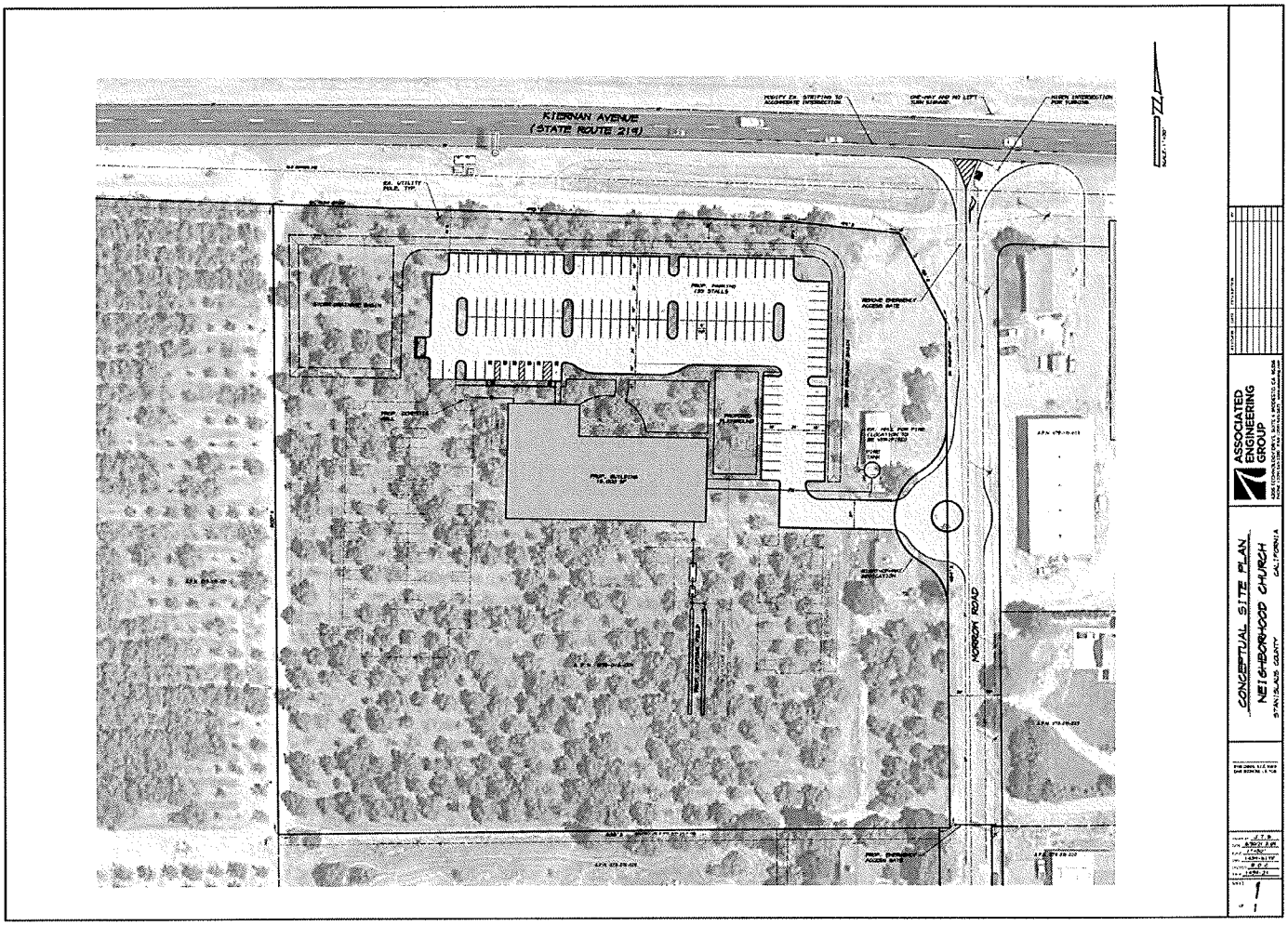


VICINITY MAP

KD Anderson & Associates, Inc.
Transportation Engineers

4712-1-0113 RA 9/16/2021

figure 1



SITE PLAN

KD Anderson & Associates, Inc.
Transportation Engineers

4712-1-0113 RA 9/16/2021

figure 2

EXECUTIVE SUMMARY

The following conclusions have been reached and recommendations made in this analysis.

Existing Traffic Operating Conditions. Assessment of Year 2020 traffic volumes adjusted to account for the effects of COVID -19 indicates that with one exception all intersections in the study area operate with Levels of Service that satisfy the minimum requirements for locations in Stanislaus County within the City of Modesto Sphere of Influence (i.e., LOS D). The exception is the Kiernan Avenue / Stanislaus ES access intersection which operates at LOS E in the morning peak hour before school. Projected peak hour queues can be accommodated within available storage at intersections, and no unsignalized intersections carry traffic volume that satisfy traffic signal warrants.

Project Characteristics. The amount of automobile associated with the project will vary greatly through the week. On weekdays, a 36,000 sf church would be expected to generate 12 trips in the a.m. peak hour and 18 trips in the p.m. peak hour. Alternatively, the initial 18,000 sf phase of the project would generate 173 trips (total inbound and outbound) during the Sunday hour, and the ultimate 36,000 sf project is expected to create 360 trips at that time.

The volume of traffic at the site will vary over the course of the week, but based on ITE rates the ultimate project could generate an average of 323 daily trips. Because the majority of the church members reside south of the site in Modesto, relocating the congregation from its Stoddard Road location to this site will reduce the church's current regional Vehicle Miles Traveled (VMT).

Project Access. The project would have access to Morrow Road. Morrow Road is a local street that extends from Bangs Avenue to Kiernan Avenue. In 2015 this two-lane local street was gated at the Kiernan Avenue intersection when the highway was widened to four lanes, and the road is signed as a "Dead End" street at Bangs Avenue. The project proposes to move the gate to the south of the Church access to ensure that church traffic does not impact the exiting neighborhood.

Recommended Access Improvements. These improvements should be constructed to safely accommodate the project's Sunday traffic.

Deceleration Lane. While the existing twelve-foot wide bike lane / shoulder that already exists along Kiernan Avenue provides room for deceleration, to accommodate ultimate church traffic we recommend that this area west of the Morrow Road intersection be widened to provide a right turn lane that is separated from through traffic by six (6) feet. The initial phase 1 church could proceed using the existing shoulder. The combination of the transition area and right turn lane should be designed to fall within the intersection and the changeable message sign.

Intersection Design. To accommodate turning and acceleration, improvements that are similar to those provided at the existing American Avenue intersection are recommended. This work would include large radius returns and exiting taper.

Left Turn Restriction. To ensure that exiting motorists do not attempt to turn left across the existing gravel center median area of Kiernan Avenue (SR 219), the Morrow Road intersection should include a painted "pork chop" median and signs to prohibit left turns.

Existing Plus Project Traffic Operations. The addition of project traffic to the study area street system does not result in any additional location operating with Levels of Service that exceed the minimum LOS D standard. Projected 95th percentile queues can be contained within available storage. While the volume of traffic at the access satisfies peak hour volume warrants, because all traffic turns right, the Level of Service will be acceptable, and a traffic signal is not recommended.

Existing Plus Approved Project Conditions. Approved projects that remain to be developed within the study area were identified by City of Modesto and County staff. Development of these projects would not result in any new conditions in excess of adopted standards for LOS or queuing. While the addition of trips from the proposed project increases the length of delays on Sundays, applicable LOS and queuing standards will continue to be satisfied.

Year 2040 Traffic Operations. Long term traffic conditions will reflect the effects of regional growth and implementation of planned circulation system improvements. Future traffic volume forecasts were derived from the regional travel demand forecasting model created for the North County Corridor (NCC) EIR and reflect the addition of the City of Riverbanks Crossroads West SP which was approved following the NCC EIR.

Without additional improvements the signalized study area intersections are expected to deliver Levels of Service that exceed the minimum LOS D standard without the project, and the length of peak period queues are expected to exceed the available storage.

The extent of improvements needed to deliver satisfactory Levels of Service are dependent on decisions regarding the development of future roadways identified in the City of Modesto General Plan but not assumed in the NCC regional travel demand forecasting model, such as the extension of American Avenue and Prescott Avenue to Kiernan Avenue (SR 217). Local intersection improvements needed without those extensions include:

At *Kiernan Avenue (SR 219) / Dale Road* the following changes would yield LOS D:

- Northbound approach: add 2nd through lane
- Southbound approach: add 2nd through lane
- Westbound approach: add 3rd through lane and right turn lane

At *Kiernan Avenue (SR 219) / Stanislaus ES access intersection* the following improvements would yield LOS D:

- Eastbound approach: add 3rd through lane
- Westbound approach: add 3rd through lane

At *Kiernan Avenue (SR 219) / Carver Road intersection* the following changes would result in LOS D during each time period:

- Northbound approach: add 2nd left turn lane and right turn lane
- Southbound approach: add 2nd through lane
- Westbound approach: add 2nd left turn lane

While not analyzed as part of this analysis, it is reasonable to expect that the level of local intersection improvements would be less if the American Avenue and Prescott Avenue extensions were constructed and the volume of traffic turning at the other intersections was reduced.

Year 2040 Plus Project Traffic Operations. The addition of Neighborhood Church trips has no appreciable effect on the weekday operation of the study area circulation system. While the project will increase area traffic on Sundays, the project does not change anticipated Levels of Service and does not to result in any queuing deficiencies. No additional improvements are required because of the project.

EXISTING SETTING

This report section describes current weekday a.m. and p.m. peak hour and Sunday midday traffic volume levels and accompanying traffic operations on the roadways and intersections within a study area under the jurisdiction of Stanislaus County (lead agency), Caltrans District 10 (commenting agency) and City of Modesto.

Existing Street and Highway System

State Highways, Stanislaus County roads and Modesto city streets will be used to access the site. The project size is currently served by major regional routes such as Kiernan Avenue (SR 219), Dale Road and Carver Road.

Based on consideration of the project's location and existing traffic controls, this study addresses the operations at these existing intersections, as well as the project's access on Tully Road.

1. SR 219 (Kiernan Avenue) / Dale Road
2. SR 219 (Kiernan Avenue) / American Avenue
3. SR 219 (Kiernan Avenue) / Morrow Road
4. SR 219 (Kiernan Avenue) / Stanislaus ES Access
5. SR 219 (Kiernan Avenue) / Carver Road
6. Bangs Avenue / Morrow Road

The text that follows describes these facilities.

Kiernan Avenue (SR 219). Kiernan Avenue (SR 219) is a key east-west facility across eastern Modesto and Stanislaus County. SR 219 begins at its western terminus at an interchange on SR 99 in Salida and continues for roughly 5 miles to its junction with SR 108 (McHenry Avenue). At that point Claribel Road continues easterly along the south side of Riverbank into rural Stanislaus County beyond the Oakdale-Waterford Highway. Today Kiernan Avenue is a divided four-lane / six-lane facility with a center median that varies from an unimproved at-grade facility to raised curb. The paved shoulder in this area is 12 feet wide and provides space for deceleration / acceleration at the numerous private driveways that remained after the highway was widened to a 4-lane standard. The posted speed limit is 55 mph.

Kiernan Avenue is designated an Expressway in the City of Modesto General Plan, and is part of the North County Corridor (NCC) linking SR 99 with SR 120 east of Oakdale. The NCC plan suggests additional long-term improvements that may be made if funds eventually become available for the final project phases. These improvements include elimination of unsignalized access to SR 219 and the development of various local street extensions to link affected properties with other Arterials. Because the latter phases of NCC are unlikely to be implemented in the foreseeable future, this analysis assumes access to SR 219 remains under cumulative conditions.

Caltrans traffic counts indicate that in 2019 Kiernan Avenue carried an annual average daily traffic (AADT) volume of 27,500 vehicles per day east of SR 99 and 14,200 AADT west of McHenry Avenue. Trucks comprise 9% of the daily volume.

Dale Road. Dale Road is a north-south roadway that extends from an intersection on Standiford Avenue near Stare Route 99 northerly across Kiernan Avenue into Stanislaus County to Ladd Road. Dale Road is a four-lane / Six-lane facility south of Kiernan Avenue and is a two-lane rural road from that point north. The Modesto General Plan designates Dale Road as a six-lane Principal Arterial south of Kiernan Avenue and a four-lane Minor Arterial to the north. The posted speed limit is 40 mph on Dale Road.

Carver Road. Carver Road is a two-lane north-south Minor Collector street that extends from an intersection on 9th Street near SR 99 north across Kiernan Avenue to Ladd Road. The speed limit on Carver Road is 35 mph.

Bangs Avenue. Bangs Avenue is an east-west street that begins at an intersection on Dale Road near the Kaiser Medical Center and continues easterly to McHenry Avenue. Bangs Avenue is designated a two-lane Minor Collector in the Modesto General Plan. The posted speed limit is 45 mph on Bangs Avenue.

Morrow Road. Morrow Road is a local street that extends north for ½ mile from an intersection on Bangs Avenue to Kiernan Avenue. Morrow Road provides access to approximately 20 rural residences and small agricultural businesses. Morrow Road has two 10 to 12 foot-travel lanes and unimproved shoulders. The speed limit is posted at 35 mph, and the centerline is striped. In 2015 this two-lane local street was gated at the Kiernan Avenue intersection when the highway was widened to four lanes, and the road is signed as a "Dead End" street at Bangs Avenue.

American Avenue. American Avenue is a north-south street that is planned to provide access to the Kiernan / Carver CPD. Today a portion of American Avenue links Pelandale Avenue and Bangs Avenue in the area west of the proposed project. Calvary Chapel is located along this segment and hosts Sunday services starting at 8:30 and 10:45 a.m. Another segment extends north from an intersection on Kiernan Avenue. The Modesto General Plan indicates that American Avenue will eventually join Kiernan Avenue and Pelandale Avenue.

Prescott Avenue. Prescott Avenue is a north-south Minor Arterial street that extends north from Briggsmore Avenue to Bangs Avenue. The General Plan indicates that this four lane facility will be extended north to Kiernan Avenue.

The quality of traffic flow is generally governed by the operation of major intersections, and the physical characteristics of study intersections are as follows.

The **Kiernan Avenue (SR 219) / Dale Road intersection** is controlled by a traffic signal. Kiernan Avenue has three eastbound and two westbound travel lanes. The eastbound approach has a left turn lane and right turn lane, and dual westbound left turn lanes are provided. The four-lane northbound Dale Road approach has dual left turn lanes, a through and a right turn

lane. The southbound approach has a left turn lane and combined thru+right turn lane. Crosswalks are striped on the north, south and east legs of this high-speed intersection.

The **Kiernan Avenue (SR 219) / American Avenue intersection** is a "tee" limited to right turns only because of the Kiernan Avenue median and by a painted island (i.e., "pork chop") in the American Avenue approach. Two travel lanes exist in both directions on Kiernan Avenue, and the westbound approach has a short (1.5., 150 foot) taper to provide room for right turns outside of the through travel lanes. A stop sign controls the single lane southbound American Avenue approach. There are no crosswalks or streetlights at this intersection.

The **Kiernan Avenue (SR 219) / Morrow Road intersection** is a public road encroachment located ¾ mile east of Dale Road (centerline to centerline, or c-t-c), ¼ mile from American Avenue and ¾ mile west from Carver Road. Morrow Road is the first of six encroachments that exist along a 775 foot stretch of eastbound Kiernan Avenue. Kiernan Avenue has two through travel lanes in each direction, and no auxiliary deceleration treatments have been installed at the encroachments in this area. The Morrow Road approach lacks corner radius curves on its connections to the highway. Today Morrow Road is gated, and the connection from SR 219 is signed "Do Not Enter". No streetlights exist at this intersection.

A large changeable message sign is located 450 feet west of Morro Road c-t-c. The sign is eight feet beyond the shoulder and is preceded by guardrail.

The **Kiernan Avenue (SR 219) / Stanislaus Elementary School Access intersection** is located approximately 2,000 feet east of the Morrow Road intersection and is part of a traffic management program created for the school. This "tee" intersection at the west end of the school is controlled by a traffic signal, and both inbound and outbound traffic is permitted. Kiernan Avenue has two through travel lanes in each direction, and a 600 foot eastbound left turn lane is provided. A second school access limited to right-turns-only is located 700 feet to the east, and that access is preceded by a 450 foot right turn lane. A loading zone is located between the driveways, and this area is separated from westbound through traffic by a 15 foot painted median and 10 foot wide Class 2 bike lane. Crosswalks are striped across Kiernan Avenue at this signalized intersection.

The **Kiernan Avenue (SR 219) / Carver Road intersection** is controlled by a traffic signal. Kiernan Avenue has been widened through the intersection to provide three through lanes and separate left turn and right turn lanes. The two-lane Carver Road approaches have separate left turn lane and thru+right turn lanes. No Crosswalks are striped at this rural intersection.

The **Bangs Avenue / Morrow Road** intersection is a "tee" controlled by a stop sign on the southbound Morrow Road approach. Each approach has a single travel lane, but the corner of the intersection has been widened (i.e., pavement of gravel) to accommodate the turning radii of trucks. Private residences exist on the south side of Bangs Avenue in this area, and curb gutter and sidewalks has been installed on that side of the street. A streetlight exists on the south side of the intersection. Two residential driveways exist opposite Morrow Road and each is offset from Morrow Road by approximately 25 feet c-t-c.

Level of Service Calculation - Methodology

Levels of Service were determined at the study intersections to quantitatively evaluate traffic operating conditions and to provide a basis for comparison of conditions with and without project generated traffic.

"Level of Service" (LOS) is a quantitative measure of traffic operating conditions whereby a letter grade "A" through "F" is assigned to an intersection. LOS "A" through "F" represents progressively worsening traffic conditions. The characteristics associated with the various LOS for intersections are presented in Table 1. LOS "E" and "F" are associated with severe congestion and delay and are unacceptable to most motorists.

The methods and procedures used for calculating Levels of Service at intersections is as presented in the Highway Capacity Manual, 6th Edition (HCM). Table 1 presents a summary of Level of Service characteristics specific to signalized and unsignalized intersections. Levels of Service were calculated using SYNCHRO software, as typically requested by Caltrans District 10, Stanislaus County and the City of Modesto.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10.0 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Sources: Highway Capacity Manual, 6th Edition Transportation Research Board (TRB) Special Report 209.

Information describing Levels of Service at unsignalized intersections is also presented in the HCM. While the unsignalized Level of Service may indicate very long delays (i.e., LOS "E") traffic conditions are generally not assumed to be significant unless a significant number of motorists are delayed. For this analysis, the satisfaction of rural peak hour traffic signal warrants has been used to suggest the significance of unsignalized Level of Service. Although satisfying signal warrants signifies that an intersection has unacceptable operating conditions, it does not mean that installation of a signal is the only way to mitigate those conditions. It is often possible to improve an intersection with additional lanes or improved geometrics so that signalization is not necessary.

Level of Service – Minimum Standards

Minimum acceptable LOS standards are selected by local agencies and typically disclosed in General Plan documents. For this analysis the standards employed by the agency with jurisdiction over a particular facility have been used.

Stanislaus County Policy. According to Policy 2.1 from the Circulation Element of the Stanislaus County General Plan, originally adopted in 1987 and most recently revised in 2000, the minimum acceptable operating standards has been determined as follows:

- The County shall maintain LOS C or better for all County roadways and intersections, except, within the sphere of influence of a city that has adopted a lower Level of Service standard, the City standard shall apply.

In this case, the City of Modesto's General Plan boundary / sphere of influence extends north to Kiernan Avenue.

City of Modesto General Plan Policy V.C.1 notes that LOS D is the significance threshold for Planned Urbanizing areas, and this is the minimum standard for all other study intersection and the site access.

Evaluation Criteria. With the implementation of SB 743 and the use of Vehicle Miles Traveled (VMT) as the applicable metric, CEQA analysis no longer considers change to operating Level of Service as a "significance" criterion. However, the following polices can be used for determining consistency with the General Plan on Stanislaus County facilities:

Intersections. A significant project inconsistency is defined to occur at a signalized or un-signalized intersection if the addition of project traffic causes either of the following:

1. An intersection operating at an acceptable level (LOS D or better) to degrade to an unacceptable level (LOS E or worse).
2. An increase in control delay of more than five (5.0) seconds at an approach/movement at a signalized or un-signalized intersection that currently operates at an unacceptable level.

Existing Traffic Volumes

Approach. For much of 2020 travel limitations and school closures caused by COVD-19 have resulted in traffic volumes on County Roads, City streets and state highways that fall below previous levels. In response, Caltrans has provided traffic study guidance indicating that "non-COVID conditions be used for analysis. Ideally, recent traffic counts collected prior to COVID-19 will be used where available, but techniques making use of cellphone-based "Big Data" have been created to estimate traffic volumes for locations where physical traffic count data is not available.

In this case, weekday a.m. and p.m. peak hour and Sunday peak hour traffic volume data is limited. Traffic counts were available at the Kiernan Avenue (SR 219) / McHenry Avenue (SR 108) intersection for March 4, 2020 and from November 16, 2016. In general, the 2020 count was conducted before the effects of COVID-19 has been felt in Stanislaus County, and as noted in Table 2. The total intersection volumes in 2020 were greater than those observed in 2016.

TABLE 2
MCHENRY AVENUE (SR 108) / KIERNAN AVENUE (SR 219) INTERSECTION
PEAK HOUR TRAFFIC VOLUMES COMPARISON

Date	Total Approach Volume (vph)			
	AM Peak Hour		PM Peak Hour	
	Volume (vph)	Ratio	Volume (vph)	Ratio
March 4, 2020	3,195	1.00	4,086	1.00
November 16, 2016	2,776	0.87	3,507	0.86
November 17, 2020	3,005	0.94	3,952	0.97

Sources of data for other study location were reviewed. No recent intersection traffic counts were available for other locations, and Caltrans PeMS data for SR 219 is outdated. An alternative approach was taken to estimate peak hour traffic volumes for these locations combining new traffic counts and cellphone-based Big Data from StreetLight Data Inc.

Method. A multi-step process was followed to create representative traffic volumes for the other study locations.

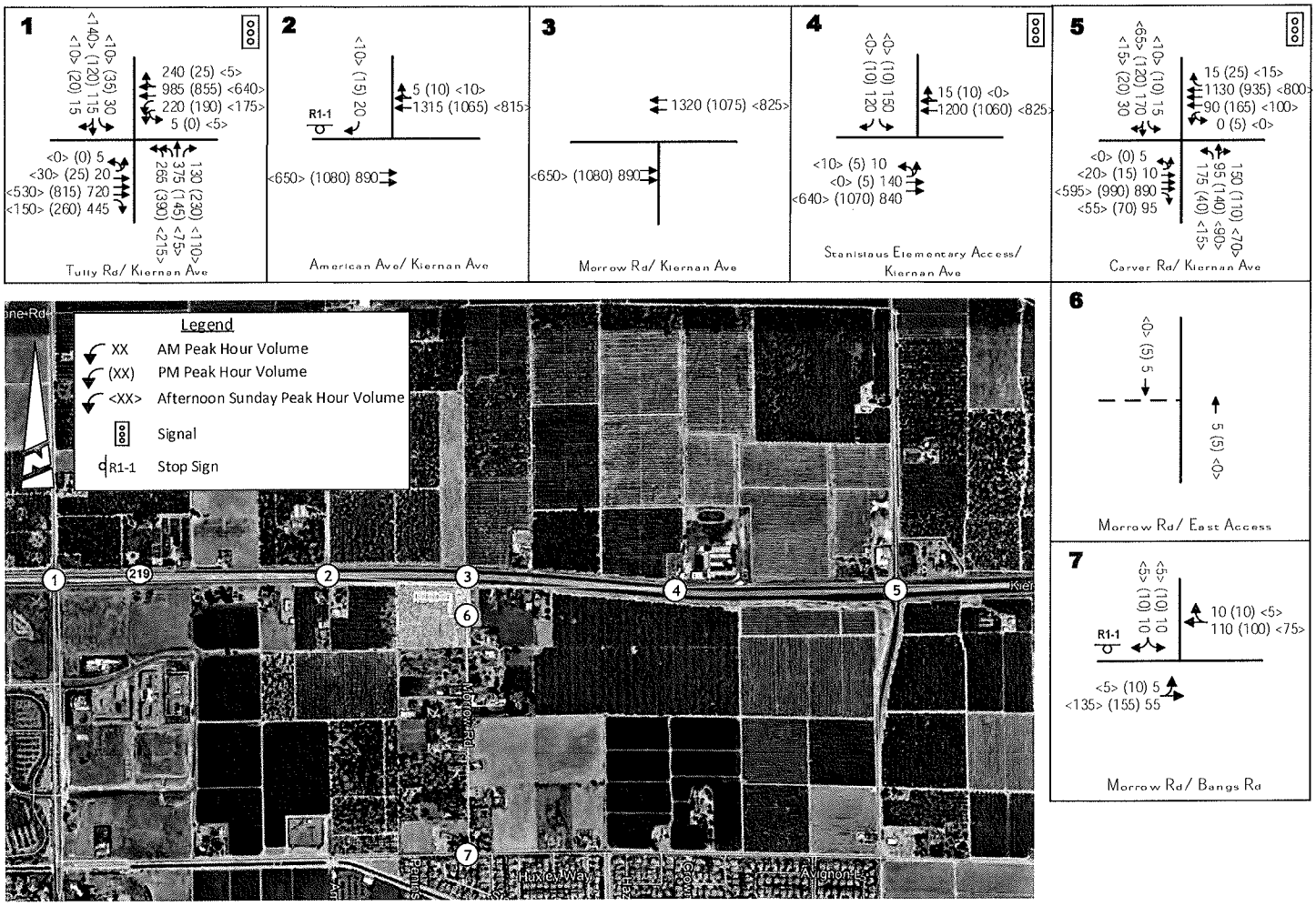
- Data Set #1. New year 2020 a.m./p.m. weekday counts were made on November 17, 2020 and Sunday midday counts were made on November 22, 2020 at all locations. Sunday traffic counts were made from 11:00 a.m. to 1:00 p.m. as this would be the

"worst case" combination of regular background and traffic exiting a service at Calvary Chapel. The counts would reflect the effects of COVID-19 on current travel patterns.

- Data Set #2. Cellphone-based GIS data from StreetLight Data Inc. was assembled that was representative of peak hours during COVID-19 travel restrictions (i.e., October 2020) and of peak hours of "average" months (i.e., March, April, September, October) in 2019. The 2019 volume forecasts would represent current "Non-Covid" conditions and are data Set #2.

- The two StreetLight estimates were compared, a growth increment was identified for each turning movement, and that increment was added to the observed 2020 counts (data set # 1) to create adjusted 2020 volumes.

Results. Figure 3 presents the adjusted Year 2020 peak hour volumes employed for this analysis.



EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 3

Current Traffic Operations

Levels of Service. Peak hour levels of service were calculated at the existing study intersections (Refer to Appendix for calculation worksheets) under "Existing - No Project" conditions. The results of these calculations are presented in Table 3. As shown, the Level of Service at both signalized study intersections satisfy the City of Modesto's minimum LOS D standard and are acceptable to Stanislaus County. Because access is limited to right turns only, the delays at unsignalized intersections in the area of the project are also low. Resulting Levels of Service are LOS B and LOS C, and all meet Stanislaus County or City of Modesto minimum standards.

Traffic conditions in this area are poorest during the peak 15 minutes at the access to the Stanislaus Elementary School, as congestion and delays relating to on site drop-off and loading can affect the adjoining circulation system. This condition is common at most rural schools.

TABLE 3
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour		PM Peak Hour		Sunday Peak Hour	
		Average Delay (sec)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
Kiernan Ave (SR 219) / Dale Road	Signal	45.3	D	23.6	C	21.0	C
Kiernan Ave (SR 219) / American Ave Southbound approach	SB Stop	16.2	C	13.1	B	11.6	B
Kiernan Ave (SR 219) / Stanislaus ES Access	Signal	63.4	E	5.3	A	2.7	A
Kiernan Ave (SR 219) / Carver Rd	Signal	36.5	D	28.3	C	18.7	B
Bangs Ave / Morrow Rd Southbound approach	SB Stop	9.4	A	9.7	A	9.5	A

95th Percentile Queue Lengths. The 95th percentile queue lengths estimated for key locations at study area intersections have been developed as a byproduct of HCM LOS analysis, and the resulted are noted in Table 4. Current traffic volumes and available lane storage are also precented. As indicated the eastbound and westbound left turn lanes on Kiernan Avenue are very long and accommodate both storage for waiting vehicles and deceleration outside of through travel lanes by turning vehicles. All turn lanes can accommodate estimated 95th percentile queues.

TABLE 4
EXISTING 95th PERCENTILE QUEUES AT INTERSECTIONS

Intersection	Lane	Storage (feet)	AM Peak Hour Existing		PM Peak Hour Existing		Sunday Peak Hour	
			Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95 % Queue (feet)
Kiernan Ave (SR 219) / Dale Road	NB left (2)	320	265	210	390	315	215	145
	SB left	90	30	70	35	80	10	30
	EB left	560	25	55	25	55	30	65
	WB left (2)	450	225	150	190	120	180	120
Kiernan Ave (SR 219) / Stanislaus ES	EB left	600	150	195	10	25	10	25
Kiernan Ave (SR 219) / Carver Road	NB left	270	175	215	40	45	15	<25
	SB left	100[1]	15	<25	10	<25	10	<25
	EB left	530	15	<25	15	<25	20	25
	WB left	600	90	110	170	200	100	115

[1] lane continues as TWLT lane for another 360 feet

Traffic Signal Warrants. The peak hour traffic volumes at unsignalized intersections were reviewed to determine whether peak hour traffic signal warrants may be satisfied according to the Manual of Uniform Traffic Control Devices (MUTCD 2014, Section 4C.04 Warrant 3, Peak Hour). The choice between rural (>40 mph) and urban (≤40 mph) criteria we based on the posted speed limit. No location carries volumes that satisfy warrants today.

Sight Distance. The minimum sight distance needed to safely access public roads from private access points is defined in Table 201.1 of the Caltrans Highway Design Manual (HDM). These minimum requirements range from 250 feet at 35 mph to 500 feet at 55 mph, which are the posted speed limits on Morrow Road and Kiernan Avenue, respectively. At each intersection the alignment of the major street is straight and level, and the view in each direction satisfies minimum requirements.

PROJECT TRAFFIC IMPACTS

Project Characteristics

This project proposes to relocate the existing Neighborhood Church congregation from their existing facilities on Stoddard Road to a new building on Morrow Road that would ultimately have 36,000 sf of floor area. Today the church hosts services on Sundays at 10:00 a.m. at the Stoddard Road site, and the proposed project is expected to host Sunday services at 9:00 a.m. and 10:45 a.m.

The project proposes to move the Morrow Road gate south to a location that is further from Kiernan Avenue and beyond the church's proposed access to Morrow Road. In this manner all church traffic would use the Kiernan Avenue driveway, and access for church neighbors to the south would be unaffected. The gate would be accessible by the adjoining business on Morrow Road, and this property could continue to use Morrow Road to reach Bangs Avenue.

Trip Generation. Development of the project will result in new automobile trips in the study area. Typically, the amount of traffic accompanying new development is determined based on trip generation rates published by the Institute of Transportation Engineers (ITE).

Table 5 identifies the number of trips that would accompany use of the initial 18,000 sf building and an ultimate 36,000 sf facility. As shown, the church at buildout could be expected to generate 12 trips and 18 trips during typical weekday commute hours and 360 trips during the peak hour on a Sunday.

Estimates have also been made for the daily traffic associated with this use, as noted in Table 6. On Sundays the church at buildout could generate 995 trips (i.e., ½ inbound and ½ outbound), the forecast would be lower on weekday and Saturdays, and the 7-day average would be 352 trips.

TABLE 5
PEAK HOUR TRIP GENERATION RATES AND ESTIMATES

			Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips			Sunday Peak Hour Trips		
Description	Unit	Quantity	In	Out	Total	In	Out	Total	In	Out	Total
Church (Code 560)	Building floor area	ksf	60%	40%	0.33	45%	55%	0.49	48%	52%	9.99
	Phase 1	18.0	3	3	6	4	5	9	86	94	180
	Build Out	36.0	7	5	12	8	10	18	173	187	360

TABLE 6 DAILY TRIP GENERATION RATES AND ESTIMATES												
			Weekday			Saturday			Sunday			
Description	Unit	Quantity	Total	Days	Weekly Total	Total	Days	Weekly Total	Total	Days	Weekly Total	7 day Average
Church (Code 560)	Building floor area	ksf	6.95	-		5.99	-		27.63	-		
		36.0	250	5	1,250	216	1	216	995	1	995	352

Trip Distribution. In the near term the distribution of trips generated by the proposed relocation will reflect the general location of Neighborhood Church member residences. The current residence distribution was identified from the proponent and is noted in Table 7. As indicated, roughly 40% of the residences are north of Kiernan Avenue and 60% are south.

TABLE 7 EXISTING MEMBER RESIDENCE DISTRIBUTION		
Locations	Direction from Site	Percentage
Salida, Ripon, Lodi	Northwest	30%
Escalon, Riverbank	Northeast	9%
Modesto west of Prescott Ave	Southwest	14%
Modesto east of Prescott Ave, Hughson	Southeast	40%
Ceres, Turlock, Crows Landing[1]	South	7%
Total		100%
[1] locations reached via SR 99		

Trip Assignment. To reach this site the project's members will make use of the reopened Morrow Road connection to Kiernan Avenue. Figure 4 illustrates the assignment of project trips based on the relative "least time path" along competing routes in each direction.

Access. The project site plan conceptually identifies the location of site access on Morrow Road roughly 250 feet south of Kiernan Avenue. No improvements are proposed at the existing Kiernan Avenue / Morrow Road intersection.

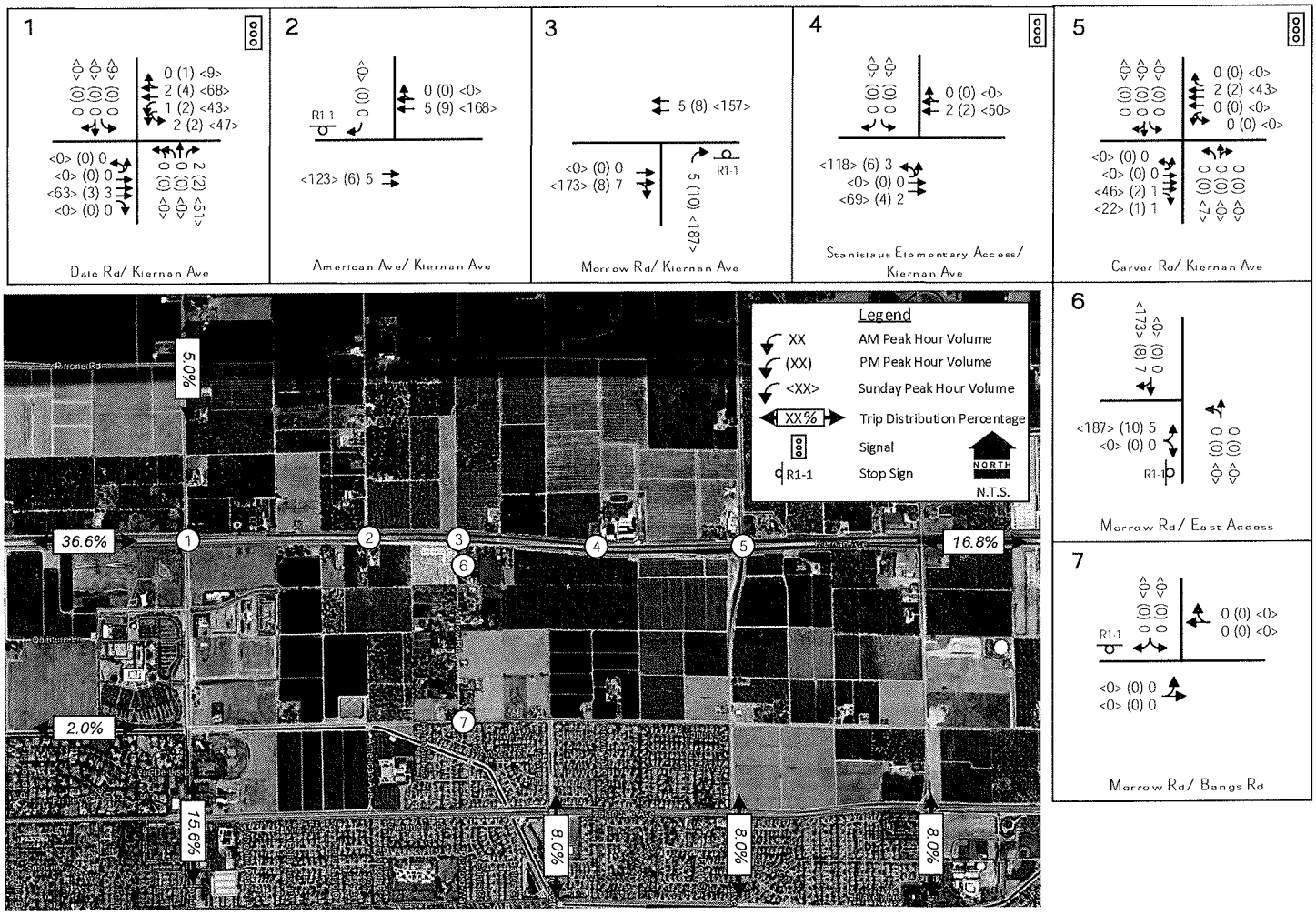
Project Traffic Effects

Using the trip generation, distribution and assignment assumptions noted above, the trips generated by the project were superimposed onto current background volumes to create "Existing Plus Project" conditions. The peak hour traffic volumes associated with this scenario are presented in Figure 5.

Levels of Service. Resulting Levels of Service were then calculated for study intersections and street segments under these conditions. As noted in Table 8, on weekdays the project adds minimal traffic to the study area street system. The addition of project trips does not result in any location operating with Level of Service that exceeds the LOS D minimum during any time period.

95th % Queues. The introduction of project traffic will not appreciably increase the length of 95th percentile queues occurring during a.m. and p.m. peak hours, as noted in Table 9. On Sundays the project will lengthen queues in the westbound left turn lane at the Kiernan Avenue / Dale Road intersection and in the eastbound left turn lane at the Stanislaus ES signal. However, as noted in Table 9, at no location do the projected queue lengths exceed available storage.

Traffic Signal Warrants. The addition of project trips does not result in any existing unsignalized intersection carrying volumes that reach the level which would satisfy peak hour warrants. Technically, the Sunday peak hour volume at the Kiernan Avenue (SR 219) / Morrow Road intersection would reach the level that satisfies peak hour wants under high-speed conditions. However, because all exiting traffic turns right, satisfactory traffic operations can be achieved with stop control, and a traffic signal is not recommended.



PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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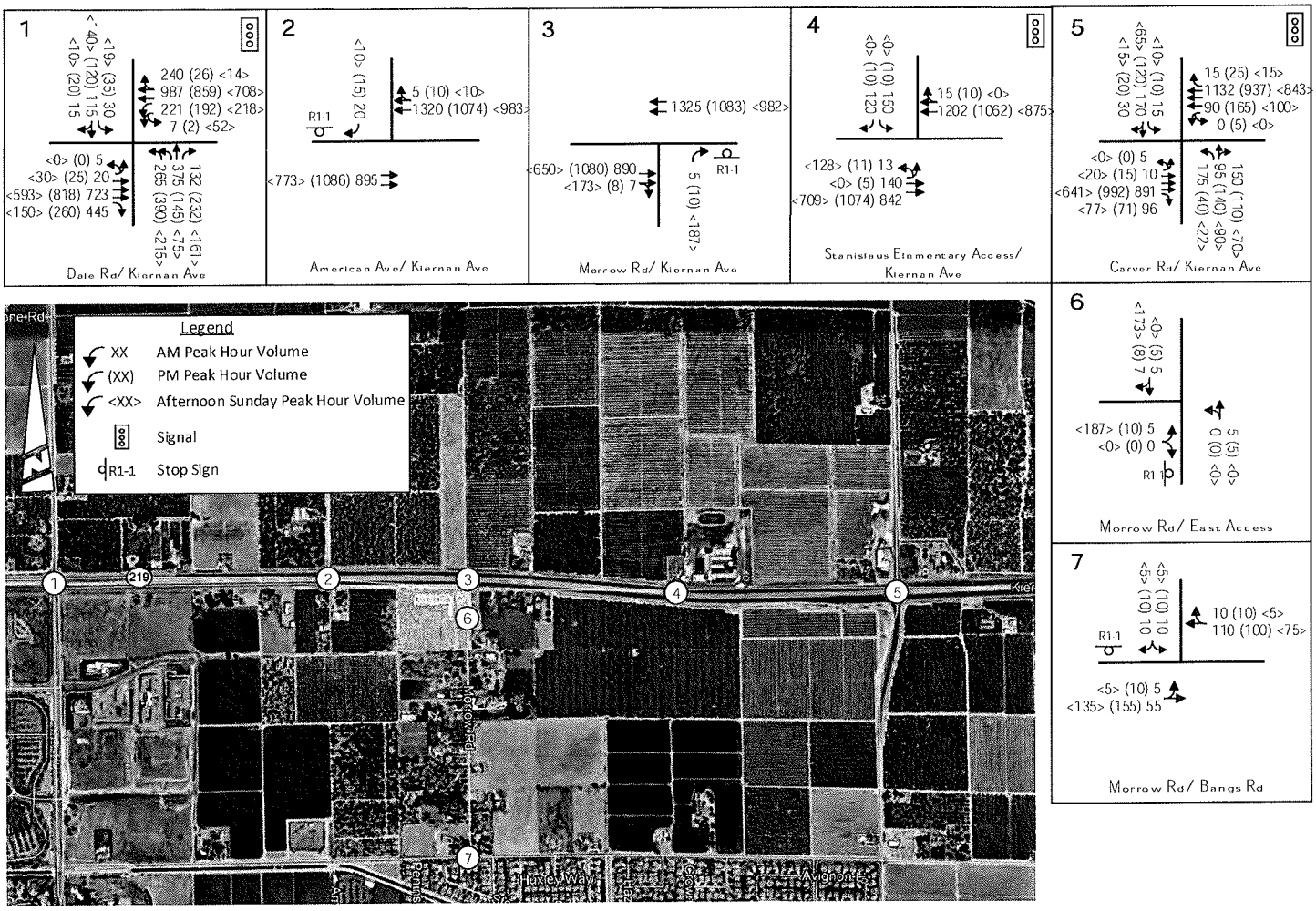
figure 4



EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 5

TABLE 8
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour				Sunday Peak Hour			
		Existing		Existing Plus Project		Existing		Existing Plus Project		Existing		Existing Plus Project	
		Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS
Kiernan Avenue (SR 219) / Dale Road	Signal	45.3	D	45.5	D	23.6	C	23.6	C	21.0	C	21.6	C
Kiernan Ave (SR 219) / American Avenue SB approach	SB Stop	16.2	B	16.3	B	13.1	B	13.2	B	11.6	B	12.6	B
Kiernan Ave / Morrow Road NB approach	NB Stop	-		11.7	B	-		13.2	B	-		14.9	B
Kiernan Ave (SR 219) / Stanislaus ES Access	Signal	63.4	E	64.1	E	5.3	A	5.4	A	2.7	A	4.4	A
Kiernan Ave (SR 219) / Carver Road	Signal	36.5	D	36.5	D	28.3	C	28.3	C	18.7	B	19.0	B
Bangs Ave / Morrow Road SB approach	SB Stop	9.4	A	9.4	A	9.7	A	9.7	A	9.5	A	9.5	A

TABLE 9
EXISTING PLUS PROJECT 95th PERCENTILE QUEUES AT INTERSECTIONS

Intersection	Lane	Storage (feet)	AM Peak Hour				PM Peak Hour				Sunday Peak Hour			
			Existing		Existing Plus Project		Existing		Existing Plus Project		Existing		Existing Plus Project	
			Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (feet)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)
Kiernan Ave (SR 219) / Dale Road	NB left (2)	320	265	210	265	210	390	315	390	320	215	145	215	145
	SB left	90	30	70	30	70	35	80	35	80	10	30	19	45
	EB left	560	25	55	25	55	25	55	25	55	30	65	30	65
	WB left (2)	450	225	150	228	150	190	120	194	125	180	120	270	170
Kiernan Ave (SR 219) / Morrow Road	NB right		-		5	<25	-		10	<25	-		187	40
Kiernan Ave (SR 219) / Stanislaus ES	EB left	600	150	195	153	200	10	25	16	35	10	25	128	230
Kiernan Ave (SR 219) / Carver Road	NB left	270	175	215	175	215	40	45	40	45	15	<25	22	30
	SB left	100[1]	15	<25	15	<25	10	<25	10	<25	10	<25	10	<25
	EB left	530	15	<25	15	<25	15	<25	15	<25	20	25	20	25
	WB left	600	90	110	90	110	170	200	170	200	100	115	100	115

[1] lane continues as TWLT lane for another 360 feet

EXISTING PLUS APPROVED PROJECTS (EPAP) CONDITIONS

Approach

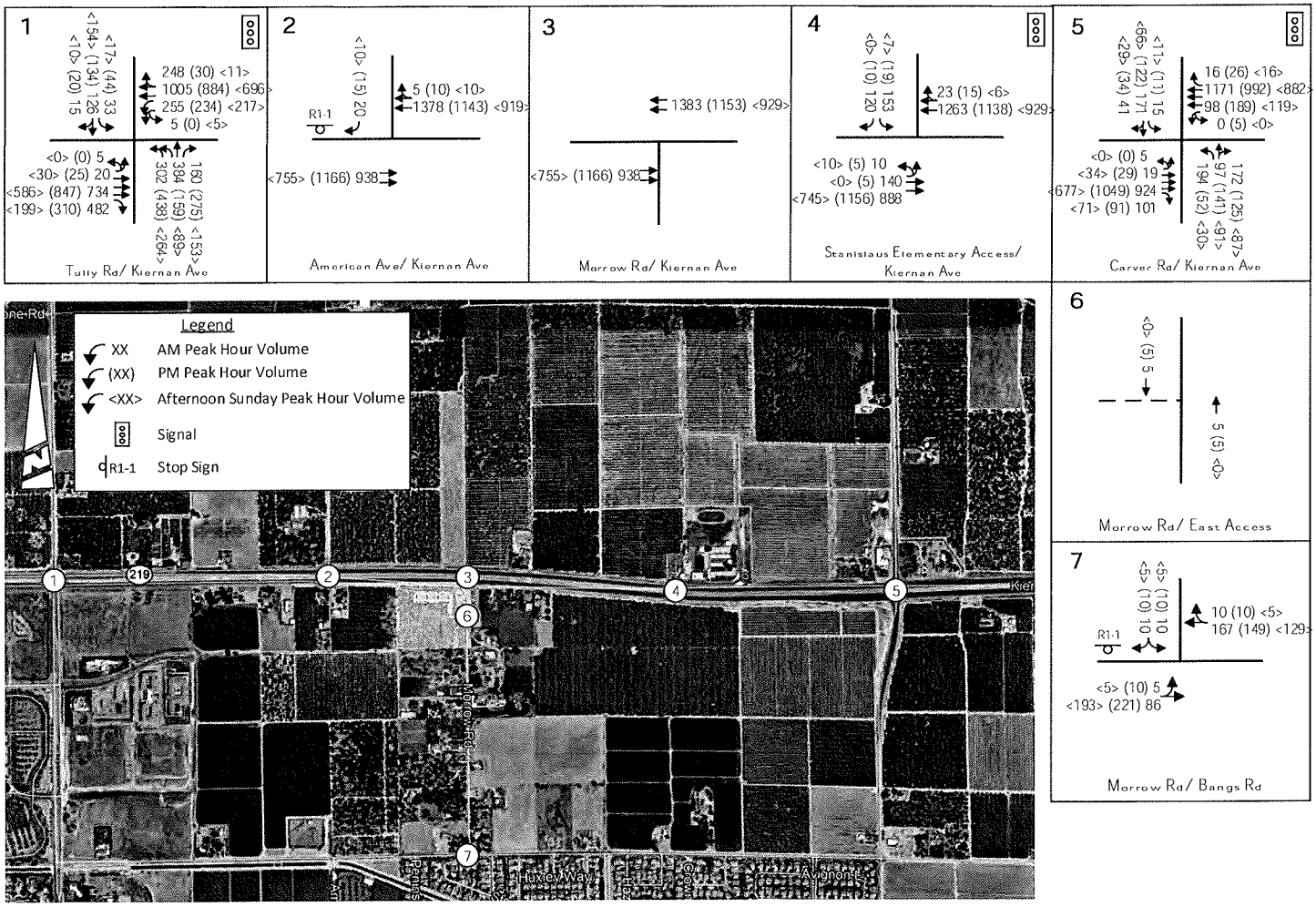
The effects of the proposed project have also been considered within the contexts of a short-term future condition which assumes that other approved projects are occupied.

Land Use. Stanislaus County and City of Modesto staff were contacted to identify approved projects in the study area. Table 10 summarizes the projects and their locations and presents the projected trip generation for each. More information regarding projects in the Kiernan Business Park is included in the appendix. As noted, these projects could generate a total of 13,272 daily after discount for retail and service pass-by trips, with 881 trips generated in the weekday a.m. peak hour, 1,187 trips occurring in the weekday p.m. peak hour and 1,358 trips in the Sunday peak hour. While the actual peak hour for each use on Sunday will vary, to provide a conservative analysis all projects have been assumed to generate peak traffic concurrently.

TABLE 10 APPROVED PROJECTS					
		Trip Generation			
Name	Description	Weekday Daily	AM Peak Hour	PM Peak Hour	Sunday Peak Hour
Stanislaus County Projects					
Libitzky (PLN2018-0082)	96 ksf Industrial @ Kiernan Avenue & Tully Road	476	67	60	0
Derrell's Mini-Storage (PLN2019-0077)	256 ksf ministorage expansion @ Kiernan Avenue / Tunson Rd	400	26	44	41
Holy Family Church[1]	Church with 634 seats at 4524 Tully Road	387	6	59	342
City of Modesto Projects					
Kiernan Business Park[2]	18 position gas station with C-Store	7,370	412	552	557
	16 position gas station with C-store and car wash				
	16 position gas station with C-Store				
	10,100 sf restaurants				
	9,000 sf retail				
	31,000 sf office				
Woodglen[3]	543 unit subdivision located north of Bangs Avenue between Tully Road and Carver Avenue	4,638	370	472	418
Total all Approved Projects		13,271	881	1,187	1,358

[1] Traffic Impact Analysis for Holy Family Church, KDA, June 2014
[2] primary trips net pass-by trips
[3] Traffic Impact Analysis for Woodglen Residential Plan, KDA September 2007

Traffic Volumes. The trips associated with each approved project were assigned to the study area street system based on the assumptions made in each respective traffic study or based on current travel patterns in the Kiernan Business Park. Resulting Existing Plus Approved Projects (EPAP) volumes are noted in Figure 6, while Figure 7 presents the sum of EPAP and Neighborhood Church project volumes.



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EXISTING PLUS APPROVED PROJECTS TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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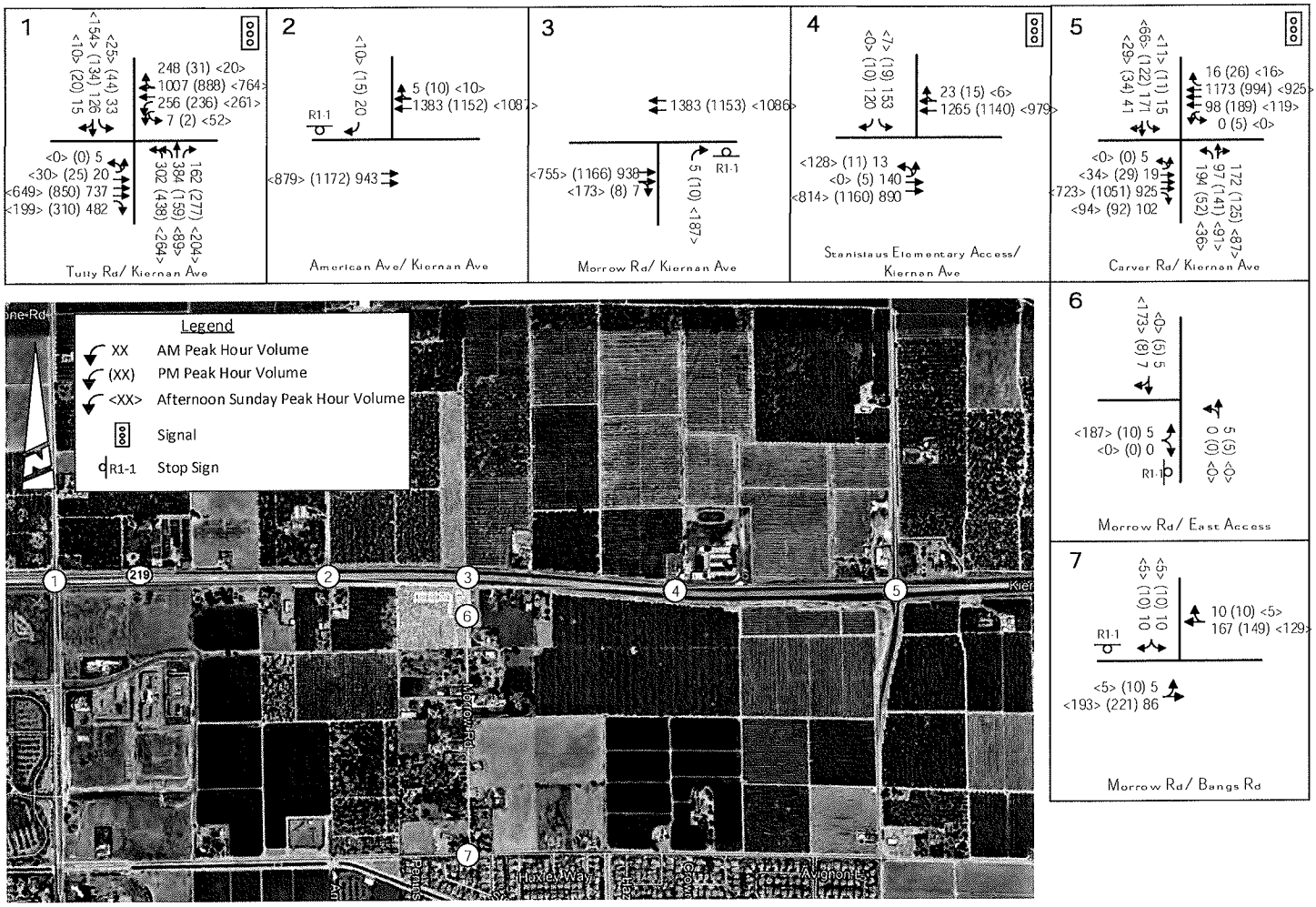
figure 6



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EPAP PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 7

Existing Plus Approved Projects Traffic Conditions

Levels of Service. Resulting Levels of Service were then calculated for study intersections and street segments if approved projects proceed. As noted in Table 11, the addition of approved project trips does not result in any location operating with Level of Service that exceeds the LOS D minimum.

95th % Queues. The addition of approved projects traffic will increase the length of 95th percentile queues occurring during peak hours, as noted in Table 12. The p.m. peak hour queue in the northbound left turn lanes at the Kiernan Avenue (SR 219) / Dale Road intersection is projected to exceed the available storage by more than 20 feet, but elsewhere anticipated queues will remain within the available storage. Lessened the queue length at that location would likely require some combination of traffic signal re-timing, intersection capacity enhancement or completion of other planned north-south arterial streets leading to Kiernan Avenue.

Traffic Signal Warrants. The addition of trips accompanying approved projects does not result in any location where an unsignalized intersection carried volumes that reached the level which would satisfy peak hour warrants.

EPAP Plus Project Traffic Conditions

Levels of Service. Resulting Levels of Service were then calculated for study intersections and street segments assuming that the proposed project is built out under these conditions. As noted in Table 11, the addition of project trips does not result in any location operating with Level of Service that exceeds the LOS D minimum.

95th % Queues. As was the case under Existing plus Project conditions, the introduction of project traffic will not appreciably increase the length of 95th percentile queues occurring during a.m. and p.m. peak hours, as noted in Table 12. On Sundays the project will lengthen queues in the westbound left turn lane at the Kiernan Avenue / Dale Road intersection and in the eastbound left turn lane at the Stanislaus ES signal. However, at no location does the Neighborhood Church project to create queue lengths exceed available storage.

Traffic Signal Warrants. The addition of project trips does not result in any new location where an unsignalized intersection carried volumes that reached the level which would satisfy peak hour warrants. as was noted previously, the Sunday peak hour volume at the Kiernan Avenue (SR 219) / Morrow Road intersection would reach the level that satisfies peak hour wants under high-speed conditions, but because all exiting traffic turns right, satisfactory traffic operations can be achieved with stop control, and a traffic signal is not recommended.

TABLE 11
EXISTING PLUS APPROVED PROJECTS (EPAP) INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour				Sunday Peak Hour			
		Existing Plus Approved Projects		EPAP Plus Project		Existing plus Approved Projects		EPAP Plus Project		Existing Plus Approved Projects		EPAP Plus Project	
		Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS
Kiernan Ave (SR 219) / Dale Road	Signal	53.3	D	53.6	D	25.6	C	25.7	C	21.7	C	22.4	C
Kiernan Ave (SR 219) / American Avenue SB approach	SB Stop	16.9	C	17.0	C	13.7	B	13.7	B	12.2	B	13.4	B
Kiernan Ave / Morrow Road NB approach	NB Stop	-		11.9	B	-		13.8	B	-		16.3	C
Kiernan Ave (SR 219) / Stanislaus ES Access	Signal	69.0	E	69.8	E	5.7	A	5.8	A	5.3	A	7.3	A
Kiernan Ave (SR 219) / Carver Road	Signal	42.5	D	43.1	D	35.0	D	35.0	D	20.2	C	20.5	C
Bangs Ave / Morrow Road SB approach	SB Stop	9.9	A	9.9	A	10.4	B	10.4	B	10.2	B	10.1	B

TABLE 12
EXISTING PLUS APPROVED PROJECTS (EPAP) 95th PERCENTLE QUEUES AT INTERSECTIONS

Intersection	Lane	Storage (feet)	AM Peak Hour				PM Peak Hour				Sunday Peak Hour			
			Existing Plus Approved Projects		EPAP Plus Project		Existing Plus Approved Projects		EPAP Plus Project		Existing Plus Approved Projects		EPAP Plus Project	
			Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (feet)	95th % Queue (feet)	Volume (vph)	95th % Queue (fret)
Kiernan Ave (SR 219) / Dale Road	NB left (2)	320	302	250	302	250	438	**370**	438	**370**	264	195	264	195
	SB left	90	33	80	33	80	44	105	44	105	17	45	25	55
	EB left	560	25	55	25	55	25	55	25	55	30	65	30	65
	WB left (2)	450	260	170	263	175	234	145	238	150	222	140	313	205
Kiernan Ave (SR 219) / Morrow Road	NB right		-	-	5	<25	-	-	10	<25	-	-	187	45
Kiernan Ave (SR 219) / Stanislaus ES	EB left	600	150	195	153	200	10	25	16	35	10	30	128	245
Kiernan Ave (SR 219) / Carver Road	NB left	270	194	240	194	240	52	55	52	55	30	35	36	40
	SB left	100[1]	15	<25	15	<25	11	<25	11	<25	11	<25	11	<25
	EB left	530	15	<25	24	30	29	35	29	35	34	40	34	40
	WB left	600	98	120	98	120	194	225	194	225	119	135	119	135

[1] lane continues as TWLT lane for another 360 feet

BOLD values exceed available storage by 20 feet or more

CUMULATIVE YEAR 2040 CONDITIONS

Background Assumptions

The analysis of conditions twenty years in the future (i.e., 2040) was prepared to assess the adequacy of traffic operations at study intersections and site access under long-term conditions. The long-term scenario addresses the effects of both regional circulation improvements and county-wide development.

Approach. The analysis makes use of the regional travel demand forecasting model created for NCC EIR and subsequently modified for the City of Riverbank's Crossroads West Specific Plan EIR. It is reasonable to include Crossroads West in this analysis as this large project lies immediately north of Claribel Road east of the study area.

Circulation System Improvements. The cumulative analysis based on the NCC traffic model reflects many of the major improvements anticipated as the north Modesto area develops but does not assume all potential roadway improvements.

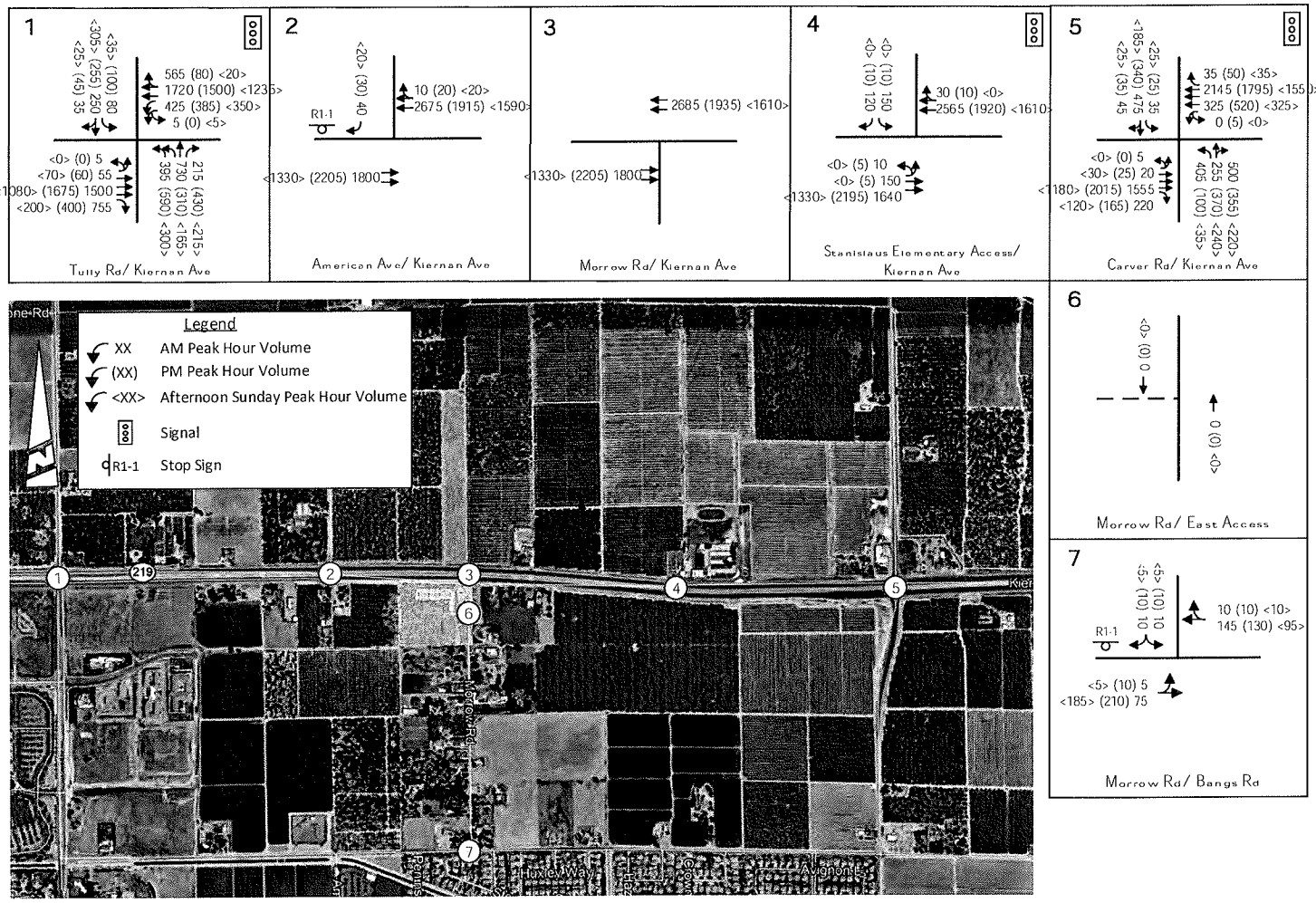
As noted earlier, the Modesto General Plan assumes that American Avenue and Prescott Avenue will be extended north to Kiernan Avenue. However, neither extension has been included in the NCC traffic model. Thus, by limiting additional regional access to Kiernan Avenue the cumulative analysis presents a conservative picture of conditions at other signalized intersections on Kiernan Avenue (SR 219).

It is likely that intersections on Kiernan Avenue (SR 219) will be improved as adjacent properties are developed near Dale Road and Carver Road. This analysis, however, does not assume any improvements to existing intersections.

The NCC plan suggests additional long-term improvements that may be made if funds eventually become available for the final project phases. These improvements include elimination of un-signalized access to SR 219 and the development of various local street extensions to link affected properties with other Arterial. Because the latter phases of NCC are unlikely to be implemented in the foreseeable future, this analysis assumes unsignalized access to SR 219 remains under cumulative conditions.

Traffic Volume Forecasts. Background traffic volume forecasts were created using the traffic model created for the NCC EIR and subsequently modified to the City of Riverbank's Crossroads West Specific Plan EIR. For this analysis an incremental approach was taken for creating study area traffic volumes. The baseline model version and Year 2042 model with Crossroads West land uses and streets included were rerun. Daily intersection approach volumes were identified on each intersection approach, and 20-year growth factors were calculated. These growth factors were then applied to current peak hour traffic volumes, and the results were balanced using the "Furness" techniques from the Transportation Research Board's (TRB) NCHRP Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design.* Figure 8 presents resulting cumulative conditions without the project.

Project trips were superimposed onto the base Cumulative volumes (Figure 8) to create the Cumulative plus Project volumes presented in Figure 9.



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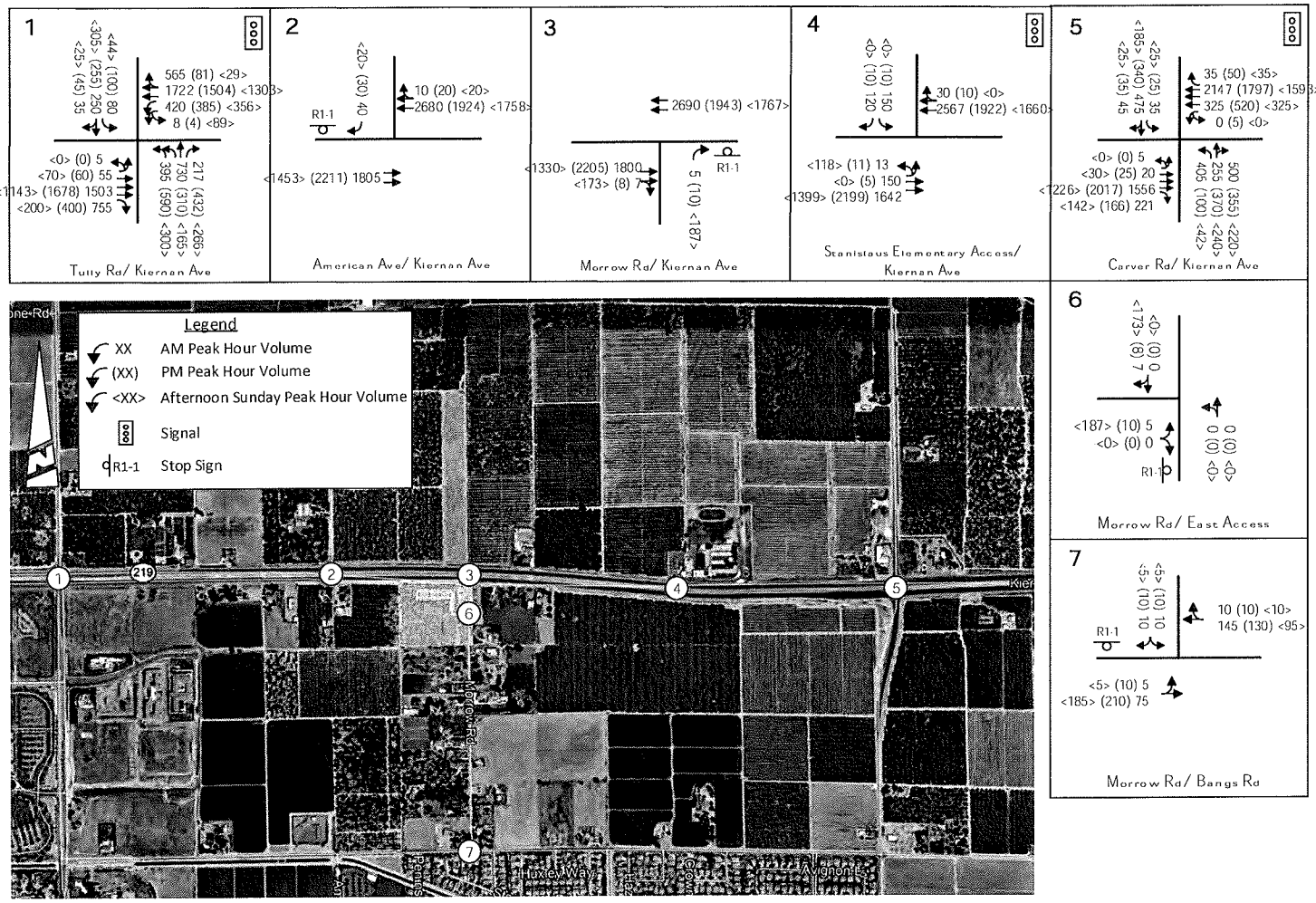
CUMULATIVE NO PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 8



CUM PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 9

Cumulative Year 2040 No Project Traffic Operations

Intersection Level of Service. Table 13 compares Year 2040 peak hour traffic conditions with and without the proposed project. As shown, under the background assumptions, LOS F conditions are forecast at the signalized intersections on Kiernan Avenue (SR 219) at Dale Road (a.m. and p.m. peak hours), the Stanislaus ES access (a.m. peak hour) and Carver Road (a.m., p.m. and Sunday peak hour).

Measures to deliver Levels of Service satisfying the minimum LOS D standard were considered within the context of long term plans for improvements in this area of Stanislaus County.

Localized Improvements Alone. If no regional improvements were to be made (i.e., American Avenue and Prescott Road extensions to Kiernan Avenue), then the following intersection improvements would yield LOS D at study area intersections during each time period:

At *Kiernan Avenue (SR 219) / Dale Road* the following changes would yield LOS D:

- Northbound approach: add 2nd through lane
- Southbound approach: add 2nd through lane
- Westbound approach: add 3rd through lane and right turn lane

At *Kiernan Avenue (SR 219) / Stanislaus ES access intersection* the following improvements would yield LOS D:

- Eastbound approach: add 3rd through lane
- Westbound approach: add 3rd through lane

At *Kiernan Avenue (SR 219) / Carver Road intersection* the following changes would result in LOS D during each time period:

- Northbound approach: add 2nd left turn lane and right turn lane
- Southbound approach: add 2nd through lane
- Westbound approach: add 2nd left turn lane

Regional Improvements. As noted previously the extensions of American Avenue and Prescott Road to Kiernan Avenue (SR 219) are improvements that are consistent with the City of Modesto General Plan. Each improvement would likely draw traffic that has been assumed to be using Carver Road or Dale Road in the cumulative traffic volume forecasts. It is reasonable to assume that these traffic diversions would reduce the volume of traffic turning onto or off of the state highway at the two study intersections. While the overall volume of traffic on mainline Kiernan Avenue (SR 219) may not change, the level of improvements to study intersections would likely be reduced.

The cumulative analysis suggests that LOS F conditions could occur at the un-signaled Kiernan Avenue (SR 219) / American Avenue intersection during the a.m. peak hour. Long delays may occur on the side street approaches to many unsignalized intersections along SR 219 in the future. Ultimately the latter phases of the NCC project address this issue by constructing alternative routes to other Arterial streets for affected properties.

95th Percentile Queues. Table 14 summarizes projected queue lengths at study area turn lanes under background cumulative conditions. As might be expected under LOS F conditions, projected 95th percentile queues exceed available storage at many locations during the weekday a.m. and p.m. peak hours. The same improvements discussed to address Level of Service deficiencies would be needed to shorten projected queues.

Traffic Signal Warrants. The long term cumulative background traffic volumes do not result in any location where an unsignalized intersection carried volumes that reached the level which would satisfy peak hour warrants.

Cumulative Year 2040 Plus Project Traffic Operations

Intersection Level of Service. Table 13 compares Year 2040 peak hour traffic conditions with and without the proposed project. As shown, the addition of project traffic has no appreciable effect on conditions occurring during the a.m. and p.m. peak hours, and the same improvements discussed for conditions without the project would remain necessary. On Sundays the project would increase the length of delays at the Kiernan Avenue (SR 219) / Dale Road intersection, but that location would continue to operate at LOS D without improvements at that time. The project would add traffic at the Kiernan Avenue (SR 219) / Carver Road intersection, but the LOS E conditions projected without the Neighborhood Church project would remain.

The Level of Service at Kiernan Avenue / Morrow Road intersection has been determined under cumulative condition. Because the project contributes relatively little traffic during weekday a.m. and p.m. peak hours, the northbound Morrow Road approach is projected to operate at LOS C/D at those times. While the project would contribute appreciably more traffic during the Sunday peak hour, because the background traffic volume on Kiernan Avenue is lower on Sunday, the access is projected to operate at LOS D.

95th Percentile Queues. Table 14 summarizes projected queue lengths at study area turn lanes with and without the project. As indicated, on weekdays the project does not appreciably change the forecast queue lengths, although in many cases the projected queue lengths exceed available storage with and without the project. As noted under previous scenarios, the project is expected to lengthen queues during Sunday peak hours at the Kiernan Avenue (SR 219) / Dale Road intersection (WB left turn) and Kiernan Avenue (SR 219) Stanislaus ES access intersection (EB left turn lane), at those locations the 95th percentile queues can be contained within the available turn lane storage.

Traffic Signal Warrants. The addition of project trips does not result in any existing unsignalized intersection carrying volumes that reach the level which would satisfy peak hour warrants. Technically, the Sunday peak hour volume at the Kiernan Avenue (SR 219) / Morrow Road intersection would reach the level that satisfies peak hour warrants under high-speed conditions. However, because all exiting traffic turns right, satisfactory traffic operations can be achieved with stop control, and a traffic signal is not recommended.

TABLE 13
YEAR 2040 PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour				Sunday Peak Hour			
		No Project		Plus Project		No Project		Plus Project		No Project		Plus Project	
		Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (sec/veh)	LOS
Kiernan Avenue (SR 219) / Dale Road	Signal	**168.7**	**F**	**168.9**	**F**	**71.0**	**E**	**71.6**	**E**	39.4	D	43.7	D
Kiernan Ave (SR 219) / American Avenue SB approach	SB Stop	**52.3**	**F**	**52.3**	**F**	23.5	C	23.7	C	18.5	C	20.5	C
Kiernan Ave / Morrow Road NB approach	NB Stop	-		18.7	C	-		26.7	D	-		32.7	D
Kiernan Ave (SR 219) / Stanislaus ES Access	Signal	**215.7**	**F**	**216.9**	**F**	6.9	A	7.2	A	2.3	A	4.5	A
Kiernan Ave (SR 219) / Carver Road	Signal	**132.1**	**F**	**132.3**	**F**	**135.2**	**F**	**135.3**	**F**	**75.8**	**E**	**76.7**	**E**
Bangs Ave / Morrow Road SB approach	SB Stop	9.6	A	9.6	A	10.1	B	10.1	B	9.9	A	9.7	A

BOLD values exceed LOS D.

TABLE 14
YEAR 2040 PLUS PROJECT 95th PERCENTILE QUEUES AT INTERSECTIONS

Intersection	Lane	Storage (feet)	AM Peak Hour				PM Peak Hour				Sunday Peak Hour			
			No Project		Plus Project		No Project		Plus Project		No Project		Plus Project	
			Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (feet)	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)
Kiernan Ave (SR 219) / Dale Road	NB left (2)	320	395	**335**	395	**335**	590	**460**	590	**460**	300	235	300	235
	SB left	90	80	**225**	80	**225**	100	**205**	100	**205**	35	80	44	110
	EB left	560	60	180	60	180	60	150	60	150	70	175	70	175
	WB left (2)	450	425	365	428	365	385	310	389	315	355	250	445	345
Kiernan Ave (SR 219) / Morrow Road	NB right		-	-	5	<25	-	-	10	<25	-	-	187	100
Kiernan Ave (SR 219) / Stanislaus ES	EB left	600	160	220	163	225	10	25	16	35	10	30	118	225
Kiernan Ave (SR 219) / Carver Road	NB left	270	405	**770**	405	**775**	100	195	100	195	35	40	42	45
	SB left	100[1]	35	100	35	100	25	65	25	65	25	30	25	30
	EB left	530	25	65	25	65	25	60	25	60	30	35	30	35
	WB left	600	325	**640**	325	**640**	525	**955**	525	**955**	325	**360**	325	**360**

[1] lane continues as TWLT lane for another 360 feet

PROJECT ACCESS AND CIRCULATION

SR 219 (Kiernan Avenue) / Morrow Road

Background. The project proposes to make use on an existing public road encroachment on SR 219 (Kiernan Avenue) located roughly ¾ mile east of the Dale Road traffic signal and ½ mile west of the Carver Road traffic signal. This location was gated in 2015 when Kiernan Avenue was widened to 4-lanes, but before that change full access was allowed at the Morrow Road intersection and a short eastbound right turn lane was provided at that time.

Today the Morrow Road connection is relatively narrow and has no return radii to facilitate turns. The existing wide shoulder does project some space for motorists to decelerate or accelerate outside the flow of eastbound traffic.

Project Effects. The proposed project will increase the volume of traffic using the Morrow Road connection, but the amount at the driveway will vary throughout the week. As noted earlier the amount of weekday peak hour traffic accompanying the church would be relatively low. The volume of traffic could be substantial for a few hours on Sundays and to a lesser degree on Wednesday evenings when the church hosts study groups.

As noted in the cumulative analysis, in the long term the increase traffic volume on Kiernan Avenue will generally make it difficult for motorists to turn right onto eastbound SR 219 at unsignalized driveway, although because background Sunday traffic volumes are lower the project's Morrow Road approach is projected to operate at LOS D.

The most appreciable project effect is caused by project traffic slowing and accelerating on Kiernan Avenue (SR 219) during the peak periods before and after services on Sunday. Speed differential between adjoining vehicles is a common cause of collisions on high-speed roadways.

The configuration of improvements to address this issue has been considered. Caltrans Highway Design Manual (HDM) Table 405.2B notes deceleration lane length requirements for various speeds. The recommended distance is 485 feet at posted speed limit and 530 feet for 60 mph. The HDM does permit acceptance of up to 20 mph deceleration in advance of the turn lane, and deceleration from 35 mph requires 275 feet. Acceleration lane length recommendations are not introduced in the HDM. Often it is better to avoid providing a short acceleration lane because that feature can lead to weaving problems for merging vehicles and through traffic at the end of the acceleration area.

It is important to note that long term plans for the NCC include the creation of alternative access for properties with existing driveways on Kiernan Avenue (SR 219), although funding for this phase of the NCC is likely to be many years off. In this case, while it might theoretically be possible to open the Morrow Road gate and take access via Bangs Avenue, to avoid impacts the existing neighborhood, creating access through the property to the west to America Avenue represents the most logical long term solution.

Improvements. The following improvements should be constructed to safely accommodate the project's Sunday traffic:

Deceleration Lane. While the existing twelve-foot wide bike lane / shoulder that already exists along Kiernan Avenue in this area provides room for deceleration, to accommodate ultimate church traffic we recommend that this area west of the Morrow Road intersection be widened to provide a right turn lane that is separated from through traffic by six (6) feet. The initial phase 1 church could proceed using the existing shoulder. The combination of the transition area and turn lane should be made to fit within the area between the intersection and the changeable message sign. The 400± foot distance would allow motorists to enter the bay taper at 40+ mph (350 feet) and provide storage for two vehicles (50 feet).

Intersection Design. To accommodate turning and acceleration improvements that are similar to those provided at the existing American Avenue intersection are recommended. This work would include large radius returns and exiting taper

Left Turn Restriction. To ensure that existing motorists do not attempt to turn left across the existing gravel center median area of Kiernan Avenue (SR 219), the Morrow Road intersection should include a painted "pork chop" median and signs to prohibit left turns.

APPENDIX

APPENDIX

PROVIDED ELECTRONICALLY