Solano County

675 Texas Street
Fairfield, California 94533
www.solanocounty.com

Agenda - Final

Thursday, December 8, 2016

7:00 PM

Board of Supervisors Chambers

Airport Land Use Commission

Any person wishing to address any item listed on the Agenda may do so by submitting a Speaker Card to the Clerk before the Commission considers the specific item. Cards are available at the entrance to the meeting chambers. Please limit your comments to five (5) minutes. For items not listed on the Agenda, please see “Items From the Public”.

Any person wishing to review the application(s) and accompanying information may do so at the Solano County Department of Resource Management, Planning Division, 675 Texas Street, Suite 5500, Fairfield, CA. Non-confidential materials related to an item on this Agenda submitted to the Commission after distribution of the agenda packet are available for public inspection during normal business hours and on our website at www.solanocounty.com under Departments, Resource Management, Boards and Commissions.

The County of Solano does not discriminate against persons with disabilities and is an accessible facility. If you wish to attend this meeting and you will require assistance in order to participate, please contact Kristine Sowards, Department of Resource Management at (707) 784-6765 at least 24 hours in advance of the event to make reasonable arrangements to ensure accessibility to this meeting.

AGENDA

CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

APPROVAL OF AGENDA

APPROVAL OF THE MINUTES

There are no minutes available for approval at this time.

REPORTS FROM COMMISSIONERS AND/OR STAFF

ITEMS FROM THE PUBLIC

This is your opportunity to address the Commission on a matter not heard on the Agenda, but it must be within the subject matter jurisdiction of the Commission. Please submit a Speaker Card before the first speaker is called and limit your comments to five minutes. Items from the public will be taken under consideration without discussion by the Commission and may be referred to staff.

REGULAR CALENDAR

OLD BUSINESS

There is no old business to discuss.

NEW BUSINESS

1 **AC 16-028** Public Hearing to consider the consistency of the Ashton Place General Plan Amendment and Rezoning (ALUC-16-08) (hereafter, 'Ashton Place Project') with the Travis Air Force Base Land Use Compatibility Plan: (Sponsor - City of Vacaville)

Attachments: A - CEQA ISMND
B - Location_map
C - Site Plan
D - Application Form
E - Travis Plan Map

2 **AC 16-029** Public Hearing to consider the consistency of the Roberts Ranch Specific Plan, Pre-Zoning and Annexation (ALUC-16-09) (hereafter, 'Roberts Ranch Project') with the Travis Air Force Base Land Use Compatibility Plan: Applicant - City of Vacaville

Attachments: A - Roberts' Ranch Specific Plan DEIR
B - Roberts Ranch Location Map
C - Roberts Ranch Land Use Plan
D - Roberts Ranch Travis Plan Map

3 **AC 16-030** Receive an update from staff regarding the progress of the Wildlife Hazards Working Group

4 **AC 16-031** Receive an update from staff regarding the progress of the Renewable Energy Working Group

5 **AC 16-032** Receive an update from staff regarding a work plan for the study of potential regulations for Recreational Drones

ADJOURN

To the Airport Land Use Commission meeting of January 12, 2017 at 7:00 P.M., Board Chambers, 675 Texas Street, Fairfield, CA

Solano County

675 Texas Street
Fairfield, California 94533
www.solanocounty.com

Agenda Submittal

Agenda #:	1	**Status:**	ALUC-Regular-NW
Type:	ALUC-Document	**Department:**	Airport Land Use Commission
File #:	AC 16-028	**Contact:**	
Agenda date:	12/8/2016	**Final action:**	
Title:	Public Hearing to consider the consistency of the Ashton Place General Plan Amendment and Rezoning (ALUC-16-08) (hereafter, 'Ashton Place Project') with the Travis Air Force Base Land Use Compatibility Plan: (Sponsor - City of Vacaville)		
Governing body:			
District:			
Attachments:	A - CEQA ISMND B - Location_map C - Site Plan D - Application Form E - Travis Plan Map		

Date	Ver.	Action By	Action	Result

RECOMMENDATION

Adopt the recommended findings and determine that the Ashton Place Project is **consistent** with the Travis Air Force Base Land Use Compatibility Plan.

INTRODUCTION

The City of Vacaville is in the process of reviewing the Ashton Place Project which consists of a General Plan Amendment and Zoning Amendment that would permit 15 two-story single-family detached residential units on 1.76 acres. The site is a part of the on-going South Town project.
State law requires that any proposed general plan amendments or revisions and any rezoning actions be reviewed for consistency with adopted airport land use compatibility plans. This project involves both types of entitlements, which are analyzed below.

Required Tests for Consistency for General Plan Amendments

The State Department of Aeronautics has published the California Airport Land Use Planning Handbook as a guide for Airport Land Use Commissions in the preparation and implementation of Land Use Compatibility Plans and Procedure Documents. In order to be considered fully consistent with the applicable compatibility plan(s), the general plan revisions proposed must meet two specific tests, as identified in the California Airport Land Use Planning Handbook. The tests are:

1. **Elimination of any direct conflicts between the General Plan and relevant compatibility plan(s)**

   Direct conflicts primarily involve general plan land use designations which do not meet the density (for residential uses) or intensity (for non-residential uses) criteria specified in the compatibility plan, although conflicts with regard to other policies also may exist.
2. **Delineation of a mechanism or process for ensuring that individual land use development proposals comply with the ALUC's adopted compatibility criteria**

Elimination of direct conflicts between a county's or a city's general plan and the ALUC's compatibility plan is not enough to guarantee that future land use development will adhere to the compatibility criteria set forth in the compatibility plan. An implementation process must also be defined either directly in the general plan or specific plan or by reference to a separately adopted ordinance, regulation, or other policy document.
There are three facets to the process of ensuring compliance with airport land use compatibility criteria:

a. **Delineation of Compatibility Criteria**

   Airport land use compatibility criteria must be defined either in a policy document adopted by the county or city or through adoption of or reference to the ALUC's compatibility plan itself.

b. **Identification of Mechanisms for Compliance**

   The mechanisms by which applicable compatibility criteria will be tied to an individual development and continue to be enforced must be identified. A conditional use permit or a development agreement are two possibilities.

c. **Indication of Review and Approval Procedures**

   Lastly, the procedures for review and approval of individual development proposals must be defined. At what level within a county or a city are compatibility approvals made: staff, planning commission or governing body? The types of actions which are submitted to the ALUC for review and the timing of such submittals relative to internal review and approval process also must be indicated.

Required Tests for Consistency for Rezoning Actions

State law, under Section 21661.5 of the Public Utilities Code, requires that any proposed zoning regulations or revisions to the local zoning ordinance be reviewed for consistency with adopted airport land use compatibility plans.
California Airport Land Use Planning Handbook
The State Department of Aeronautics has published the California Airport Land Use Planning Handbook as a guide for Airport Land Use Commissions in the preparation and implementation of Land Use Compatibility Plans and Procedure Documents. Section 6.4.2 sets forth procedures for the review of local zoning ordinances and directs agencies to consider the topics listed in Table 5A, as follows:
Zoning or Other Policy Documents *(from Table 5A, CalTRANS Airport Land Use Planning Handbook)*
The Handbook lists the following topics for consideration when reviewing zoning or other policy documents.

- *Intensity Limitations on Nonresidential Uses*
- *Identification of Prohibited Uses*
- *Open Land Requirements*
- *Infill Development*
- *Height Limitations and Other Hazards to Flight*
- *Buyer Awareness Measures*
- *Non-conforming Uses and Reconstruction*

Staff has reviewed the Ashton Place Project in light of the tests outlined above. Our analysis is presented below.

ANALYSIS

Project Description

The Ashton Place Unit 3 Project (proposed project) would involve subdividing the project site to develop 15 two-story single-family detached residential units on 1.76 acres. Development of the proposed project is subject to CEQA review (See Attachment A) and approval of applications for an amendment to the General Plan Land Use Designation, General Plan Text Amendment, Zone Change, Tentative Map, Conditional Use Permit (CUP), and Planned Development with Design Review of house plans.
The proposed project is located in Vacaville, Solano County, California (Attachments B and C). The 1.76 acre project site is located on the north side of Cogburn Circle and is bound by Vega Way to the west and Vanden Road to the east, on the undeveloped parcel identified as APN 0136-874- 010. An existing residential development borders the project site to the north.
The site lies entirely within Compatibility Zone D of the Travis Air Force Base Land Use Compatibility Plan.

Relevant Issues for the ALUC

The ALUC is concerned with those aspects of the Ashton Place Project that have the potential to be incompatible with any of the Travis Air Force Base Land Use Compatibility Plan, and more particularly, the plan only encompasses lands which lie within Compatibility Zone D (See Attachment E).
Consequently, the issues to be analyzed would be compliance with the following compatibility criteria:
Compatibility Criteria for Zone D
Compatibility Zone D includes all other locations beneath any of the Travis AFB airspace protection surfaces delineated in accordance with FAR Part 77 as well as areas subject to frequent aircraft overflight.

There are no density limitations on residential uses or intensity limitations on non-residential uses within this Compatibility Zone. There are "Other Development Conditions" listed in Compatibility Zone D, as follows:

1. ALUC review required for objects > 200 feet AGL
2. All proposed wind turbines in excess of 100 feet in height must meet line-of-sight criteria in Policy 3.4.4
3. All new or expanded commercial-scale solar facilities must conduct an SGHAT glint and glare study for ALUC review
4. All new or expanded meteorological towers > 200 feet AGL, whether temporary or permanent, require ALUC review
5. For areas within the Bird Strike Hazard Zone, reviewing agencies shall prepare a WHA for discretionary projects that have the potential to attract wildlife that could cause bird strikes. Based on the findings of the WHA, all reasonably feasible mitigation measures must be incorporated into the planned land use.
6. For areas outside of the Bird Strike Hazard Zone but within the Outer Perimeter, any new or expanded land use involving discretionary review that has the potential to attract the movement of wildlife that could cause bird strikes are required to prepare a WHA.

Discussion of Consistency

Compatibility Zone D
As previously mentioned, there are no land use limitations within compatibility zone D. However, within Compatibility Zone D, the relevant factors for consideration would be "Height Limitations and Other Development Conditions" which include height review for objects in excess of 200 feet in height, wind turbines in excess of 100 feet in height, and projects within either the Bird Strike Hazard Zone or the Outer Perimeter Area. None of the hazards are associated with the lawful use of single family homes and are not expected to exist within the development for reasons discussed in the following sections.

General Plan Consistency Factors

Elimination of Direct Conflicts
As discussed above, the proposed Ashton Place Project lies entirely within zone D, where there are no land use restrictions within the Travis Land Use Compatibility Plan. The residential project is consistent with the Other Development Conditions for the following reasons:

Height Review for Objects Greater than 200 Feet in Height
The Project's General Plan land use designation and City's Zoning Ordinance do not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.
Wind Turbines in Excess of 100 Feet in Height
The City's zoning ordinance does not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.
Projects within the Bird Strike Hazard Zone or the Outer Perimeter Area
The project lies outside of the Bird Strike Hazard Zone but within the Outer Perimeter Area. For projects within the Outer Perimeter Area, the Travis Plan requires consideration of whether any new or expanded land use has the potential to attract the movement of wildlife and cause bird strikes. If the potential exists, a Wildlife Hazards Assessment must be prepared.
In this particular case, the project is a change in use from commercial to residential on 1.76 acres. Table 3 of the

Travis Plan - Species Groups Known to be attracted to Land Use Types in the Vicinity of Travis AFB sets forth the land uses of concern and the species types most likely to be attracted by individual land uses. Neither the commercial, nor the residential uses are identified as land uses which attract species groups in Table 3. As a result, the project is not considered to have the potential to attract wildlife movement and cause bird strikes.

In conclusion, based on the analysis above, the proposed Ashton Place Project meets the first test for consistency by the ALUC - the elimination of direct conflicts with an airport's LUCP compatibility criteria.

Assurance of Compliance with Compatibility Criteria

The second test for consistency is the assurance that there will be compliance with the compatibility criteria contained within any adopted LUCP's. The California Airport Land Use Planning Handbook provides guidance to local ALUC's in making consistency determinations on General Plans.

> *Elimination of direct conflicts between a county's or a city's general plan and the ALUC's compatibility plan is not enough to guarantee that future land use development will adhere to the compatibility criteria set forth in the compatibility plan. An implementation process must also be defined either directly in the general plan or specific plan or by reference to a separately adopted ordinance, regulation or other policy document*.

The Handbook identifies three facets to the process of insuring compliance with airport land use compatibility criteria:

a. Delineation of Compatibility Criteria-

Airport land use compatibility criteria must be defined either in a policy document adopted by the county or city or through adoption of or reference to the ALUC's compatibility plan itself.

Consistency between the City's General Plan and the applicable Land Use Compatibility Plans is established by General Plan Land Use Element Implementing Policy 2.1- I 12, requiring that "Land use changes and development proposals within the Vacaville planning area shall be consistent with the Nut Tree and Travis Airport Land Use Compatibility Plans (ALUCP's).

This in effect gives the City a basis for requiring that projects under review comply with the applicable Airport land Use Compatibility Plan.

b. Identification of Mechanisms for Compliance-

The mechanisms by which applicable compatibility criteria will be tied to an individual development and continue to be enforced must be identified. A conditional use permit or a development agreement are two possibilities.

Adoption of the general plan amendment does not authorize the residential development. Subsequent legislative actions by the City Council will be required, including a rezoning of the property. Tentative subdivision maps will also be required. Under California state law, both the rezoning and the tentative subdivision maps must be consistent with the City's General Plan. This requirement addresses conformance with applicable LUCP's and as such, the City's mechanism for compliance is adequately assured.

c. Indication of Review and Approval Procedures-

Lastly, the procedures for review and approval of individual development proposals must be defined. At what level within a county or city are compatibility approvals made: staff, planning commission or governing body? The types of actions which are to be submitted to the ALUC for review and the timing of such submittals relative to the internal review and approval process must be indicated.

Per state law, legislative actions (e.g., General Plan Amendments and Zoning Ordinance Amendments) that have an impact on the Travis LUCP must be approved by the Vacaville City Council following a public hearing. They must also be reviewed by the ALUC prior to the City Council's action.

Procedures for planning review:

The Tentative Map must be approved by the City Council.

Types of actions submitted to ALUC:

Any revisions to the General Plan or Zone Change are required to come before the ALUC for statutory review.

Timing:

ALUC review would be completed before the City takes further action on any development proposal.

As a result, the review procedures are adequate to assure that applicable compatibility criteria will be tied to an individual development and continue to be enforced.

Zoning Change Consistency Factors

As previously discussed, the CalTRANS Handbook lists the following topics for consideration when reviewing zoning or other policy documents.

Each of these categories is reviewed below:

Intensity Limitations on Nonresidential Uses

Within Compatibility Zone D, there are no limitations on density for residential land uses or limitations on intensity for non-residential land uses.

Identification of Prohibited Uses

Residential units are not prohibited uses within Compatibility Zone D.

Open Land Requirements

Compatibility Zone D has no open land requirements for development.

Infill Development

This project is a part of the currently developing South Town area within Vacaville and would not be considered an infill development.

Height Limitations and Other Hazards to Flight
As previously discussed, within Compatibility Zone D, the relevant factors for consideration include height review for objects in excess of 200 feet in height, wind turbines in excess of 100 feet in height, and projects within either the Bird Strike Hazard Zone or the Outer Perimeter Area. None of the hazards are associated with the lawful use of single family homes and are not expected to exist within the development for reasons discussed in the following sections.

Height Review for Objects Greater than 200 Feet in Height
The Project's General Plan land use designation and City's Zoning Ordinance do not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.

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In this particular case, the project is a change in use from commercial to residential on 1.76 acres. Table 3 - Species Groups Known to be attracted to Land Use Types in the Vicinity of Travis AFB sets forth the land uses of concern and the species types most likely to be attracted by individual land uses. Neither the commercial, nor the residential uses are identified as land uses which attract species groups in Table 3. As a result, the project is not considered to have the potential to attract wildlife movement and cause bird strikes.

Buyer Awareness Measures

The proposed project lies within Compatibility Zone D and outside of any noise contours of concern. As a result, Buyer Awareness Measures are not required by the Travis Plan.

Non-conforming Uses and Reconstruction
The project is new construction and therefore does not contain any non-conforming uses or reconstruction activities.
In light of the above discussion, the Ashton Place Project's zoning amendment is consistent with the Travis Plan.

RECOMMENDATION

Based on the analysis and discussions above, Staff recommends that the Solano County Airport Land Use Commission find as follows:

Determination:

1). That the Ashton Place General Plan Amendment is consistent with the Travis Air Force Base Land Use Compatibility Plan, because no direct conflicts exist between the specific plan and the Travis Air Force Base Land Use Compatibility Plan and the mechanisms for assurance of compliance with applicable compatibility criteria are in place.

2). That the Ashton Place Project Rezoning is consistent with the Travis Air Force Base Land Use Compatibility Plan, because it is consistent with the regulations for height and the prohibitions on "Other Hazards to Flight" contained within Compatibility Zone D.

ATTACHMENTS

Attachment A: CEQA Initial Study
Attachment B: Location Map
Attachment C: Site Plan
Attachment D: Application
Attachment E: Travis Plan Map

Ashton Place Unit 3 Project
Initial Study Mitigated Negative Declaration

Lead Agency:
City of Vacaville
Community Development Department
650 Merchant Street
Vacaville, California 95688

Technical Assistance:
Stantec Consulting Services Inc.
1340 Treat Boulevard, Suite 300
Walnut Creek, California 94597

October 24, 2016

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Appendix C: Cultural Survey Technical Memorandum
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Appendix F: Water Supply Calculations Memorandum
Appendix G: Noise Modeling Outputs
Appendix H: Traffic Assumptions Memorandum

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Acronyms and Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC	air conditioning
ADT	Average Daily Traffic
AF	Acre Feet
AF/YR	Acre Feet per Year
ALS	Advanced Life Support
ALUC	Airport Land Use Commission
APN	Assessor's Parcel Number
BAU	Business-As-Usual
bgs	below ground surface
BMP	best management practice
CAAQS	California Ambient Air Quality Standards
Cal EPA	California Environmental Protection Agency
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CalRecycle	California Department of Resources Recycling and Recovery
CARB	California Air Resources Board
CBC	California Building Code
CCA	Coalition for Clean Air
CCR	California Code of Regulations
CCS	cryptocrystalline silica
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CHRIS	California Historical Resources Information System
CH_4	methane
City	City of Vacaville
CMA	Congestion Management Agency
CN	Neighborhood Commercial
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Ranking
CUPA	Certified Unified Program Agency

dB	decibel
dBA	A-weighted sound level
DOC	Department of Conservation
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
du/ac	dwelling unit per acre
DUSD	Dixon Unified School District
DWR	Department of Water Resources
ECAS	Energy Conservation Action Strategy
EIR	Environmental Impact Report
EMS	Emergency Medical Service
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FSUSD	Fairfield-Suisun Unified School District
FTA	Federal Transit Administration
GCP	General Construction Permit
General Plan	City of Vacaville General Plan
General Plan EIR	General Plan and Energy Conservation Action Strategy Environmental Impact Report
GHG	greenhouse gas
GWP	global warming potential
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
HOA	Homeowner's Association
HMBP	Hazardous Materials Business Plan
IMP	Integrated Management Policies
IPaC	Information for Planning and Conservation
ISMND	Initial Study Mitigated Negative Declaration
ITE	Institute of Transportation Engineers
KOP	key observation point
Ldn	day/night sound level
LID	Low Impact Development
LLD	Streetlight and Landscape District
Lmax	maximum instantaneous noise level
LOS	level of service
MBTA	Migratory Bird Treaty Act
MCV	Manual of California Vegetation
mgd	million gallons per day

MLD	most likely descendant
MRZ	Mineral Resource Zone
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NBA	North Bay Aqueduct
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Association
NOI	Notice of Intent
NOx	nitrogen oxide
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
N_2O	nitrous oxide
O_3	Ozone
OHP	State Office of Historic Preservation
Pb	lead
PFC	perfluorinated chemical
PGA	peak ground acceleration
PG&E	Pacific Gas and Electric
PHWWF	Peak Hour Wet Weather Flow
PM	Particulate Matter
$PM_{2.5}$	particulate matter (2.5 microns and less in diameter)
PM_{10}	particulate matter (10 microns and less in diameter)
p.p.v	peak particle velocity
PRC	Public Resources Code
PRD	Permit Registration Documents
PUE	public utility easement
RCNM	Roadway Construction Noise Model
REMELS	reference energy mean emission levels
RM	Residential Medium
RMD	Residential Medium Density
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SBF	Sanitary Base Flow
SCDEM	Solano County Department of Environmental Management
SCWA	Solano County Water Agency
sf	square feet
SF_6	sulfur hexafluoride
SID	Solano Irrigation District
SIP	State Implementation Plan

SMAQMD	Sacramento Metro Air Quality Management District
SMARA	California Surface Mining and Reclamation Act of 1975
SO_2	sulfur dioxide
SRI	Solar Reflective Index
STA	Solano Transportation Authority
SVAB	Sacramento Valley Air Basin
SWMP	Stormwater Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TMDL	Total Max Daily Load
TUSD	Travis Unified School District
USDA	United States Department of Agriculture
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VFD	Vacaville Fire Department
VMT	vehicle miles traveled
VOC	volatile organic compound
VPD	Vacaville Police Department
VUSD	Vacaville Unified School District
WWTP	Waste Water Treatment Plan
YSAQMD	Yolo-Solano Air Quality Management District

INITIAL STUDY MITIGATED NEGATIVE DECLARATION

PROJECT TITLE: Ashton Place Unit 3 Project

PROJECT DESCRIPTION: The Ashton Place Unit 3 Project (proposed project) would involve the development of 1.76 acres with 15 two-story single-family detached residential units. The site consists one 1.33 acre parcel owned by the applicant, and requests that 0.43 acres of City owned public right-of-way be dedicated to the project site for a total of 1.76. The Applicant is requesting to change the General Plan Land Use Designation of the property from Neighborhood Commercial (CN) to Residential Medium Density (RMD), amend General Plan Policy LU-P23.1 to remove commercial requirements in the project area and exempt new development within the Southtown Project Area from having to meet or exceed the standard for any adjacent neighboring homes, and also rezone the property to Residential Medium (RM). The 15 two-story residential units would range in size from 1,696 square feet (sf) to 2,217 sf with an average lot size of 1,985 sf, and a gross density of 8.52 dwelling units per acre (du/ac). The proposed project also includes private yard areas, and provides four parking stalls per residential unit. All units would have rear entry, and the units adjacent to Vanden Road and Vega Way would face the public street. Per the Land Use and Development Code (Division 14.09 of the Municipal Code), the proposed project requests an in-lieu payment for off-site recreation/open space instead of the required on-site space. The constructed project would be managed by a Homeowners Association (HOA).

PROJECT LOCATION: The proposed project is located in Vacaville, Solano County, California (Figure 2.0-1). Specifically, the total 1.76 acre project site is located in the Southtown Project Area at the northwest intersection of Cogburn Circle and Vanden Road, bounded by Vega Way to the west, Vanden Road to the east, and Cogburn Circle to the south (Figure 2.0-2). An existing residential development borders the project site to the north. The assessor's parcel number (APN) of the 1.33 acre site is 0136-874-010. The proposed project Tentative Map is presented on Figure 2.0-3.

NAME OF LEAD AGENCY:
City of Vacaville
Community Development Department
Planning Division
650 Merchant Street
Vacaville, California

LEAD AGENCY CONTACT INFORMATION:

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6683 Owens Drive
Pleasanton, California 94588

REQUIRED FINDINGS: The City of Vacaville has determined that a) all potentially significant or significant impacts required to be identified in the Initial Study Mitigated Negative Declaration (ISMND) have been identified and analyzed; and b) with respect to each significant impact on the environment either of the following apply: 1) changes or alterations have been required in or incorporated into the proposed project that avoid or mitigate the significant impacts to a level of less than significant; or 2) those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency. The ISMND and supporting documents are available at the City of Vacaville Community Development Department, Planning Division, located at 650 Merchant Street Vacaville, California 95688, and online by searching the project name at:

https://permits.cityofvacaville.com/eTRAKiT3/Search/project.aspx.

Christina Corsello, Associate Planner
Community Development Department
Planning Division
City of Vacaville, California

By: _____ Date: October 24, 2016

1.0 INTRODUCTION

1.1 PROJECT TITLE

Ashton Place Unit 3 Project

1.2 LEAD AGENCY

City of Vacaville
Community Development Department
Planning Division
650 Merchant Street
Vacaville, California 95688

1.3 LEAD AGENCY CONTACT

Christina Corsello, Associate Planner
Community Development Department
Planning Division
650 Merchant Street
Vacaville, California 95688
Phone: (707) 449-5374
Email: Christina.Corsello@cityofvacaville.com

1.4 PROJECT SPONSOR(S) NAME AND ADDRESS

D.R. Horton
Northern California Division
6683 Owens Drive
Pleasanton, California 94588

1.5 PURPOSE

The purpose of this Initial Study/Mitigated Negative Declaration (ISMND) is to identify any potential environmental impacts from implementation of the Ashton Place Unit 3 Project (proposed project) in Vacaville, California. This Initial Study identified potentially significant effects on the environment and revisions to the project site plans, presented as mitigation measures, were identified to mitigate the effects to a point where clearly no significant effect on the environment would occur. Thus, a negative declaration as a "mitigated negative declaration" was determined to be appropriate for the proposed project and the ISMND herein has been prepared. Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15367, the City of Vacaville (City) is the Lead Agency in the preparation of this ISMND and any additional environmental documentation required for the proposed project. The City has discretionary authority over the proposed project. The intended use of this document is to

provide the basis for input from public agencies, organizations, and interested members of the public.

1.6 PROJECT LOCATION

The proposed project is located in Vacaville, Solano County, California (Figure 2.0-1). The 1.76 acre project site is located on the north side of Cogburn Circle and is bound by Vega Way to the west, Vanden Road to the east, an existing residential development to the north, and across from Fire Station 75 and Magnolia Park on the south (Figure 2.0-2). Assessor's parcel number (APN) is 0136-874-010.

1.7 SITE HISTORY AND PREVIOUS ENVIRONMENTAL ANALYSIS

The project site is part of the Southtown Project Area, an EIR for which was adopted by the City Council in April 27, 2004. As described in the Southtown Project EIR, the proposed land uses included approximately 1,410 housing units, 30,000 square feet of commercial space, 33.5 acres of park space, a fire station, and 14 acres of public/civic space on an approximately 287-acre site. While majority of the Southtown Project Area was planned as residential, two parcels on the northeast and northwest corner of Vanden Road and Cogburn Circle were zoned for neighborhood commercial. The Ashton Place Unit 3 Project is proposed on the parcel northwest corner of Vanden Road and Cogburn Circle. A separate development application for residential uses has been submitted for the second parcel on the northeast corner, but is not part of the proposed project.

A Commercial Market Analysis was conducted by New Economics and Advisory for the Applicant on March 25, 2015, to evaluate the market for the originally intended commercial use of the project site, and the undeveloped lot located east of the project site. In addition, a community outreach booth was established on September 10, 2016 as part of the City's efforts to evaluate the merits of the land use change. There was a general sense that the surrounding neighborhood had a preference for a residential project over commercial. Considering that, the Applicant submitted an application to the City in June of 2015 to build 16 homes on the project site. However, based on the site and design review by the City, the Applicant revised the Plan and reduced the number of units from 16 to 15. The revised site plan is what constitutes the proposed project and is being evaluated in this ISMND.

1.8 LAND USE DESIGNATIONS

The project site is currently designated Neighborhood Commercial (CN) in the City's General Plan and public right-of-way. The Applicant is proposing to change the General Plan designation of the project site to Residential Medium Density (RMD) and also rezone the project site from Neighborhood Commercial (CN) to Residential Medium Density (RM).

1.9 SUMMARY OF PROJECT

The proposed project consists of abandoning 0.43 acres of City Right of Way to add to an existing 1.33 acre parcel to create the 1.76 acre undeveloped project site, then subdividing and

developing the site with 15 single-family residential units and one common parcel. The APN is 0136-874-010. The Applicant is requesting to change the General Plan Land Use Designation of the property from CN to RMD, amend General Plan Policy LU-P23.1 to remove commercial requirements in the project area and exempt new development within the Southtown development from having to meet or exceed the standard for any adjacent neighboring homes, and also rezone the property from CN to RM. Per the Land Use and Development Code (Division 14.09 of the Municipal Code). The 15 two-story residential units would range in size from 1,696 to 2,217 square feet (sf) to sf with an on lots ranging from 1,736 to 2,254 sf, and a gross density of 8.52 dwelling units per acre (du/ac). The proposed project also includes private yard areas and provides four parking stalls per residential unit. All units would have rear entry to the garage, and the units adjacent to Vanden Road and Vega Way would face the public street. The proposed project includes an in-lieu fee for off-site improvements to Magnolia Park instead of on-site recreation/open space. The constructed project would be managed by the same Homeowners Association (HOA) and Ashton Place 1 and Ashton Place 2.

1.10 SURROUNDING LAND USES AND SETTING

The currently undeveloped project site is bordered by the following:

- **North.** North of the project site is a residential neighborhood consisting of two-story single-family residences with wide, shallow lots located in an area designated Residential Low Medium Density (5.1 to 8.0 units per acre) by the City's Zoning Ordinance. There are five existing single-family residences that abut the northern boundary of the project site.
- **South.** Cogburn Circle forms the southern boundary of the project site, beyond which lies Magnolia Neighborhood Park and the newly constructed Vacaville Fire Department (VFD) Station 75.
- **West.** Vega Way forms the western boundary of the project site, beyond which lies two-story single-family residences. The single-family residences are located on wide, shallow lots in an area zoned Residential Low Medium Density (5.1 to 8.0 units per acre) by the City's Zoning Ordinance.
- **East.** The eastern boundary of the project site is bordered by Vanden Road, beyond which lies currently undeveloped land currently zoned as CN. A development application for rezoning of this parcel to construct single-family units similar to the proposed project is under review. If approved, the undeveloped land east of the project site would be rezoned as RM (8.1 to 14.0 units per acre) by the City's Zoning Ordinance.

1.11 CEQA AND PUBLIC AND AGENCY REVIEW

The California Environmental Quality Act (CEQA) is the State environmental law that requires project proponents to disclose the significant impacts to the environment from proposed development projects. The intent of CEQA is to foster good planning and to consider environmental issues during the planning process. The City is the Lead Agency under CEQA for the preparation of this ISMND. The CEQA Guidelines (Section 21067) define the Lead Agency as: "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment." The approval of the proposed project is considered a public agency discretionary action, and therefore the proposed project

is subject to compliance with CEQA. The City has directed the preparation of an analysis that complies with CEQA.

At the direction of the City, Stantec has prepared this document. The purpose of this document is to present the environmental consequences of implementing the proposed project to decision-makers and the public. This disclosure document is being made available to the public for review and comment. The public, City residents, and other local and State resource agencies would be given the opportunity to review and comment on this document during the 30-day public review period. Comments received during the 30-day public review period would be considered by the City prior to the certification of the CEQA disclosure document and project approval.

This ISMND was prepared for the proposed project in September 2016. The City, as Lead Agency, released the ISMND for public review beginning on October 24, 2016 and ending on November 22, 2016, pursuant to CEQA Guidelines Section 15105.

If you wish to send written comments (including via e-mail) they must be received by 5 p.m. on November 22, 2016. Written comments should be addressed to:

Christina Corsello, Associate Planner
Community Development Department
Planning Division
650 Merchant Street
Vacaville, California 95688
Phone: (707) 449-5374
Email: Christina.Corsello@cityofvacaville.com

After comments are received from the public and reviewing agencies, the City may (1) adopt the ISMND and approve the proposed project, (2) undertake additional environmental studies, or (3) abandon the proposed project. If the proposed project is approved and funded, the City could proceed with all or part of the proposed project, depending on agency permits.

The ISMND and supporting documents are available at the City of Vacaville, Community Development Department, Planning Division, located at 650 Merchant Street Vacaville, California 95688, and online by searching the project name at:

https://permits.cityofvacaville.com/eTRAKiT3/Search/project.aspx.

If you have questions regarding the ISMND, please call Christina Corsello, Associate Planner, at (707) 449-5374.

1.12 REQUIRED PERMITS AND APPROVALS

This ISMND would be used by the City, as the Lead Agency, in evaluating the potential environmental impacts of the proposed project. In order for the proposed project to be implemented, a series of actions and approvals would be required from several agencies. Anticipated project approvals/actions would include, but are not limited to, the following:

- Review and legislative action on General Plan Designation Amendment and Text Amendment from Neighborhood Commercial to Residential Medium Density, Zone Change from Neighborhood Commercial to Residential Medium, Tentative Subdivision Map, Conditional Use Permit, Planned Development with Design Review for house plans, and Request for City to grant Public Right of Way to developer: City of Vacaville City Council.

- Review for approval of permits related to Improvement Plans, Grading Plans, and Abandonment of Public Right of Way: City of Vacaville, Public Works.

- Plan Check for Building Permits for Residential Development: City of Vacaville, Building Division.

- Regional Water Quality Control Board, National Pollutant Discharge Elimination System Permit.

1.13 SCOPE OF THIS STUDY

As the Lead Agency under CEQA, the City is responsible for compliance with the environmental review process prescribed by the CEQA guidelines. This initial study focuses on the environmental issues identified as potentially significant in the CEQA checklist and by CEQA guidelines. This Initial Study evaluates potentially significant effects on the environment and identifies revisions in the project site plans, presented as mitigation measures to mitigate the effects to a point where clearly no significant effect on the environment would occur. A complete Project Description is included in Section 2.0. Proposed project elements and environmental resources are analyzed in Section 3.0 and references are included in Section 4.0. The following technical studies were conducted and/or reviewed in preparing this ISMND: air quality modeling outputs, biological resources field memorandum, cultural resources field memorandum, sewer calculations memorandum, storm drain runoff comparison memorandum, water supply calculations memorandum, noise modeling, and a transportation study. These studies are included as appendices to this ISMND and referred to where appropriate throughout this document.

1.14 DOCUMENT ORGANIZATION

This ISMND is organized as follows:

Section 1.0: Introduction. This section provides an introduction to the proposed project and describes the purpose and organization of this document.

Section 2.0: Project Description. This section describes the purpose and need for the proposed project, identifies project objectives, and provides a detailed description of the proposed project.

Section 3.0: Environmental Checklist and Environmental Evaluation. This section presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if the proposed project would result in no impact, a less than significant impact, a less than significant impact with mitigation incorporated, or a potentially significant impact for each topic. If impacts are determined to be potentially significant after incorporation of applicable mitigation measures, an Environmental Impact Report (EIR) would be required. For this proposed project, however, mitigation measures have been incorporated where needed, that would reduce all potentially significant impacts to a less than significant level.

Section 4.0: References. This section lists the references used in preparation of this ISMND.

Section 5.0: List of Preparers. This section identifies report preparers.

2.0 PROJECT DESCRIPTION

2.1 PROPOSED PROJECT

The Ashton Place Unit 3 Project (proposed project) would involve subdividing the project site to develop 15 two-story single-family detached residential units on 1.76 acres. Development of the proposed project is subject to approval of applications for an amendment to the General Plan Land Use Designation, General Plan Text Amendment, Zone Change, Tentative Map, Conditional Use Permit (CUP), and Planned Development with Design Review of house plans.

2.1.1 Project Location

The proposed project is located in Vacaville, Solano County, California (Figure 2.0-1). The 1.76 acre project site is located on the north side of Cogburn Circle and is bound by Vega Way to the west and Vanden Road to the east, on the undeveloped parcel identified as APN 0136-874-010 (Figure 2.0-2). An existing residential development borders the project site to the north. The proposed project Tentative Map is presented on Figure 2.0-3.

2.1.2 Land Use Designation

The project site is currently designated CN in the City's General Plan. The Applicant is proposing to change the General Plan designation of the project site to Residential Medium Density (RMD) and also rezone the project site from CN to RM.

General Plan

The City of Vacaville General Plan land use designation for the project site is CN, and is defined as follows:

"*This designation provides for small sites for neighborhood commercial centers, generally anchored by a grocery store with convenience uses serving the immediate area. New Neighborhood Commercial sites must be between 4 and 10 acres in size*."

The General Plan Policy LU-P23.1, described below, further guides development in the Southtown Area:

LU-P23.1: Require that the South Vanden Area, including the Southtown and Southtown Commons Project Areas, facilitate the development of a range of housing densities and opportunities, pedestrian and bicycle friendly design, neighborhood commercial sites, and recreational and neighborhood facilities, by including the following requirements:

- A network of landscaped pedestrian/bike corridors shall connect key elements of the area, such as the community park and arterial streets. New development adjacent to existing homes within the city limits shall match or exceed the size, character, and quality of adjacent homes and lots.

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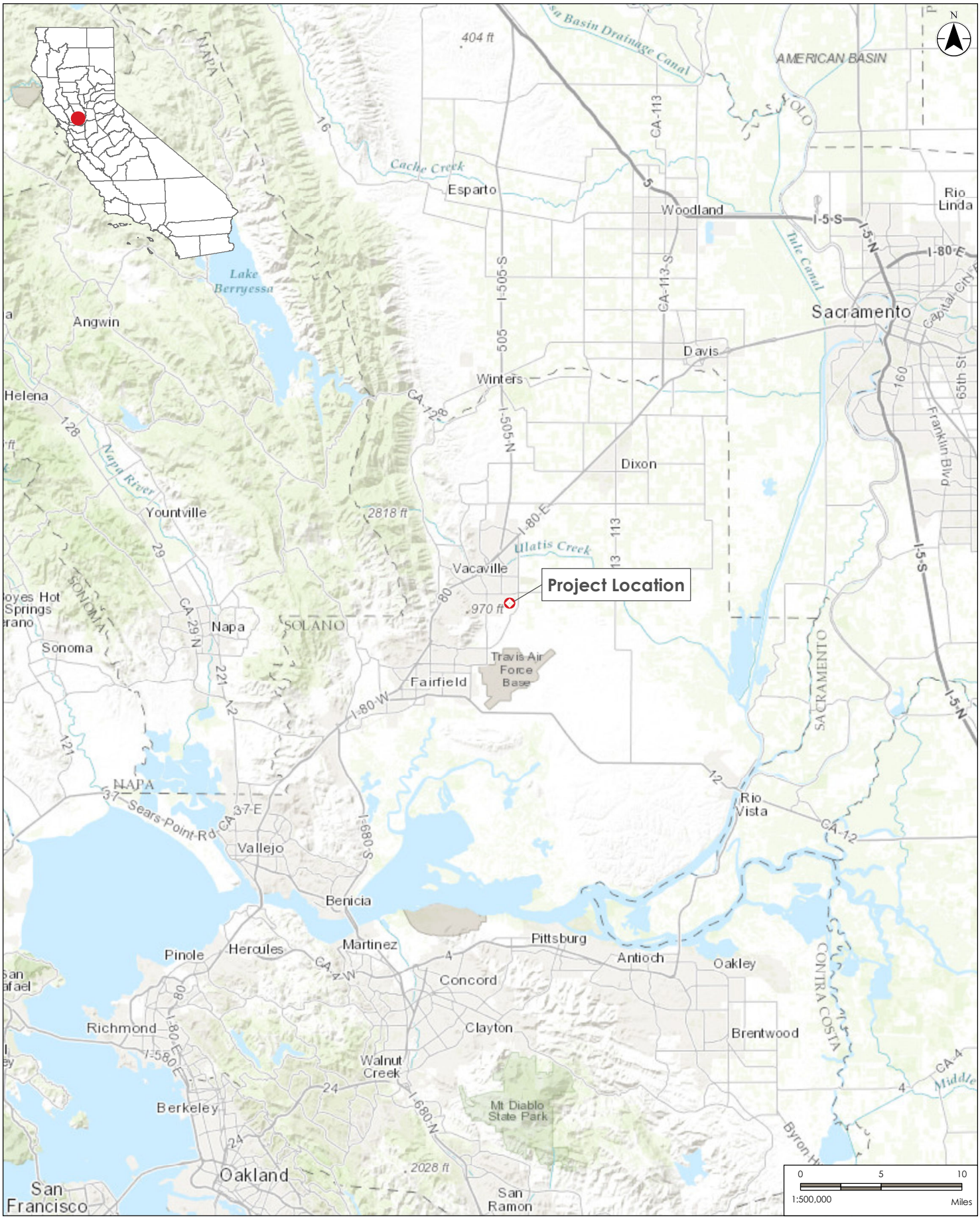

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Ashton Place Unit 3 Project
Vacaville, California

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Figure 2.0-1. Regional Project Location Map

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Figure 2.0-2. Project Area

Prepared: MNugent, 10/5/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Legend

- Project Area
- Parcel Area

Note: Tentative Map data provided by Phillippi Engineering (PEI)

Not to Scale

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Figure 2.0-3. Tentative Map

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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- All new residential development shall conform to the Residential Design Requirements for New Single Family Development.
- The Southtown Project Area will include a range of housing types and densities and attached, detached, and cluster housing.
- Land shall be reserved for community uses such as private schools, membership organizations, day care centers, and senior centers.
- A financing mechanism for all public facility improvements shall be established before development occurs.
- Nut Tree Road and Vanden Road shall be widened to the City standard width through the project sites for all projects that front on these streets.
- Leisure Town Road shall be widened and improved to the standards for the Jepson Parkway along the frontage of all projects that abut Leisure Town Road.
- Foxboro Parkway shall be extended between Nut Tree Road and Vanden Road. The extension will be completed prior to the reconstruction and reconfiguration of Vanden Road.
- A 1-acre site for a future fire station site shall be reserved within the Southtown Project Area.
- A site within the Vanden Road loop shall be reserved for a park.
- A multi-family project on Leisure Town Road shall begin construction in the first phase of development within the Southtown Project Area.
- Public areas adjacent to Alamo Creek shall be landscaped to enhance the view of the creek channel, within the requirements of Solano County Water Agency.
- Different development projects within the Southtown project area shall coordinate their respective roads, bike paths, landscape corridors, and design standards to create a unified sense of place and identity.
- Commercial buildings shall be no more than an average of 30 feet in height, and be designed to front on the sidewalk, with parking at the rear of the property, when feasible, so as to enhance neighborhood aesthetics and to encourage pedestrian–friendly design.
- Infrastructure master plans for sewer, water, storm drain, and traffic improvements shall be prepared prior to or in conjunction with the processing of subdivision maps for all development within the South Vanden areas, including the Southtown and Moody project areas.

- Prior to the approval of any subdivision applications, the developers shall assure that all required domestic water supply and distribution systems, wastewater collection and treatment facilities, stormwater management facilities, and roadway segment and intersection improvements will be incorporated into the final project plans.

- The lands to the south of the Southtown and Southtown Commons project areas will be subject to subsequent General Plan Amendments, Prezonings, and other prerequisites to annexation.

Zoning

The zoning for the project site is currently Neighborhood Commercial, which is described as follows:

"The CN-Neighborhood Commercial district allows for uses which generally provide goods and services in small retail centers intended to accommodate a neighborhood area. The CN district is established to achieve the following purposes:

A. To allow for the establishment of commercial retail, office, service, entertainment, and public uses suitable for neighborhood commercial centers;

B. To provide sites of adequate size to accommodate smaller retail centers in locations convenient to residential neighborhoods;

C. To promote the economic vitality of businesses by ensuring an appropriate mix of uses compatible with surrounding residential areas;

D. To allow for the establishment of other appropriate uses which are determined to be compatible with the intent of the district."

2.2 DESCRIPTION OF PROJECT

2.2.1 Project Characteristics

The proposed project requires the approval of land use designation and corresponding zone changes in order to allow the development of the proposed residential uses.

Proposed Land Use Designations

General Plan

The Applicant is proposing to change the General Plan land use designation of the project property to Residential Medium Density, which is defined as follows:

"This designation provides opportunities for multiple residential uses, including duplexes, duets, attached or detached townhouses, and multi-dwelling structures with landscaped open space for residents, subject to appropriate standards. Homes designed as stacked units without

garages are prohibited in this land use designation. Multi-dwelling structures must be within a subdivision in which each unit may be under individual ownership. Single-family detached housing may be allowed when in compliance with Residential Design Requirements for New Single-Family Development. The base density is 8.1 units per gross acre, and the maximum potential density is 14.0 units per gross acre."

The project also proposes to amend the General Plan Policy LU-P23.1 to revise the requirement for new development adjacent to existing homes to match or exceed the standards for the existing homes to only apply to projects outside of the Southtown project and to remove any requirement for commercial construction. Revisions to Policy LU-P23.1 are as noted below with any deleted text shown as strikeout and new text is shown in red:

LU-P23.1: Require that the South Vanden Area, including the Southtown and Southtown Commons Project Areas, facilitate the development of a range of housing densities and opportunities, pedestrian and bicycle friendly design, ~~neighborhood commercial sites,~~ and recreational and neighborhood facilities, by including the following requirements:

- A network of landscaped pedestrian/bike corridors shall connect key elements of the area, such as the community park and arterial streets.
- New development adjacent to existing homes within the city limits shall match or exceed the size, character, and quality of adjacent homes and lots. This applies only to the exterior of the Southtown and Moody projects and not internally within said projects.
- All new residential development shall conform to the Residential Design Requirements for New Single Family Development.
- The Southtown project area will include a range of housing types and densities and attached, detached, and cluster housing.
- Land shall be reserved for community uses such as private schools, membership organizations, day care centers, and senior centers.
- A financing mechanism for all public facility improvements shall be established before development occurs.
- Nut Tree Road and Vanden Road shall be widened to the City standard width through the project sites for all projects that front on these streets.
- Leisure Town Road shall be widened and improved to the standards for the Jepson Parkway along the frontage of all projects that abut Leisure Town Road.

- Foxboro Parkway shall be extended between Nut Tree Road and Vanden Road. The extension will be completed prior to the reconstruction and reconfiguration of Vanden Road.

- A 1-acre site for a future fire station site shall be reserved within the Southtown project area.

- A site within the Vanden Road loop shall be reserved for a park.

- ~~A multi-family project on Leisure Town Road shall begin construction in the first phase of development within the Southtown project area.~~

- Public areas adjacent to Alamo Creek shall be landscaped to enhance the view of the creek channel, within the requirements of Solano County Water Agency.

- Different development projects within the Southtown project area shall coordinate their respective roads, bike paths, landscape corridors, and design standards to create a unified sense of place and identity.

- ~~Commercial buildings shall be no more than an average of 30 feet in height, and be designed to front on the sidewalk, with parking at the rear of the property, when feasible, so as to enhance neighborhood aesthetics and to encourage pedestrian-friendly design.~~

- Infrastructure master plans for sewer, water, storm drain, and traffic improvements shall be prepared prior to or in conjunction with the processing of subdivision maps for all development within the South Vanden areas, including the Southtown and Moody project areas.

- Prior to the approval of any subdivision applications, the developers shall assure that all required domestic water supply and distribution systems, wastewater collection and treatment facilities, stormwater management facilities, and roadway segment and intersection improvements will be incorporated into the final project plans.

- The lands to the south of the Southtown and Southtown Commons project areas will be subject to subsequent General Plan Amendments, Prezonings, and other prerequisites to annexation.

Zoning

The Applicant is proposing a zone change of the project property to Residential Medium, which is defined as follows:

"The Residential Medium Density district provides for attached multi-family housing such as duplexes, townhouses, and apartments, as well as for single-family detached housing on small lots. The allowed density ranges from 8.1 to 14.0 units per gross developable acre, with a

minimum project area of 7.5 acres. The RM district is established to achieve the following purposes:

A. To reserve appropriately located areas for medium density, multi-family residential development;

B. To ensure a mix of housing types to meet the diverse needs of the citizens of Vacaville;

C. To allow for the establishment of other appropriate uses which are determined to be compatible with the intent of the district."

A single-family development in RM zoning district is subject to a CUP with a planned development application.

Development Characteristics

The Applicant is proposing to develop the 1.76 acre undeveloped project site as a 15 lot single-family detached residential subdivision. The lot sizes would range in size from 1,736 sf to 2,254 sf with an average lot size of 1,985 sf, and a gross density of 8.52 du/ac. The proposed project also includes a minimum of 400 sf of private yard areas and four parking stalls per residential unit. As shown in Figure 2.0-3: Tentative Map, all units would have rear entry. Units adjacent to Vanden Road and Vega Way would face the public street. The common areas of the proposed project (landscaping, driveways, and drive paths) would be maintained and managed by an HOA.

The building size of the 15 two-story dwelling units would range from 1,696 sf to 2,217 sf. As shown on the Tentative Map, the larger homes would be located along Vega Way and Vanden Road, and the smaller homes would be located in the center and along the northern boundary. The side yard setbacks for the units would be five feet minimum on one side and 10 feet on the other side. The 10 foot side yard would provide a minimum of 400 sf of usable private recreational space. The five foot side yard space would contain the air conditioning (AC) unit, toters, and storage. The front yard setback would extend 21.5 feet from the back of the curb with the addition of the public right of way to the project site. There are no single-story units proposed for the project. Three different house plans and elevations are proposed are described below:

<u>Architectural Styles</u>

The proposed project would incorporate three types of architectural styles; Craftsman, French Country, and Spanish. Each architectural style would incorporate unique architectural elements and would be required to meet the City's architectural design requirements, prior to the issuance of a building permit. The three proposed architectural styles for the proposed project are described below, and depicted on Figure 2.0-4, Figure 2.0-5, and Figure 2.0-6.

Spanish

Spanish style homes are typically characterized as having a stucco exterior, arches around entry walkways, and low-pitched tile roofs. The proposed Spanish style units would incorporate concrete low profile 'S' tile, stucco finishes, shutters, decorative gable end details, enhanced sills, and 1x stucco finish trims.

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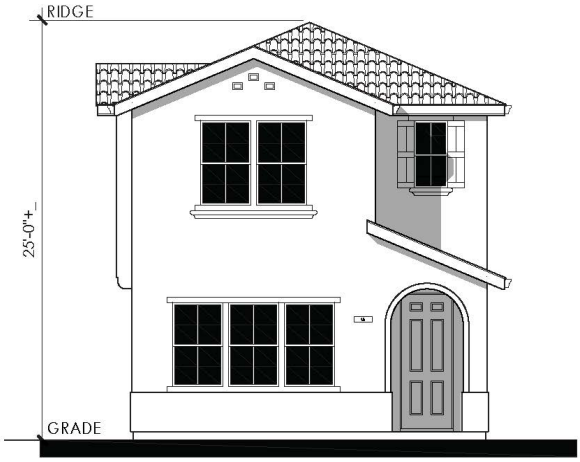

ELEVATION '1A' - SPANISH

1A Material Legend:
Concrete Low Profile 'S' Tile
Stucco Finish
Shutters
Decorative Gable End Detail
Enhanced Sills
1x Stucco Finish Trims

ELEVATION '1B' - FRENCH COUNTRY

1B Material Legend:
Flat Concrete Tile Roofing
Stucco Finish
Cementitous Siding/Shingles
Shutters
Decorative Corbels
Stone Veneer
Enhanced Sills
1x Stucco Finish Trims

ELEVATION '1C' - CRAFTSMAN

1C Material Legend:
Flat Concrete Tile Roofing
Stucco Finish
Cementitous Siding/Shingles
Enhanced Sills
1x Stucco Finish Trims
Wood Posts

Note: Plan drawings provided by KTGY group

Stantec

Ashton Place Unit 3 Project
Vacaville, California

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Figure 2.0-4. Plan 1- Front Elevations

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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ELEVATION '2A' - SPANISH

2A Material Legend:
Concrete Low Profile 'S' Tile
Stucco Finish
Decorative Gable End Detail
Enhanced Sills
1x Stucco Finish Trims

ELEVATION '2B' - FRENCH COUNTRY

2B Material Legend:
Flat Concrete Tile Roofing
Stucco Finish
Cementitous Siding/Shingles
Shutters
Decorative Corbels
Stone Veneer
Enhanced Sills
1x Stucco Finish Trims

ELEVATION '2C' - CRAFTSMAN

2C Material Legend:
Flat Concrete Tile Roofing
Stucco Finish
Cementitous Siding/Shingles
Enhanced Sills
1x Stucco Finish Trim
Wood Posts

Note: Plan drawings provided by KTGY group

Stantec

Ashton Place Unit 3 Project
Vacaville, California

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Figure 2.0-5. Plan 2- Front Elevations

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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ELEVATION '3A' - SPANISH

3A Material Legend:
Concrete Low Profile 'S' Tile
Stucco Finish
Decorative Gable End Detail
Enhanced Sills
1x Stucco Finish Trims
Shutters

ELEVATION '3B' - FRENCH COUNTRY

3B Material Legend:
Flat Concrete Tile Roofing
Stucco Finish
Cementitous Siding/Shingles
Shutters
Stone Veneer
Enhanced Sills
1x Stucco Finish Trims

ELEVATION '3C' - CRAFTSMAN

3C Material Legend:
Flat Concrete Tile Roofing
Stucco Finish
Cementitous Siding/Shingles
Enhanced Sills
1x Stucco Finish Trim
Wood Posts
Shutters

Note: Plan drawings provided by KTGY group

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Figure 2.0-6. Plan 3- Front Elevations

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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French Country

French Country style homes are characterized as incorporating decorative shutters, and arches with accenting keystones above the windows and doors. French Country style homes also include a symmetrical façade of brick, stone, or stucco finishing. The proposed project French County style units would incorporate flat concrete tile roofing, stucco finishes, cementitious siding/shingles, shutters, decorative corbels, stone veneer, enhanced sills, and 1x stucco finish trims.

Craftsman

Craftsman style homes typically incorporate a more simplistic design with natural materials. Craftsman architectural elements include shingle siding, stone details, low-pitched roofs, and square or round columns and stone supports. The proposed project Craftsman style units would incorporate flat concrete tile roofing, stucco finishes, cementitious siding/shingles, enhanced sills, 1x stucco finish trim, wood posts, and shutters.

Each architectural style would be designed with three different floor plans with each floor plan having three elevation types. The three floor plans are described as follows:

Plan 1
Plan 1 is 1,697 sf and has three bedrooms and 2.5 baths. There are three distinctive and unique elevations which are: Plan 1A – Spanish; Plan 1B – French Country; and, Plan 1C – Craftsman. The elevation height for Plan 1 would range from 25'-0" to 26'-11". Each residential unit would be constructed on a building PAD approximately 0.50 feet. The finished floor elevation would be between 98 feet to 99 feet.

The Plan 1 floor plan would include a large great room downstairs which opens to both the kitchen and dining room. Upstairs there are four bedrooms including a large master bedroom with walk-in closet. Where the side of the house faces a public street, significant architectural elements are provided. In addition, significant architectural treatment of the rear elevation is provided which would also include a motion activated light and lighted address. A lighted address would also be displayed on the front and rear of the house.

Plan 2
Plan 2 is 2,099 sf and has three and four bedroom options and three full baths. The three elevations are: Plan 2A – Spanish; Plan 2B – French Country, and; Plan 2C – Craftsman. The elevation height for Plan 2 would range from 25'-9" to 27'-10". Each residential unit would be constructed on a building PAD approximately 0.50 feet. The finished floor elevation would be between 98 feet to 99 feet.

The Plan 2 floor plan would include a large great room downstairs along with a large kitchen that opens to the dining room. There is also a large bedroom and full bath downstairs. Upstairs there are two to three bedrooms (depending on the options selected) including a large master bedroom with walk-in closet. Where the side of the house faces a public street significant architectural elements are provided. In addition, significant architectural treatment of the rear

elevation is provided which would also include a motion activated light and lighted address. A lighted address will also be displayed on the front and rear of the house.

Plan 3
Plan 3 is 2,217 sf and has four bedrooms and three full baths. The three elevations are: Plan 3A – Spanish; Plan 3B – French Country, and; Plan 3C – Craftsman. The elevation height for Plan 3 would range from 27'-5" to 29'-7". Each residential unit would be constructed on a building approximately 0.50 feet. The finished floor elevation would range between 98 feet to 99 feet.

The Plan 3 floor plan would include a large great room downstairs along with a large kitchen that opens to the dining room. There is also a large bedroom and full bath downstairs. Upstairs there are three bedrooms including a large master bedroom with walk-in closet. Where the side of the house faces a public street significant architectural elements are provided. In addition, significant architectural treatment of the rear elevation is provided which would also include a motion activated light and lighted address. A lighted address would also be displayed on the front and rear of the house.

Proposed Project Deviations

In accordance with the City's Municipal Code, Chapter 14.09.074, the proposed project would adhere to most of the minimum development standards required for conditional uses in the RM zoning district, with requests for variations through the Planned Development application (City of Vacaville Municipal Code 14.09.111.060). The minimum development standards designed for the RM zoning district include, but are not limited to, standards for minimum density, lot area, rear yard; front yard; and side yard setbacks, distance between structures, maximum site coverage, and maximum building height. The building height for each of the three proposed elevations would range from 23 feet to 25 feet, in keeping with the surrounding residential neighborhoods. Greater standards may be required as a condition of project approval (City of Vacaville Municipal Code 2016). However, due to the limited parcel size and project feasibility, the proposed project would be built as a Planned Development to allow for variations from the City's development standards for the RM zoning district. The proposed project single-family design guidelines are proposed to be modified as follows: five feet side yard setback on one side and 10 feet side yard setback on the other side with 15 feet between structures. In addition, the maximum Lot Coverage is 40 percent and shall be computed by comparing the entire site area instead of by individual lot, 1.76 acres to the total square footage of the 15 structures. Table 2.0-1 discusses the proposed project's development standards and provides consistency analysis for differing from the zoning standards for residential development.

Table 2.0-1: Municipal Code Requirements and Planned Development

Setback	Municipal Code Requirements (Conditional Use)	Planned Development	Consistency Analysis
Minimum Lot Size	12,000 square feet	57,934.8 square feet	Consistent. However, subdivided

Setback	Municipal Code Requirements (Conditional Use)	Planned Development	Consistency Analysis
		Request additional 18,730.8	lots range from 1,736 sq. ft. to 2,254 sf.
Minimum Front Yard	20 feet	≥ 21.5 feet, with approval of ROW dedication	Privately owned lots do not include front yards. Request setbacks to be measured from the back of the curb to the foremost plane of the structure. Interior units measured by distance from each other.
Side Yard	20 feet + 5 feet for each additional story	5 feet and 10 feet	Request a reduction to the side yard requirements in RM zoning. Alternatively, meet the side yard setback of the existing adjacent lots for compatibility.
Site Width	300 feet	>300 feet	Consistent.
Site Depth	100 feet	>100 feet	Consistent.
Max. Building Height	40 feet	29'-7"	Consistent.
Distance Between Structures	10 feet	15 feet	Consistent. Request to meet the side yard setbacks of the adjacent lots for compatibility.
Rear Yard	20 feet	0 feet	Privately owned lots do not include front yards. Request setbacks to be measured from the back of the structure to

Setback	Municipal Code Requirements (Conditional Use)	Planned Development	Consistency Analysis
			the back of the curb on the internal shared/common driveways.
Private Open Space	400 square feet	≥ 400 square feet	Consistent.
Housing mix	Mix of one- and two- story	All two-story	A two-story structure would provide more floor area considering the smaller lot sizes.
Max Site Coverage	30%	33% of entire project site	Request to determine lot coverage based on percent of entire 1.76 acres that is covered by structures (homes plus patios), similar to that of a multifamily site.
Notes: Setbacks are calculated from the face of the curb.			

Parking

According to the City's Municipal Code, Chapter 14.09.128.080, parking requirements for single-family residential developments are, "two enclosed parking spaces per dwelling unit for new construction. Garage conversions for existing dwellings may be allowed, subject to a determination that the exterior design of the converted area is compatible with the dwelling, and provided that two onsite spaces are maintained in the driveway, or elsewhere onsite as determined by the Director." The Ordinance doesn't specify the exact placement of spaces but small lot subdivisions are typically conditioned to provide a guest parking space within 100 to 200 feet of the unit it is serving. The City Municipal Code further states, "for projects of four units or more, a minimum of 10 feet of landscaping shall be required between a parking lot and property line. Landscaping shall not be required when it would block access to driveways, walkways, or joint access aisles. In addition to the required perimeter landscaping, an additional five percent of the gross parking lot area shall be landscaped."

Consistent with the Residential Design Requirements for New Single Family Development, the proposed project includes off-street parking of four parking spaces per dwelling unit. The proposed project provides 60 parking spaces (30 garage spaces along with 30 additional onsite spaces) for the 15 units. This provides a ratio of four parking spaces per unit, as required.

Landscaping

The City's Municipal Code, Chapter 14.09.074.130, establishes landscaping design criteria. According to the guidelines, "front yard and corner lot street side yard landscaping shall be installed for all dwelling units. Landscaping shall be installed prior to final inspection of the dwelling, except as provided below, and shall comply with the requirements of the Vacaville Water Efficient Landscape Requirements." Additionally, "landscaping shall be provided for all common areas within single-family residential projects, and shall be installed in accordance with the Water Efficient Landscape Requirements" and "on an ongoing basis, no more than 50 percent of the front yard shall be paved with concrete, asphalt, or other similar impervious materials."

Along with the proposed development plans, the Applicant would submit a landscape plan, which meets the general design standards outlined in the City's Municipal Code.

Stormwater

Proposed stormwater runoff from the project site would be directed to proposed area drains. These area drains would be connected to two12 inch and one 10 inch proposed onsite storm drain lines with laterals to area lines. The three onsite storm drain lines would then connect to the existing 18 inch public storm drain line located on the north side of Cogburn Circle. The stormwater would then be conveyed through existing public storm drain lines to the existing detention basin on the east side of Leisure Town Road. The proposed project would be served with drainage service by the City of Vacaville.

Water

A proposed 8 inch onsite water pipe system would branch from the existing 12 inch water main pipe located in Cogburn Circle to provide water to the project site. The proposed project would be served with water service by the City of Vacaville.

Sewer

The proposed project includes two proposed onsite eight inch sanitary sewer lines which would connect with the existing eight inch sewer line located in Cogburn Circle which then connects to the 24 inch sewer line in Vanden Road. Lot 1 would connect to the existing 6 inch sewer stub previously installed to the project site. With a project area of 1.76 acres, the total sewer effluent discharge units (EDUs) from the proposed project would be 15 EDUs (1 EDU per unit). A Sewer Calculation Memorandum (Appendix D) was prepared on October 21, 2016 by Phillippi Engineering Inc., to evaluate the projected sewer flows associated with the Ashton Place Units 1-3, Potters Place, and Park Parish properties as originally intended (CN and RM) versus the

proposed sewer flows which would result from the conversion to Single Family Residential. The proposed project would be served with sewer service by the City of Vacaville

Utilities

The proposed project requires the installation of water meter boxes, backflows for fire sprinklers, sewer cleanouts, cable, phone, and power boxes. Utility boxes are required to be positioned in a manner that they do not dramatically reduce front yard landscaping. Utilities would be provided by Pacific Gas and Electric (PG&E), SBC, and Comcast. According to the General Plan, "in newer developments, the distribution lines for electricity are placed underground, along with cable television, telephone, and natural gas lines." The Applicant would work with the utility companies to relocate the public utility easement (PUE). The proposed development plans would be required to meet these criteria during the City's development review phase, prior to issuance of a building permit.

Onsite Circulation

The proposed project would be accessed by two private driveways and would include multiple onsite private alleys, which would provide access to the garages located in the rear of each residential unit. Interior curbs along the private alleys would be painted red. The HOA would ultimately be responsible and there would be "No Parking" and "Tow Away" signs posted. All driveways and alleys associated with the proposed project would be private.

Lighting

Lighting shall be provided as specified in the City's Municipal Code, Chapter 14.09.127.110. All parking lots and loading areas shall include lighting with sufficient illumination for security and safety. According to the City's Residential Design Requirements for New Single Family Development guidelines, "Alleys and adjacent development shall be designed to promote security and attractive appearance. Project approval shall require features such as:

1. Dwelling units designed to provide visual access to alley areas.
2. Open style fencing along abutting rear yards.
3. Security lighting.
4. Street addresses provided at intersection of alley and public street.
5. Public alleys shall be approved only when a maintenance district is concurrently established.
6. Maintenance of private alleys shall be addressed through CC&R provisions."

The proposed project would be required to meet these criteria during the City's development review phase, prior to issuance of a building permit.

Other Services

The proposed project would be required to adhere to the City's Municipal Code, Chapter 11.01.020, Development Impact Fees.

The proposed project provides an average usable private yard area of 453 sf, with a 400 sf minimum. Instead of providing onsite Open Space, the Applicant is proposing a financial contribution to the City to enhance Magnolia Park, in accordance with the City's Municipal Code. The purpose of the parks and recreation facilities impact fee is to "provide a variety of parks, recreation facilities and park improvement projects such as tennis courts, swimming pools, soccer, ball fields and the like. As development and population increases, park and recreation facilities, inadequate to serve the city, could occur which have potential for adversely affecting the general well-being of city residents. In order to address this potential and to meet city recreation standards it is appropriate that new development pay for additional park facilities and recreation development attributable to development impacts."

The Vacaville Fire Department (VFD) is funded by the City's General Fund, ambulance transport fees, Special Paramedic tax, Inspections fees, impact fees from new development, and from public safety Community Facilities Districts, which have been formed for new development areas to offset the cost of providing public safety services to such areas through the levy of special taxes (General Plan 2015). The proposed project would be part of the City's Southtown Public Safety Community Facilities District #11.

2.2.2 Project Construction Phasing, Access, Staging, Equipment, and Methods

Implementation of the proposed project would result in the construction of a 15 lot single-family detached residential subdivision. The project site would be cleared and graded up to two feet of disturbance, in addition, foundation and grading would consist of cuts and fills of up to five feet to achieve the finished pad grading and provide adequate gradients for site drainage and utility infrastructure. Staging for the proposed project would be located on undeveloped disturbed land located along the southwest portion of Cogburn Circle (Figure 2.0-2). Temporary construction fencing with privacy screens would be used to screen views of the staging site and activities from adjacent residents. All construction staff, vehicle equipment, materials, and construction preparation would take place within these locations. At the time of construction the proposed project would require access to Cogburn Circle for equipment, material, and employee movement to facilitate construction activities. Grading is estimated to begin April 2017 with an estimated construction date of May 2017 through March 2018.

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3.0 ENVIRONMENTAL CHECKLIST AND ENVIRONMENTAL EVALUATION

The environmental factors checked below would be potentially affected by this project, involving at least one impact that requires mitigation to reduce the impact from "Potentially Significant" to "Less Than Significant" as indicated by the checklist on the following pages.

☒ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology/Soils
☒ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☒ Hydrology/Water Quality
☒ Land Use/Planning	☐ Mineral Resources	☒ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☒ Tribal Cultural Resources	☐ Utilities/Service Systems
☒ Mandatory Findings of Significance		

Evaluation of Environmental Impacts

Section 3.0, Environmental Checklist and Environmental Evaluation, presents the environmental checklist form found in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures recommended as appropriate as part of the proposed project.

For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which mitigation has not been identified. If any potentially significant impacts are identified, an Environmental Impact Report (EIR) must be prepared. An ISMND cannot be used in the case of a project for which this conclusion is reached in any impact category.

Less Than Significant with Mitigation Incorporated: This designation applies where applicable and feasible mitigation measures previously identified in prior applicable EIRs or in the General Plan EIR have reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact", and pursuant to Section 21155.2 of the Public Resources Code (PRC), those measures are incorporated into the ISMND.

This designation also applies where the incorporation of new project-specific mitigation measures not previously identified in prior applicable EIRs or in the General Plan EIR has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact".

Less Than Significant Impact: Any impact that would not be considered significant under CEQA, relative to existing standards.

No Impact: The project would not have any impact.

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3.1 AESTHETICS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

3.1.1 Environmental Setting

This section provides a description of existing visual conditions in the vicinity of the proposed project and an assessment of changes to those conditions that would occur from implementation of the proposed project. Impacts of the proposed project on the visual environment are generally defined in terms of a proposed project's physical characteristics and potential visibility, the extent to which the proposed project's presence would change the perceived visual character and quality of the environment where it would be located, and the expected level of sensitivity that the viewing public may have in areas where project facilities would alter existing views.

The aesthetic quality of a community is composed of visual resources, which are those physical features that make up the visible landscape, including land, water, vegetation, and the built environment (e.g., buildings, roadways, and structures).

Visual Distance Zones

The following distance zones (foreground, middleground, and background) can be used to characterize the dominant visual character from each vantage point and describe views in terms that can be analyzed and compared. The sensitivity of views, which have been modified from the existing environment, is defined in order to establish thresholds for the analysis of potential visual impacts resulting from the implementation of the proposed project.

Foreground Views

Foreground views include elements that can be seen at a close distance and that dominate the entire view. Impacted views at this distance are generally considered potentially adverse when viewed by a sensitive viewer group, such as surrounding residents, workers, pedestrians, or regular motorists.

Middleground Views

Middleground views include elements that can be seen at a middle distance and that partially dominate the view. Impacted views at this distance are generally considered to be potentially adverse when viewed by a sensitive viewer group.

Background Views

Background views include elements that are seen at a long distance and typically do not dominate the view, although they are part of the overall visual composition of the view. Impacted views at this distance are generally considered not to be an adverse impact when viewed by a sensitive viewer group.

Regional Setting

The proposed project is located in Solano County, in the City of Vacaville. The City is located in northern Solano County, midway between San Francisco and Sacramento. The City has transformed from a small agricultural town into a thriving and progressive city (City of Vacaville 2016). Views of the Vaca Mountains, open space areas characterized by oak-dotted hillsides, Alamo and Ulatis Creeks, and flat fields of row crops are scenic values experienced from a number of public vantage points throughout the City (General Plan EIR 2013). Scenic resources are a valued local asset for the community, and are an important element of the City's quality of life (General Plan 2015).

Visual Setting

The project site is located in the Southtown Project Area, in southeast Vacaville. As part of the Southtown Project build-out, the project site is previously disturbed, and is one of the last remaining undeveloped lots in the Southtown Project Area. With the exception of a temporary trailer and three conex storage containers, there are no existing structures on the project site. The project site is located on the northwest corner of the intersection of Vanden Road and Cogburn Circle. The project site is a relatively flat undeveloped lot, with a gentle upslope gradient trending toward the eastern portion of the project site. Most of the project site consists of non-native vegetation, grasses, and low-lying plants. The south side of the project site, along Cogburn Circle, features a sidewalk and landscape plantings. The VFD Station 75 and Magnolia Park are located directly south of the project site, across Cogburn Circle. There is a six foot decorative masonry wall constructed along the north, east, and west boundaries of the project site. In addition to the proposed project, there are three residential projects; Ashton Place Unit 1, Ashton Place Unit 2, and Potter's Place, proposed to be constructed in the surrounding area of the project site. The proposed project is proposed to be constructed first. During construction, the proposed project would use the undeveloped disturbed land along the southwest portion of

Cogburn Circle, proposed to be developed as Ashton Place Unite 1 and Ashton Place Unit 2 once the proposed project is completed (Figure 2.0-2).

Key Views of the Project Site

Below is a description of the surrounding land uses and corresponding views of the project site. Photographs of the project site were taken during a reconnaissance survey performed by Stantec on September 2, 2016. Photographs were taken from key observation points (KOPs) of the project site in the surrounding vicinity. Figures 3.1-1 to 3.1-4 provides a graphic representation of the identified KOPs for the project site from the surrounding land uses.

North

North of the project site is a residential neighborhood consisting of two-story single-family residences on wide, shallow lots located in an area zoned Residential Low Medium (5.1 to 8.0 units per acre) by the City's Municipal Code. There are five existing suburban single-family residences that abut the northern boundary of the project site. The single-family residences, located north of the project site, are uniquely designed as wide, shallow suburban detached residential units with neutral color stucco finishing's and stucco tile roofing. Each residential unit has an attached side garage. The architectural elements of the residences, located north of the project site, are similar to the residences located west and south of the project site. Views of the project site from the single-family residences are generally obstructed by the six foot decorative masonry wall constructed along the northern boundary of the project site. Views of the project site from the second-story of the single-family residences consist of a grassy, flat, undeveloped lot, the VFD Station 75, and Magnolia Park.

South

Cogburn Circle borders the southern boundary of the project site. Directly across the street from the project site is the Magnolia Neighborhood Park, and the newly constructed VFD Station 75. Phase one development of Magnolia Park is completed and is approximately 5.9 acres. Phase two development of Magnolia Park would include an additional 6.9 acres. Magnolia Park provides City residents with multiple shaded picnic areas, public restrooms, a basketball court, children's playground and splash pad, and open space play field. Magnolia Park is surrounded by a network of pedestrian amenities which include sidewalks, bike paths, and trails. Views of the project site from Magnolia Park and VFD Station 75 consist of grassy, flat, undeveloped land. There are ornamental trees and shrubs planted along the southern boundary of the project site that somewhat obstruct views of the project site.

West

The western boundary of the project site is bordered by Vega Way. Two-story single-family residences are located across Vega Way from the project site. The single-family residences are located in an area zoned Residential Low Medium (5.1 to 8.0 units per acre) by the City's Zoning Ordinance. The single-family residences are uniquely designed as wide, shallow suburban detached residences, and complete with neutral color stucco finishing's, and stucco tile roofs. The homes on these wide-shallow lots are all 2-story with setbacks as follows:

- Minimum 20 ft. to the living space (or 15 ft. from the porch) from the front property line.
- About 27 ft. to the living space from the curb on Vega Way.
- About 32 ft. to the living space from the curb on Cogburn Circle.
- Minimum 20 ft. from the rear property line; with a range of 18 ft. to 47 ft. from the proposed project site.
- Minimum 5 ft. from the side property lines; 30 ft. setback from the curb on corner lots.

Each residential unit has an attached side garage. The architectural elements of the single-family residences, located west of the project site, are similar to the residences located north of the project site. Views of the project site from single-family residences, located across the street, are generally obstructed by the six foot decorative masonry wall constructed along the western boundary of the project site. Ornamental trees have been planted along the western boundary of the project site, which somewhat obstruct view of the project site. Views of the project site from the second-story of the single-family residences consist of a grassy, flat, undeveloped lot.

East

The eastern boundary of the project site is bordered by Vanden Road. The area across the street from the eastern boundary of the project site is currently undeveloped, and would be developed as Southtown Phase 3 based on the approved tentative map for single family residential and neighborhood commercial uses. The commercial portion of land east of the project site is proposed to be re-zoned as Residential Medium (8.1 to 14.0 units per acre) as part of a different submitted project request. Views of the project site are largely obstructed by the six foot decorative masonry wall, constructed along the eastern boundary of the project site. Additionally, ornamental trees have been planted along the eastern boundary of the project site, obstructing views of the project site.

Scenic Resources/Corridors

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the highways. According to the Caltrans State Highway Network Data Library, and the General Plan there are no State scenic highways located in the City (Caltrans 2016, and General Plan 2015).

The City's scenic resources are a valued local asset for the community. The General Plan does not identify any official scenic vistas (General Plan 2015). While the General Plan does not designate any official scenic vistas, the General Plan considers westward views of the Vaca Mountains, a part of the Inner Coast Range, and views of the Inner Coast Range hillsides within the City as scenic vistas that are worthy of protection. Additional scenic resources in the City consist of rural and undeveloped lands, hillsides surrounding the City, Vaca Mountains, English Hills, Alamo Creek Ridge, creeks, and riparian corridors (General Plan 2015).

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Figure 3.1-1. Key Observation Point Locations

Prepared: MNugent, 10/5/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Figure 3.1-2. Key Observation Point, Location 1

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Figure 3.1-3. Key Observation Point, Location 2

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Figure 3.1-4. Key Observation Point, Location 3

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Light and Glare Conditions

The terms "glare" and "skyglow" are used in the following analysis to describe the visual impacts of lighting. For the purposes of this impact analysis, glare is considered to be direct exposure to bright lights and skyglow. Skyglow extends beyond the light source and can dominate or partially dominate views above the horizon. Light pollution refers to all forms of unwanted light in the night sky, including glare, light trespass, skyglow, and over-lighting. Excessive light and glare can be visually disruptive to humans and nocturnal animal species, and often reflects an unnecessarily high level of energy consumption. Light pollution has the potential to become an issue of increasing concern as new development contributes additional outdoor lighting installed for safety and other reasons.

In general, nighttime lighting in the project vicinity is likely minimal and does not produce substantial glare or skyglow. The project site is currently undeveloped and does not contain any streetlights, or any other sources of light and glare. Nighttime lighting is present in the surrounding area mainly as streetlight lighting, parking lot lighting, building security lighting for the surrounding residences and VFD Station 75, and security lighting for Magnolia Park.

3.1.2 Methodology

Viewer Exposure and Sensitivity

Viewer sensitivity is considered when assessing the impacts of visual change and is a function of several factors. The sensitivity of the viewer or viewer concern is based on the visibility of resources in the landscape, proximity of the viewers to the visual resource, elevation of the viewer relative to the visual resource, frequency and duration of views, number of viewers, and types and expectations of individuals and viewer groups.

The viewer's distance from landscape elements plays an important role in the determination of an area's visual quality. Visibility and visual dominance of landscape elements depend on their placement within a viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1988). Landscape elements are considered higher or lower in visual importance based on their proximity to the viewer. Generally, the closer a resource is to the viewer, the more dominant, and thus the more visually important it is to the viewer. For purposes of analysis, landscapes are separated into foreground, middleground, and background views (U.S. Forest Service 1995). In general, the foreground is characterized by clear details (within 0.25 or 0.5 mile of the viewer); the middleground is characterized by the loss of clear detail in a landscape, creating a uniform appearance (from the foreground to three to five miles in the distance); and the background extends from the middleground to the limit of human sight.

Visual sensitivity is also affected by viewer activity, awareness, and expectations in combination with the number of viewers and the duration of the view. Visual sensitivity is generally higher for views that are observed by people who are driving for pleasure, or engaging in recreation activities such as hiking, biking, camping or by residents of an area. Sensitivity is lower for people engaged in work activities or commuting to work. Viewer response must be based on the regional context. The same landform or landscape feature may be valued differently in different

settings; landscape features common in one area would not be valued as highly as the same feature in a landscape that generally lacks similar features. For example, a small hill may have little value in a mountainous area, but may be highly valued in a landscape that has little topographic variation.

Assumptions

The following visual resources impact analysis is based on a reconnaissance survey of the project site and the surrounding areas on September 2, 2016, interpretation and analysis of aerial photographs, and field survey photographs of the project site.

Analysis of the proposed project's visual impacts is based on an evaluation of the changes to the existing visual resources that would result from implementation of the proposed project. In determining the extent and implications of the visual changes, consideration was given to: the existing visual quality of the affected environment, specific changes in the visual character, and quality of the affected environment; the visual context of the affected environment; the extent to which the affected environment contains places or features that provide unique visual experiences or that have been designated in plans and policies for protection or special consideration; and the sensitivity of viewers, access of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the proposed project.

3.1.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact AES-1 Have a substantial adverse effect on a scenic vista?

Impact Analysis

The proposed project consists of developing the 1.76 acre site with 15 single-family detached residential units. The project site is located in an existing residential neighborhood. Having previously been disturbed as part of the Southtown Project development, the topography of the project vicinity is generally flat. According to the General Plan there are no officially designated scenic vistas in the City. The General Plan considers westward views of the Vaca Mountains, a part of the Inner Coast Range, and views of the Inner Coast Range hillsides within the City as scenic vistas (General Plan EIR 2013). In addition, the General Plan identifies the following scenic resources within the City as, the Vaca Mountains, English Hills, surrounding hillsides, rural and undeveloped lands, creeks, and riparian corridors (General Plan 2015). The surrounding area is substantially built out, and existing views of the surrounding hillsides, southeast of the project site, are obscured by surrounding residential development. Foreground views of and from the project site are limited due to the suburban nature of the surrounding area; therefore, the project site is not within the viewshed of a scenic vista.

The proposed project design would be similar in scale, height, and character as the existing nearby residential developments. The proposed project would be consistent with most of the minimum development standards designed for permitted and conditional uses in the RMD

District, in accordance with the City's Municipal Code, Chapter 14.09.074, except where variations and exceptions to the standards are requested through the Planned Development. The proposed project design would be compatible with the surrounding residences, and incorporate the following development standards:

Elevation Design

The average building height of the surrounding residential developments is 27 +/- feet. The proposed project would consist of three architectural styles. Each architectural style would be designed with three different floor plans with each floor plan having three elevation types. As discussed in Section 2.0, Project Description, Plan 1 elevations would range from 25'-0" to 26'-9", Plan 2 elevations would range from 25'-9" to 27'-10", and Plan 3 elevations would range from 27'-5" to 29'-7". The proposed project average building height would be 27 +/- feet, compatible with the surrounding residences. Based on the grading plans each residential unit would be constructed on a 0.50 foot building pad, with the finished floor grade elevations ranging from 98.60 feet to 99.80 feet. Residential units abutting the northern boundary of the project site range from 100.10 feet to 100.40 feet. The proposed project would be staggered. Building massing would be compatible with the abutting properties along the perimeter of the northern boundary. Therefore, the building elevations would conform to the maximum building height limitations of the RMD District, as outlined in the City's Municipal Code.

Setbacks

The proposed project would implement side yard setbacks with five feet on one side and 10 feet on the other side as part of the Planned Development request, and consistent with the adjacent RLM-3.6 zoning. The proposed project would provide 15 feet between each building. The proposed private homes do not have front yards. However, the setbacks from the public street to the front of the house would be 21.5 feet minimum, if the City agrees to abandon the public right of way to the proposed project. The lot size of the proposed project would incorporate a compact design to allow for a higher density, which is encouraged in the City's ECAS, as discussed in Section 2.0, Project Description.

The proposed project is not, by CEQA definition, a scenic vista and would not have a substantial adverse effect on a scenic vista. The proposed project would be of similar scale, height, and character to the surrounding residences, and would be consistent with the RM zoning development standards outlined in the City's Municipal Code, except where variations and exceptions to the standards are requested through the Planned Development. Furthermore, the proposed project is located in a suburban setting, with limited viewsheds of the surrounding hillsides. Therefore, the potential impact on views from the adjacent properties would be minimal, and the proposed project would result in a less than significant impact.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AES-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Impact Analysis

According to Caltrans California Scenic Highway Mapping System and the General Plan, there are no officially designated State scenic highways located within the City. Additionally, the project site is barren of significant rock outcroppings or historic buildings. Therefore, the proposed project would have no impact on scenic resources such as rock outcroppings, trees, or historic buildings within view from a State scenic highway. No impact would occur.

Level of Significant Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AES-3 Substantially degrade the existing visual character or quality of the site and it surroundings?

Impact Analysis

The proposed project would subdivide the 1.76 acre site and develop 15 two-story single-family detached residential units (8.52 units/acre). The project site is located in a suburban residential area of the Southtown Project Area. The northern boundary of the project site is bordered by five single-family residences, Cogburn Circle to the south, Vanden Road to the east, and Vega Way to the west. The Magnolia Park and VFD Station 75 are located directly across the street from the southern boundary of the project site. The project site is currently designated CN in the City's General Plan. The Applicant is proposing to change the General Plan designation of the project site to RMD and also rezone the project site to RM.

<u>Short-Term Construction Impacts</u>

Of the four proposed projects in the surrounding area, the proposed project is proposed to be constructed first. During construction of the proposed project, staging would be located on the undeveloped, disturbed land located along the southwest portion of Cogburn Circle, proposed

to be developed as the Ashton Place Unit 1 and Ashton Place Unit 2 developments. In order to reduce visual impacts to the surrounding area, temporary construction fencing with privacy screens would be installed to screen views of the staging site, and construction activities from adjacent residents. All construction staff, vehicle equipment, materials, and construction preparation would take place within these locations. Therefore, with the implementation of construction fencing with privacy screens, visual impacts during construction would be less than significant.

Operational Impacts

The proposed project would be designed as a residential neighborhood complete with landscaping, pedestrian-friendly walkways, and street trees. The proposed project would incorporate an efficient and compact design, compatible with the design of the existing nearby residences in the Southtown Project Area.

Consistent with the City's development requirements, the proposed project includes three architectural styles with three different floor plans for each of the three elevations. The three architectural styles include; Spanish, French Country, and Craftsman. Each architectural style would incorporate design elements that are compatible with the size, character, and quality of the adjacent homes and lots, in accordance with General Plan Policy LU-P23.1. The surrounding residential neighborhoods consist of two-story post-modern styled homes typical of suburban neighborhoods. The surrounding post-modern styled homes incorporate distinctive architectural features from a variety of styles including; Spanish, French Country, and Craftsman, as proposed by the project. The proposed project requests to not include single-story units, which is consistent to the surrounding area as there are no single-story homes in the project vicinity. Furthermore, the proposed project would incorporate compatible architectural features with the surrounding residences such as, decorative shutters and arches above the windows, stucco finishes, shingle and tile roofs, wood posts with awnings above entry ways, deep set doors, and neutral earth tone paint colors. The proposed project would include some varying plains on three elevations with additional enhancements on the side walls facing Cogburn Circle to maximize architectural interest. Each proposed residential unit would have a rear entry garage, off the interior onsite alleys.

In accordance with the City's landscaping code, 14.09.074.130, the proposed project would install landscaping for the front yard and corner lot street side yard for all residential units, and to enhance the project site. The proposed project would also install additional trees and other landscaping throughout the common area to provide for shading of sidewalks/walking paths and to shield the fronts of the homes in close proximity to the sidewalks. Landscaping would comply with the requirements of the Vacaville Water Efficient Landscape Requirements. Additionally, the proposed project would comply with the City's ECAS wastewater measure to install drought-tolerant native landscaping, where appropriate (ECAS 2015). Final Landscape Plans would be reviewed and approved by the Community Development Director.

Variations and exceptions to the standards are requested through the Planned Development because the proposed project does not meet all of the minimum development standards designed for permitted and conditional uses in the RMD District, in accordance with the City's

Municipal Code, Chapter 14.09.074. The project requests exceptions to setbacks from the City's Code and from the existing homes as follows:

	Vega way		Cogburn Circle		Vanden Road	
Curb to Living Space*	Existing	Proposed	Existing	Proposed	Existing	Proposed
Front	27 ft.	24.5 ft - 27.5 ft.	32 ft.	n/a	n/a	33.4 ft. – 36 ft.
Corner lots, side setback	n/a	n/a	n/a	21.5 ft. – 25.4 ft.**	n/a	n/a
The distance from the proposed homes to the rear property line of the existing homes is 12 ft. *Not include porch. **Side yard extends additional 5 ft. closer, ranging from 16.5 ft. – 25.4 ft. from the curb.						

Pursuant to General Plan Policy LU-P23.1 the proposed project is required to conform to the Residential Design Requirements for New Single-Family development. These exceptions and the Planned Development are also part of the City's review of the proposed project design through the City's design review process.

By incorporating a compact, efficient design compatible with the architectural features of the surrounding residences the overall aesthetic character of the proposed project would conform to the City's General Plan, City's Municipal Code, and the City's Residential Design Guidelines, all of which have been developed to ensure visual conformance onsite and offsite. Therefore, the proposed project would not substantially degrade the visual character of the project site or its surroundings; impacts to the visual character of the proposed project and surrounding area would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AES-4 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The proposed project would develop as many as 15 single-family detached residential units. New sources of light and glare may potentially be intrusive since the project site is undeveloped and does not currently generate nighttime lighting. The proposed project would incorporate private streetlights, parking lot lighting, public streetlights, low-level landscape lighting, motion activated exterior lights on the rear elevation of each residential unit, as well as exterior lighted placards. In addition, construction of buildings with glass windows or other reflective surfaces would introduce new sources of daytime glare and nighttime glow. These are long term, operational impacts. With the incorporation of additional exterior light sources associated with the

proposed project, the light and glare impacts are expected to be incremental and visible from surrounding residences, land uses and streets, and may potentially degrade current daytime and nighttime views. However, lighting on the project site is an impact accounted for in the Southtown Project EIR as the project site was anticipated to be commercially developed. Additionally, typical residential lighting requires lower lumens than that of commercial. Therefore, operational lighting impacts are anticipated to be less than previously anticipated in the Southtown Project EIR.

Light generated by the proposed project could also be perceived as a nuisance by those traveling to, from, and passing by the project site if the proposed project were to include light that is excessive, improperly placed, or inadequately screened. Therefore, a potentially significant impact may occur if not appropriately mitigated. As it relates to glare and glass, the resulting amount of reflective surface area would have the potential to impact daytime views in the area by adversely affecting drivers passing by the proposed project. However, the proposed project plan does not propose buildings with significant amounts of reflective materials. Moreover, construction materials would consist of concrete tile roofing, stucco finish, cementitious siding and shingles, stucco finish trims, wood posts, and stone veneer none of which is highly reflective; hence, significant glare impacts are not expected to occur. Nonetheless, Mitigation Measure AES-1 and Mitigation Measure AES-2 are proposed to ensure that the potentially significant impact with regard to lighting and glare is reduced to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM AES-1: In accordance with City's Municipal Code, Chapter 14.09.127.110, the Applicant shall provide a lighting plan to the City for review and approval. The lighting plan shall include provisions to ensure that outdoor lighting is designed so that potential glare or light spillover to surrounding roadways, properties, and residences are minimized through appropriate site design and shielding of light fixtures. The City shall review the lighting plan to ensure that all lighting is directed downward and away from adjacent properties and residences. This mitigation measure does not preclude the use of small-scale decorative lighting that may be directed upward, such as wall wash lighting or spot lighting for landscaping. This type of lighting is allowed if it does not spill over onto adjacent properties.

MM AES-2: Parking Lot lighting shall be designed so that lighting, glare, and reflection are directed away from residences. This may be accomplished with hoods, shields, or other ways of directing light. Final lighting design shall be reviewed and approved by the Community Development Director.

Level of Significant After Mitigation

Less Than Significant Impact With Mitigation.

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3.2 AGRICULTURE AND FORESTRY RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒

3.2.1 Environmental Setting

The U.S. Department of Agriculture (USDA) and California Department of Conservation (CDC) monitor conversion of farmland and develop methods for categorizing farmland according to its overall agricultural capacity. Concern for the loss of important farmland led the CDC to develop the Farmland Mapping and Monitoring Program (FMMP), which classifies different agricultural soil types relating to their ability to sustain agricultural crops. The following categories include:

- **Prime Farmland.** Land with the best combination of physical and chemical features for the long-term production of agricultural crops. This land can economically produce

sustained high yields when treated and managed according to modern farming methods.

- **Farmland of Statewide Importance.** Lands with a good combination of physical and chemical features but with minor shortcomings such as greater slopes or with less ability to hold and store moisture.
- **Unique Farmland.** Lands with less quality soils used for the production of the State's leading agricultural cash crops.
- **Farmland of Local Importance.** Land and other agricultural land identified by the local jurisdiction as being important.

The City of Vacaville has traditionally contained areas of land used for grazing, orchards, field, and row crops, and has since become urban and diversified (General Plan 2015). Agriculture takes place on two-thirds of the land in Solano County, with irrigated agriculture taking place on half of the farmland (Southtown Project EIR 2003). The primary crops in the county are nursery stock, tomatoes, alfalfa hay, cattle, wine grapes, feeder lambs, wheat field corn, walnuts, and milk. Prior to the development of the Southtown Project Area, approximately 95 percent of the total project area was agricultural land. As a result of the Southtown Project, the Southtown Area has transformed from agricultural lands to a more urban area. The project site and undeveloped parcel, located east of the project site are the remaining undeveloped parcels in the Southtown Area.

The project site and undeveloped site located east of the project site are zoned CN and designated CN. As part of the proposed project, the Applicant is requesting an amendment to the General Plan from CN to RMD, and a zone change from CN to RM to be consistent with the General Plan. The proposed project would develop 15 two-story detached residential unites on 1.76 acres. The proposed project would consist with the surrounding residential properties in the project area. To the north, the project site is bordered by five existing single-family residential properties, to the south the project site is bordered by Cogburn Circle; Magnolia Park and the VFD Station 75 are directly across the project site on Cogburn Circle, to the east the project site is bordered by Vanden Road; and an undeveloped parcel zoned CN lies directly south of Vanden Road, and to the west the project site is bordered by Vega Way; single-family residences lie directly west of Vega Way.

3.2.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, CDC FMMP database, historical aerial imagery of the project site; as available through Google Earth 2016, Solano County 2013-2014 Williamson Act Map, Southtown Project EIR, and Section 2.0, Project Description, of this ISMND. The following impact discussions consider the effects of the proposed project related to agriculture and forestry resources in the City.

3.2.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact AG-1 Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Impact Analysis

Prior to the development of the Southtown Project Area, lands were previously used for agricultural purposes and designated Prime Farmland. Impacts associated with the conversion of Prime Farmland to non-agricultural use were previously evaluated under the Southtown Project EIR (Southtown Project EIR 2003). According to the City's Zoning Map, the Southtown Area is primarily zoned for residential and commercial uses. The Southtown Project EIR determined agricultural conservation easements or other similar mechanisms, as determined by the City Council, to preserve 245 acres of active farmland in Solano County would be dedicated to offset the Southtown Project's impact to prime farmland (Southtown Project EIR 2003).

According to the City's Zoning Map, the project site and undeveloped parcel, located directly east of the project site, are zoned CN. The undeveloped parcel located southeast of the project site, directly across from Magnolia Park, is zoned Community Facilities and is planned to complete the other half of Magnolia Park. All other lands within the project vicinity are zoned for residential use. The project site would be rezoned to RM as part of the proposed project. The CN and RM zoning designations do not permit agricultural uses. The proposed project would develop 15 two-story single-family residences, and would be consistent with the surrounding land uses. Development of single-family homes in a RM district is subject to a CUP with a Planned Development Application. The proposed project would adhere to the development standards established in the City's Municipal Code. As such, through the dedication of agricultural conservation easements for 245 acres of active farmland, and the re-zoning of the project site from CN to RM, the proposed project would not result in the conversion of prime, unique, or farmland of Statewide Importance. Therefore, no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-2 Conflict with existing zoning for agricultural use or a Williamson Act contract?

Impact Analysis

In the Southtown Project EIR approximately 45 percent of the project area's western edge was under non-renewal filing, as of the fiscal year 2002- 2003. All other areas within the Southtown Project Area are not under Williamson Act contracts. The project site is located in the eastern portion of the Southtown Project Area. As part of the proposed project, the project site would be rezoned from CN to RM, neither of which are an agricultural zoning designation. In addition, the Solano County 2013-2014 Williamson Act Map does not identify the project site or lands surrounding the project site as being encumbered by a Williamson Act contract (California Department of Conservation 2014). Therefore, the proposed project would not conflict with existing agricultural zoning or with a Williamson Act contract. No impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-3 Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Impact Analysis

The FMMP database identifies the project site as "Urban and Built-Up Land" (California Department of Conservation 2014). The proposed project is located in an urban residential area in the Southtown Project Area. There are no forest resources on or adjoining the project site. As part of the proposed project, the project site would be rezoned from CN to RM, neither of which allow for forestland and timberland production. Therefore, the proposed project would not conflict with existing zoning or cause rezoning of forestland or timberland zoned for timberland production as defined by Government Code section 51104(g). No impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-4 Result in the loss of forestland or conversion of forestland to non-forest use?

Impact Analysis

The project site is undeveloped. There are no forestland resources on or adjoining the project site, or within the general vicinity of the project site. The project site is located in an urban residential neighborhood in the Southtown Project Area. As such, construction of the proposed project would not result in the loss of forestland or conversion of forestland to non-forest use, and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-5 Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forestland to non-forest use?

Impact Analysis

The FMMP identifies the project site as "Urban and Built-Up Land" (California Department of Conservation 2014). The project site is undeveloped and located in a residential neighborhood in the Southtown Project Area. As part of the proposed project, the project site would be rezoned from CN to RM, and would develop 15 two-story single-family residential units. Lands surrounding the project site are either in residential use or would be rezoned for planned residential use. Therefore, the proposed project would be consistent with the existing land uses, and would not involve changes to the existing environment and result in the conversion of farmland to non-agricultural use, or forestland to non-forest use. Therefore, no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

3.3 AIR QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose Sensitive Receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

The proposed project is located within the Sacramento Valley Air Basin (SVAB). SVAB encompasses the northern California central valley, from Shasta County to northeastern Solano County. The proposed project is located in northern Solano County within the SVAB and is considered to be within the Sacramento region. The local air pollution control agency with jurisdiction over the proposed project is the Yolo-Solano Air Quality Management District (YSAQMD). The Bay Area Air Quality Management District (BAAQMD) boundaries are located to the south of the project site.

Solano County is in nonattainment of the State ozone and particulate matter (10 microns and less in diameter) (PM_{10}) and the federal 8-hour ozone and particulate matter (2.5 microns and less in diameter ($PM_{2.5}$) standard. The County is unclassified for the State $PM_{2.5}$ and federal PM_{10}. An unclassified designation indicates that air quality and other relevant information is insufficient to determine whether the area is attainment or nonattainment (California Air Resources Board [CARB] 2016). According to the YSAQMD, pollutants of concern within the district are ozone, particulate matter (PM_{10} and $PM_{2.5}$), and Toxic Air Contaminants (TACs) (YSAQMD 2015a).

Ozone is not emitted directly into the air; rather, it is a regional pollutant formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and Nitrogen Oxides (NOx), react in the atmosphere in the presence of sunlight to form ozone. Significant ozone formation generally requires an adequate amount of ozone precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. The conditions for ozone formation are prevalent during the summer when thermal inversions are most likely to occur (YSAQMD 2015a).

PM levels tend to be highest during the winter months when the meteorological conditions favor the accumulation of localized pollutants. This occurs when relatively low inversion levels trap pollutants near the ground and concentrate the pollution (YSAQMD 2015a).

TACs are generally caused through anthropogenic sources, including mobile sources (transportation), stationary sources (factories, refineries, power plants) and indoor sources (building and cleaning materials) (YSAQMD 2015a).

Criteria Air Pollutants

Standards have been established for the following six pollutants:

Ozone (O_3)

According to CARB, ozone is a pollutant that forms in the atmosphere through complex reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Key pollutants involved in ozone formation are hydrocarbon and nitrogen oxide gases. Ozone is a highly reactive and unstable gas capable of damaging the linings of the respiratory tract. Exposure to levels of ozone above the current ambient air quality standard can lead to human health effects such as inflammation, tissue damage, and impaired functioning of the lung. Ozone exposure is also associated with symptoms such as coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms. The greatest risk for harmful health effects belongs to outdoor workers, athletes, children, and others who spend greater amounts of time outdoors during smoggy periods. Elevated ozone levels can reduce crop and timber yields, as well as damage native plants (CARB 2009).

Carbon monoxide (CO)

According to the U.S. Environmental Protection Agency (EPA), "CO is a colorless, odorless gas emitted from combustion processes. Nationally and, particularly in urban areas, the majority of CO emissions to ambient air come from mobile sources. CO can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death. EPA first set air quality standards for CO in 1971. For protection of both public health and welfare, EPA set an 8-hour primary standard at 9 parts per million (ppm) and a 1-hour primary standard at 35 ppm. In a review of the standards completed in 1985, EPA revoked the secondary standards (for public welfare) due to a lack of evidence of adverse effects on public welfare at or near ambient concentrations. The last review of the CO National Ambient Air Quality Standards (NAAQS) was completed in 1994 and the EPA chose not to revise the standards at that time" (EPA 2014a).

Lead (Pb)

According to the EPA, "Pb is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been from fuels in on-road motor vehicles (such as cars and trucks) and industrial sources. As a result of EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers" (EPA 2014b).

Nitrogen dioxide (NO_2)

According to CARB, "NO_2 is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract. This pollutant is also an essential ingredient in the formation of ground-level ozone pollution. NO_2 is one of the nitrogen oxides emitted from high-temperature combustion processes, such as those occurring in trucks, cars and power plants. In the presence of sunlight, complex reactions of nitrogen oxides with ozone and other air pollutants produce the majority of NO_2 in the atmosphere. Indoors, home heaters and gas stoves also produce substantial amounts of NO_2. Exposure to NO_2 along with other traffic-related pollutants, is associated with respiratory symptoms, episodes of respiratory illness and impaired lung functioning. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current California air quality standard. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children" (CARB 2015a).

Particulate matter (PM_{10}, $PM_{2.5}$)

According to CARB, "PM is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Particles 10 microns or less in diameter are defined as "respirable particulate matter" or "PM_{10}." Fine particles are 2.5 microns or less in diameter or "$PM_{2.5}$" and can contribute significantly to regional haze and reduction of visibility in California. Extensive research indicates that exposure to outdoor PM_{10} and $PM_{2.5}$ levels exceeding current air quality standards is associated with increased risk of hospitalization for lung and heart-related respiratory illness, including emergency room visits for asthma. PM exposure is also associated with increased risk of premature deaths, especially in the elderly and people with pre-existing cardiopulmonary disease. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory symptoms and illnesses. Besides reducing visibility, the acidic portion of PM (nitrates, sulfates) can harm crops, forests, aquatic and other ecosystems" (CARB 2005a).

Sulfur dioxide (SO_2)

According to the EPA, "SO_2 is one of a group of highly reactive gasses known as "oxides of sulfur." The largest sources of SO_2 emissions are from fossil fuel combustion at power plants (73 percent) and other industrial facilities (20 percent). Smaller sources of SO_2 emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO_2 is linked with a number of adverse effects on the respiratory system. EPA first set standards for SO_2 in 1971. EPA set a 24-hour primary standard at 140 parts per billion (ppb) and an annual average standard at 30 ppb (to protect health). EPA also set a 3-hour average secondary standard at 500 ppb (to protect the public welfare). The last review of the SO_2 NAAQS was completed in 1996 and the Agency chose not to revise the standards. In the last review, EPA also considered, but did not set, a five minute NAAQS to protect asthmatics at elevated ventilation rates from bronchoconstriction and respiratory symptoms associated with 5-10 minute peaks of SO_2" (EPA 2015).

Toxic Air Contaminants (TACs)

TACs are air contaminants not included in the California Ambient Air Quality Standards (CAAQS) but are considered hazardous to human health. TACs are defined by CARB as those pollutants that "may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health."

The health effects associated with TACs are generally assessed locally rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; TACs can also cause short-term acute effects such as eye watering, respiratory irritation, running nose, throat pain, and headaches. For evaluation purposes, TACs are separated into carcinogens and non-carcinogens. Carcinogens are assumed to have no safe threshold below which health impacts would not occur, and the cancer risk is expressed as excess cancer cases per one million exposed individuals (typically over a lifetime of exposure).

Diesel Particulate Matter

Diesel particulate matter is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases: gas and particle. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particle phase also has many different types of particles that can be classified by size or composition. The size of diesel particulates that are of greatest health concern are those that are in the categories of fine and ultra-fine particles. The composition of these fine and ultra-fine particles may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals, and other trace elements. Diesel exhaust is emitted from a broad range of diesel engines, such as the on-road diesel engines of trucks, buses, and cars, and off-road diesel engines that include locomotives, marine vessels, and heavy duty equipment (EPA 2014c).

Asbestos

Asbestos is a fibrous mineral that both naturally occurs in ultramafic rock (a rock type commonly found in California) and is used as a processed component of building materials. Because asbestos has been proven to cause a number of disabling and fatal diseases, such as asbestosis and lung cancer, it is strictly regulated either based on its natural widespread occurrence or in its use as a building material. In the initial Asbestos National Emission Standards for Hazardous Air Pollutants rule promulgated in 1973, a distinction was made between building materials that would readily release asbestos fibers when damaged or disturbed (friable) and those materials that were unlikely to result in significant fiber release (non-friable). The EPA has since determined that, when severely damaged, otherwise non-friable materials can release significant amounts of asbestos fibers. Asbestos has been banned from many building materials under the Toxic Substances Control Act, the Clean Air Act, and the Consumer Product Safety Act. Naturally occurring asbestos (NOA) is known to occur in many parts of California and is commonly associated with ultramafic or serpentinite rock. According to the U.S. Geological Survey (USGS) Geologic Map, the proposed project is not located in an area known to contain ultramafic or serpentine rock (USGS 2011).

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. The project site would be considered a sensitive receptor because it is residential in nature. Other existing sensitive receptors in the vicinity of the project site include other residences located to the north and west of the project site. Additionally, a park facility is located immediately south of the proposed project.

Air Quality Standards

According to CARB, "Federal clean air laws require areas with unhealthy levels of ozone, inhalable particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop plans, known as State Implementation Plans (SIPs). A SIP is a prepared by each state describing existing air quality conditions and measure that would be followed to attain and maintain federal standards. The 1990 amendments to the federal Coalition for Clean Air (CCA) set deadlines for attainment based on the severity of an area's air pollution problem" (CARB 2015b).

The SIP for the State of California is administered by the CARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for each regional air district. A SIP is prepared by the regional air district and sent to CARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

The CARB also administers the CAAQS for the 10 air pollutants designated in the California Clean Air Act. The 10 State air pollutants are the six federal standards listed above as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The federal and State ambient air quality standards are summarized in Table 3.3-1.

Table 3.3-1: California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
Ozone	1 Hour	0.09 ppm (180 µg/m³)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m³)	0.070ppm (137 µg/m³)	
Respirable Particulate Matter	24 Hour	50 µg/m³	150 µg/m3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m³	—	
Fine Particulate Matter	24 Hour	—	35 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m³	12 µg/m³	
Carbon Monoxide	1 Hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	—
	8 Hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	—
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)	—	—
Nitrogen Dioxide	1 Hour	0.18 ppm (339 µg/m³)	100 ppb (188 µg/m³)	—
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary Standard
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m³)	75 ppb (196 µg/m³)	—
	3 Hour	—	—	0.5 ppm (1300 µg/m³)

Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
	24 Hour	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—
Lead	30-Day Average	1.5 µg/m³	—	—
	Calendar Quarter	—	1.5 µg/m³	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m³	
Visibility-Reducing Particles	8 Hour	See Footnote 1	No National Standards	
Sulfates	24 Hour	25 µg/m³		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m³)		

Notes:

[1] - In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

mg/m³:= milligrams per cubic meter

µg/m³ : micrograms per cubic meter

Source: CARB 2016a

As summarized in Table 3.3-2, Solano County is currently designated as nonattainment for State ozone and PM_{10} standards, as well as national ozone and $PM_{2.5}$ standards. The County is currently designated unclassified for State $PM_{2.5}$ and federal PM_{10}. The standards for CO, NO_2, SO_2, and lead are being met in the County. Due to prevailing winds, ozone emissions in Solano County tend to be generated in the Bay Area and transported east to the County. As such, the YSAQMD is included in the Sacramento Federal Non-attainment Area by the EPA. Air districts throughout the Sacramento region are involved in cooperative planning efforts to meet federal and State health standards. The YSAQMD, as part of the Sacramento region, is incorporated into

the following 8-hour ozone attainment plans developed by the Sacramento Metro Air Quality Management District (SMAQMD):

- 2013 Revision – Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013).
- Milestone Report (2012).
- Revision – Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2011).
- 2009 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2009).
- 2011 Reasonable Further Progress Plan (2008).
- Voluntary Reclassification to Severe (2008).
- 2008 Rate of Progress Plan (2006).
- Proposed $PM_{2.5}$ Implementation/Maintenance Plan and Re-Designation Request for Sacramento $PM_{2.5}$ Non-Attainment Area (2013).

Table 3.3-2: Solano County Area Designations for State and National Ambient Air Quality

Criteria Pollutants	State Designation	National Designation
Ozone	Non-attainment	Non-attainment
PM_{10}	Non-attainment	Unclassified
$PM_{2.5}$	Unclassified	Non-attainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Sulfates	Attainment	—
Lead	Attainment	Unclassified/Attainment
Hydrogen Sulfide	Unclassified	—
Visibility Reducing Particles	Unclassified	—
Source: CARB 2016b		

Thresholds of Significance

Nearly all development projects in the Sacramento region have the potential to generate air pollutants that may increase the difficultly of attaining federal and State AAQS. Therefore, for most projects evaluation of air quality impacts is required to comply with CEQA. In order to help public agencies evaluate air quality impacts, the YSAQMD has developed the Handbook for Assessing and Mitigating Air Quality Impacts, adopted July 11, 2007. The YSAQMD's Handbook includes the recommended thresholds of significance for project-level emissions, as summarized in Table 3.3-3. As stated previously, the BAAQMD boundaries are located to the south of the project site. In certain instances when large development projects have been located near the BAAQMD boundaries, the YSAQMD has recommended evaluating the projects using the BAAQMD Thresholds of Significance because they are more restrictive in terms of total emissions allowed than the YSAQMD Thresholds of Significance.

The BAAQMD has a preliminary screening threshold for determining if a project has the potential to exceed BAAQMD's thresholds of significance for ROG, NOx, and PM10 during construction and operations. The proposed project would not exceed the BAAQMD's screening criteria (see Air Quality and Greenhouse Gas Assumptions Memorandum [Appendix A] for additional details), therefore it can be concluded that the project would not exceed any criteria pollutant emissions thresholds established by the BAAQMD..

Table 3.3-3: YSAQMD Significance Thresholds

Pollutants	YSAQMD Significance Thresholds
ROG	10 tons per year
NOx	10 tons per year
PM_{10}	80 pounds per day
CO	Violation of a State ambient air quality standard for CO
Source: YSAQMD 2007	

The EPA has included the YSAQMD as a $PM_{2.5}$ non-attainment area within the Sacramento Federal Non-Attainment area for $PM_{2.5}$, however, the YSAQMD has not established a threshold of significance for $PM_{2.5}$. The YSAQMD has been working in conjunction with the SMAQMD to reduce $PM_{2.5}$ within the region and revise the non-attainment status designation.

The YSAQMD has also established thresholds for development projects that have the potential to expose the public to TACs from stationary sources. If a project were to exceed the following thresholds, it would be considered to have a significant air quality impact. These thresholds are based on the YSAQMD's Risk Management Policy.

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million or more.

- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal to one for the MEI or greater.

While the YSAQMD's Risk Management Policy provides a basis for a threshold for TACs from stationary sources, this policy does not cover TACs from mobile sources. The YSAQMD has no permitting or other regulatory authority over mobile sources. While the YSAQMD continues to evaluate a threshold of significance for mobile source TAC, no specific mobile source TAC threshold is proposed at this time.

Additionally, the YSAQMD has established rules and regulations to attain and maintain State and federal air quality standards. The rules and regulations that apply to this proposed project include, but are not limited to, the following:

Rule 2.3 – Ringelmann Chart

301 Requirements:

301.1 A person shall not discharge into the atmosphere from any single source of emission listed under section 111 of this rule, any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

a) As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection 301.1 a. of this rule.

301.2 Effective 6 months after the adoption of the revisions of this rule, a person shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

a) As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection 301.2 a. of this rule.

Rule 2-5: Nuisance

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.

Rule 2.11: Particulate Matter

301 Requirement: A person shall not release or discharge into the atmosphere from any single source operation, dust, fumes, or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

Rule 2.14: Architectural Coatings

The purpose of this rule is to limit the quantity of volatile organic compounds (VOC) in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the YSAQMD.

Rule 2.28: Cutback and Emulsified Asphalt

The purpose of this rule is to limit the emissions of organic compounds from the use of cutback and emulsified asphalts in paving materials, paving, and maintenance operations.

Rule 2.40: Wood Burning Appliances

The purpose of this rule is to manage the emissions of PM, CO, and other air contaminants from wood burning appliances.

3.3.2 Methodology

Construction and operational emissions for the proposed project were modeled using the California Emissions Estimator Model (CalEEMod). The model inputs were based on information from the project design as described in Section 2.0, Project Description, CalEEMod default values, as well as the following assumptions (the model output and detailed assumptions are provided in Appendix A).

- The proposed project would develop 15 single-family detached dwelling units on 1.76 acres;
- Construction is anticipated to begin in April 2017 and would be completed by March 2018. The construction schedule utilized in the analysis represents a "worst-case" analysis scenario since emission factors for construction equipment decrease as the analysis year increases, due to improvements in technology and more stringent regulatory requirements. Therefore, construction emissions would decrease if the construction schedule moves to later years. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA guidelines.
- CalEEMod defaults for trip generation and trip lengths for YSAQMD for a residential land use were used

Methodology and thresholds for criteria air pollutant impacts and community health risk, as set forth in the YSAQMD's Handbook were used in this analysis.

3.3.2 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact AIR-1 Conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

Solano County is designated nonattainment for state and federal health based air quality standards for ozone. Solano County is also designated nonattainment for the state PM_{10} standard and federal $PM_{2.5}$ standard. The County is designated as unclassified for the state $PM_{2.5}$ standard and federal PM_{10} standard. Therefore, as part of the SIP, the YSAQMD has collaborated with the SMAQMD to develop regional air quality plans for ozone and particulate matter. As stated by YSAQMD, attainment of the state and federal ozone standards in Solano County and the Sacramento region would depend primarily on control measures in the form of new rules and statewide controls for stationary source and mobile polluters (YSAQMD 2015b).

In order to assess the proposed project's potential to obstruct implementation of the YSAQMD air quality plans, localized criteria pollutant emissions were analyzed, as these are the pollutants with established ambient air quality standards. Potential localized impacts would include exceedances of state or federal standards for PM and ozone. Particulate matter emissions, primarily PM_{10}, are of concern during construction because of potential fugitive dust emissions during earth-disturbing activities. Ozone emissions are generated from increased hauling and the use of off-road heavy-duty diesel equipment used for site grading and paving during construction.

Air quality modeling was performed using project-specific details in order to determine whether the proposed project would result in criteria air pollutant emissions in excess of the applicable thresholds of significance. The proposed project's construction- and operations-related emissions are shown in Table 3.3-4. The results of the unmitigated emissions modeling were compared to the YSAQMD standards of significance in order to determine the associated level of impact.

Construction Emissions

During construction (grading), fugitive dust (PM_{10}) would be generated from site grading and other earth-moving activities. The majority of this fugitive dust will remain localized and will be deposited near the project site. However, the potential for impacts from fugitive dust exists unless control measures are implemented to reduce the emissions from this source. MM AIR-1 requires the application of Best Management Practices (BMPs) for fugitive dust control. Implementation of MM AIR-1 will ensure that no significant impacts from fugitive dust will occur during construction activities.

The proposed project would generate emissions from construction equipment exhaust, worker travel, and fugitive dust. These construction emissions include dust (PM_{10} and $PM_{2.5}$) as well as other criteria air pollutants from the operation of heavy construction equipment. Construction activities would take place over approximately 12 months. The greatest potential impacts

would occur during site preparation and grading activities when soil disturbance and hauling are at their maximum. In addition, exhaust emissions from project construction equipment, although below quantitative daily thresholds, can be reduced with the implementation of BMPs recommended by the YSAQMD. As such, the dust control measures described above and BMPs that reduce exhaust emissions from the construction equipment shall be incorporated as MM AIR-1 to further reduce potential impacts. Therefore, the project would have a less than significant impact.

Operational Emissions

Operational emissions occur over the lifetime of the project and are from two main sources: area sources and motor vehicles, or mobile sources. It was assumed that all homes would be occupied in 20187 to provide a conservative estimate of operational emissions. If a later build out year were used the emissions would be lower due to cleaner vehicles from increasing regulations. Therefore, using an earlier year to consider full buildout of the project would provide a worst-case scenario of emissions.

The pollutants of concern include ROG, NOx, and PM_{10}. The project operational emissions for the respective pollutants were calculated using CalEEMod. The YSAQMD Criteria Air Pollutant Significance thresholds were used. The operational emissions were modeled for annual, summer and winter seasons. The results for annual and winter were the highest and are presented in Table 3.3-4. The unmitigated daily operational emissions would be less than significant.

The modeling performed for the proposed project included compliance with YSAQMD rules and regulations. Specifically, CalEEMod was adjusted to reflect compliance with YSAQMD's Rule 2.40 which requires that new wood-fired appliances meet United States Environmental Protection Agency standards. The CalEEMod run was based on catalytic wood stoves, which have the highest ROG emission rate among certified wood burning devices, as a worst-case scenario. The analysis assumed that 100 percent of the homes would have wood burning fireplaces equipped with catalytic control devices compliant with Rule 2.40; it is understood this is not the proposed intent of the Applicant, however, out of an abundance of caution, this approach was used.

The proposed project's estimated operational emissions are presented in Table 3.3-4. As shown in the table, the proposed project's operational emissions would not exceed the YSAQMD recommended thresholds of significance and impacts would be considered less than significant.

Level of Significance Before Mitigation

Potentially Significant.

Mitigation Measures

MM AIR-1: The following conditions would be included in the General Notes and/or Grading Plan for the proposed project, under the descriptive heading "Dust and Equipment Exhaust Control" and would be implemented during construction activities:

- Visible emissions from stationary diesel-powered equipment are not allowed to exceed 40 percent opacity for more than three minutes in any one-hour, as regulated under District Rule 2.3, Ringelmann Chart.

- All material excavated, stockpiled, or graded would be sufficiently watered, treated, or covered to prevent fugitive dust from leaving the property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering should occur at least twice daily, with complete site coverage.

- All areas with vehicle traffic would be watered or have dust palliative applied as necessary for regular stabilization of dust emissions.

- All onsite and construction traffic would be limited to a speed of 15 miles per hour within the project site and surrounding neighborhood.

- All land clearing, grading, earth moving, or excavation activities on a project would be suspended as necessary to prevent excessive windblown dust when winds are expected to exceed 20 miles per hour.

- All inactive portions of the development site would be covered, revegetated, or watered until a suitable cover is established. Alternatively, the applicant may apply County-approved non-toxic soil stabilizers (according to manufacturer's specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours) in accordance with the local grading ordinance.

- All material transported off-site would be securely covered to prevent public nuisance, and there must be a minimum of two feet of freeboard in the bed of the transport vehicle.

- Paved roads adjacent to the project would be swept at the end of each day or more frequently if necessary, to remove excessive or visibly raised accumulations of dirt and/or mud that may have resulted from activities at the project site.

- The Applicant would re-establish ground cover on the site through revegetation and watering in accordance with the local grading and landscape ordinances.

- A publicly visible sign would be posted with the telephone number and person to contact at the City regarding dust complaints. This person would respond and take corrective action within 48 hours of a complaint or issue notification. The YSAQMD's phone number would also be visible to ensure compliance with applicable regulations.

- All unnecessary vehicle idling would be restricted adjacent to the project site for a period of five minutes.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact AIR-2 Violate any air quality standard or contribute to an existing or projected air quality violation?

Impact Analysis

In order to assess the proposed project's potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation, criteria pollutant emissions were analyzed since these are the pollutants with established ambient air quality standards. Potential impacts would include exceedances of state or federal standards for ozone, PM, and CO. Ozone emissions are generally generated during construction activities through the operation of diesel powered construction equipment. Particulate matter emissions, primarily PM_{10}, are of concern during construction because of potential fugitive dust emissions during earth-disturbing activities. CO emissions are of concern during project operation because CO hotspots can be created due to increases in on-road vehicle congestion.

As recommended by the YSAQMD, CalEEMod was used to estimate emissions from the proposed project. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas emissions associated with project activities.

Air quality modeling was performed using project-specific details in order to determine whether the proposed project would result in criteria air pollutant emissions in excess of the applicable thresholds of significance. The proposed project's construction-related and operational emissions have been estimated using project-specific data, where available and CalEEMod default values. It should be noted that based on the rural nature of parts of the YSAQMD, the CalEEMod assumes that only 94% of the roads the residents would use are paved in the model, therefore, the PM10 emissions are significantly higher than if the project were modeled in the BAAQMD, which assumes 100% of the roads the residents would use are paved. In order to provide a conservative estimate, the default values for YSAQMD were used. Table 3.3-4 provides the estimated emissions during project construction and operations and compares them with the thresholds of significance. As shown in Table 3.3-4, the project's emissions would be less than the YSAQMD's thresholds of significance; therefore, impacts would be less than significant.

Table 3.3-4: CalEEMod Emissions Estimates

	ROG (tons per year)	NOx (tons per year)	PM_{10} (pounds per day)
Construction Emissions 2017	0.29	1.89	18.37
Construction Emissions 2018	0.17	0.27	13.82
Operational Emissions 2018	0.50	0.52	(9.79)
YSAQMD significance thresholds	10 tons per	10 tons per	80 pounds per

	ROG (tons per year)	NOx (tons per year)	PM_{10} (pounds per day)
	year	year	day
Potential for proposed project to exceed threshold	None	None	None

Note:
The project was modeled in CalEEMod using the YSAQMD location. Based on the rural nature of parts of the YSAQMD, the CalEEMod assumes that only 94% of the roads the residents would use are paved in the model, therefore, the PM10 emissions are significantly higher than if the project were modeled in the BAAQMD, which assumes 100% of the roads the residents would use are paved.

The PM10 estimate shown in parenthesis reflect what the CalEEMod estimate would be if 100% of the roads were assumed to be paved.

Vehicle Miles Traveled

The project site was previously contemplated to be developed as a commercial site with local-serving retail uses as part of the Southtown Project. The Vanden Meadown project is located to the south of the project site. The air quality analysis prepared for the Southtown Project utilized the air quality model URBEMIS, which was the most current model in place at the time the Environmental Impact Report (EIR) was released. Since then, the CalEEMod air quality software model has replaced URBEMIS as the recommended model by Air Districts in California, including YSAQMD. The Vanden Meadows air quality analysis was prepared in February 2012, when many Air Districts in California were transitioning from URBEMIS

The URBEMIS User Guide (URBEMIS 2007) states that the presence of local-serving retail can be expected to bring a two percent trip reduction benefit. This trip reduction would reduce the vehicle miles traveled (VMT) of the projects. However, neither the Southtown EIR nor the Vanden Meadows air quality analyses utilized the local-serving retail mitigation measure within the URBEMIS model to reduce vehicle trips and hence VMT and emissions from the project. The results presented in their respective EIRs do not claim any VMT or emission reductions for the local-serving project design feature. As such, removing local-serving retail from the Southtown area or near the Vanden Meadows area would not result in an increase in VMT or emissions beyond what was previously disclosed in the Southtown EIR.

Since the adoption of the EIRs for Southtown and Vanden Meadows, the City has adopted a new General Plan that includes a focus on reducing VMT by developing a mix of land uses, such that there would be local-serving retail to serve residences nearby and thus reduce VMT.

In order to provide a comparative estimate of the potential increase in VMT as a result of removing the local-serving commercial uses from the project site, a CalEEMod scenario was run for the total estimated dwelling units in the Southtown Project (1,597 dwelling units) with and without a diversity of uses included (note local-serving retail alone is not a mitigation measure within CalEEMod). Because the project is located within the Southtown area, only the Southtown

residences were evaluated. The unmitigated results show the VMT without local serving commercial (diversity of uses) and the mitigated results show VMT with commercial diversity of uses.

Table 3.3-5: Southtown Residential Vehicle Miles Traveled

Scenario	Annual VMT
Unmitigated (no diversity of uses)	40,844,228
Mitigated (with commercial diversity of uses)	38,802,016
Difference	2,042,212
Percent Increase in VMT by removing retail	5.3 percent

The percent increase in VMT was developed utilizing the same emissions model for the both the Southtown Project EIR, and the proposed project, resulting in an approximately five percent increase from the CalEEMod scenarios. However, the actual VMT increase is estimated at two percent (see Section 3.16 Transportation and Traffic and Transportation and Traffic Memorandum for additional VMT discussion). The baseline (i.e. existing condition) does not include a commercial use; therefore, the potential for a five percent emission increase is already being experienced. The implementation of the proposed project with the land use change would reduce the City's ability to reduce future emissions in the cumulative context. However, the 5.3 percent increase in VMT would not alter the conclusions of the Southtown Project EIR, or result in a new impact exceeding an air quality standard because the original Southtown Project did not utilize local-serving retail as a mechanism for achieving vehicle trip reductions and thus VMT and emission reductions. The emissions estimates presented in the Southtown Project EIR would not be increased through the removal of the commercial use of the site.

In order to estimate whether the change in land use would result in a change in the emissions estimates, CalEEMod scenarios were run evaluating the emissions from a local-serving retail land use (based on the allowed development density) for the Ashton Place Unit 3 parcel and the other remaining 2.0 acre parcel designated as commercial use (based on Floor Area Ratio of 0.3) and 32 homes (full residential development potential for Ashton 3 and the other 2.0 acre parcel at 8.3 dwelling units per acre) shown above in Table 3.3-4. As shown in Table 3.3-6, the emissions and VMT would be greater for a commercial land use versus the 32 homes (refer to the AQ/GHG assumptions memorandum for additional details).

Table 3.3-6: VMT and Emissions Comparisons between Residential and Commercial Use

Scenario	ROG (tons per year)	NOx (tons per year)	PM_{10} (pounds per day)	Annual VMT
Commercial Use (43,516 sf)	1.27	2.51	370.64 (6.53)	2,719,608
Residential Homes (32 du)	0.96	1.04	141.63	1,118,317

Scenario	ROG (tons per year)	NOx (tons per year)	PM_{10} (pounds per day)	Annual VMT
			(4.54)	
Increase or Decrease as a Result of the Proposed Project	Decrease	Decrease	Decrease	Decrease

Notes:

sf = square feet

du = residential dwelling units

The project was modeled in CalEEMod using the YSAQMD location. Based on the rural nature of parts of the YSAQMD, the CalEEMod assumes that only 94% of the roads the residents would use are paved in the model, therefore, the PM10 emissions are significantly higher than if the project were modeled in the BAAQMD, which assumes 100% of the roads the residents would use are paved.

The PM10 estimate shown in parenthesis reflect what the CalEEMod estimate would be if 100% of the roads were assumed to be paved.

Conclusion

Although the project would not exceed any quantitative threshold during construction, the YSAQMD recommends that all projects incorporate fugitive dust and emissions control measures to ensure impacts remain less than significant. Accordingly, the project has incorporated MM AIR-1 to reduce construction impacts to a less than significant level. MM AIR-1 would be consistent with MM AQ-1 from the Southtown EIR. The project would also implement other measures included in MM AQ-1 from the Southtown EIR for reducing impacts from construction exhaust equipment through cleaner than average construction equipment.

The project would not exceed any quantitative thresholds during operation; therefore, impacts would be less than significant. The project would comply with MM AQ-2 from the Southtown requiring reflective roofing, energy efficiency, and exterior outlets and prohibiting conventional open-hearth fireplaces.

As discussed above, the project would not increase the severity of the impacts previously disclosed in the Southtown EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure MM AIR-1 is required. Compliance MM AQ-1 and MM AQ-2 from the Southtown EIR is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact AIR-3	**Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

Impact Analysis

A cumulative impact analysis considers a project over time in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed. Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants, including ozone and PM, is a result of past and present development, and, thus, cumulative impacts related to these pollutants could be considered cumulatively significant. Future attainment of standards is a function of successful implementation of YSAQMD attainment plans. Consequently, the YSAQMD's approach to cumulative thresholds of significance is relevant to whether a project's individual emissions would result in a cumulatively considerable contribution to the regional existing cumulative impacts related to air quality conditions.

The proposed project site was included within the Southtown area, thus the buildout emissions of the Southtown area as disclosed in the Southtown EIR would encompass the cumulative analysis. The Southtown EIR identified significant and unavoidable impacts to air quality during construction and operation of the development.

According to the YSAQMD Handbook for Assessing and Mitigating Air Quality Impacts, the YSAQMD has developed control measures for stationary, area, and transportation sources of air pollution. Emissions above individual thresholds as defined in the Handbook would have a significant cumulative impact on regional air quality unless offset. As discussed above, emissions from the proposed project would not exceed the YSAQMD recommended thresholds. In addition, the proposed project would be required to comply with all applicable YSAQMD rules and regulations. Therefore, the proposed project's individual emissions would not be expected to result in a cumulatively considerable contribution to a significant cumulative impact, and impacts would be considered less than significant with mitigation incorporated. Furthermore, the proposed project would not increase the severity of the impacts previously accounted for in the Southtown EIR, thus the project's individual impact is not cumulatively considerable and would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-4 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

This discussion addresses whether the proposed project would expose sensitive receptors to Naturally Occurring Asbestos (NOA), construction-generated fugitive dust (PM_{10}), construction generated diesel particulate matter (DPM), operational related TACs, or operational CO hotspots. A sensitive receptor is a person in a population who is particularly susceptible to health effects due to exposure to an air contaminant. The following are land uses (sensitive sites) where sensitive receptors are typically located:

- Long-term health care facilities
- Rehabilitation centers
- Convalescent centers
- Hospitals
- Retirement homes
- Residences
- Schools, playgrounds and childcare centers

The project is considered a sensitive receptor because it is a residential development and other existing nearby residences (approximately 20 feet north of the proposed project) would also be considered sensitive receptors.

Construction Emissions

Naturally-Occurring Asbestos

The California Department of Conservation (CDC) maps NOA areas throughout the State of California. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. The risk of disease is dependent upon the intensity and duration of exposure. In California, NOA is most likely to occur in areas of serpentinite, ultramafic rock (igneous rock composed of greater than 90 percent iron-magnesium minerals), and fault/shear zones. Rock units considered to have a moderate likelihood of containing NOA include mafic rock (igneous rock rich in iron-magnesium minerals). Serpentinite, ultramafic, and mafic rock is not mapped within the project area. The closest known occurrence of ultramafic rock outcroppings is in Napa County, approximately 20 miles northwest of the proposed project (USGS 2011). Therefore, there is no potential health hazards resulting from NOA dust. There would be no impact.

Diesel Particulate Matter (DPM)

Construction activities have the potential to generate DPM emissions related to the number and types of equipment typically associated with construction. Off-road, heavy-duty diesel equipment used for site grading, paving, and other construction activities result in the generation of DPM. However, construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. In addition, only portions of the site would be disturbed at a time, with operation of construction equipment regulated by federal, state, and local regulations, including YSAQMD rules and regulations, and occurring intermittently throughout the course of a day, the likelihood that any one sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low. There would be a less than significant impact.

Operational Emissions

TAC Emissions

The CARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution" (CARB 2005b), including recommendations for distances between sensitive receptors and certain land uses. These recommendations are assessed as follows.

- **Heavily traveled roads.** CARB recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children. The project is not located near any high traffic volume roadways. Vanden Road which is adjacent to the project site has an estimated 4,700 vehicles per day.

- **Distribution centers.** CARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The closest existing distribution center to the project is located more than 5.8 miles north of the project site.

- **Fueling stations**. CARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station (a facility with a throughput of 3.6 million gallons per year or greater). CARB recommends a 50 foot separation for typical gas dispensing facilities. The nearest gas station is approximately 0.72 miles from the project site.

- **Dry cleaning operations.** CARB recommends avoiding siting new sensitive land uses within 300 feet of any dry cleaning operation that uses perchloroethylene. For operations with two or more machines, CARB recommends a buffer of 500 feet. For operations with three or more machines, CARB recommends consultation with the local air district. The nearest dry cleaning operation is approximately 1.47 miles from the project site.

Because the project is located beyond the recommended distances from the above land uses, impacts would be less than significant.

CO Hotspots

The YSAQMD recommends using a screening approach, originally developed by San Joaquin Valley Unified Air Quality Management District (SJVAQMD), to estimate whether or not a project's traffic impact would cause a potential CO hotspot at any given intersection. If either of the following criteria is true of any intersection affected by the project traffic, then the project can be said to have the potential to create a violation of the CO standard.

- A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to an unacceptable LOS (typically LOS E or F); or
- A traffic study indicates that the project would substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.

According to the Transportation Study prepared for the proposed project by Stantec, the proposed project would not generate traffic that would result in deterioration of an intersection from acceptable Level of Service (LOS) (LOS A through D) to LOS E or F under existing plus project conditions. Therefore, in accordance with YSAQMD's screening criteria, the proposed project would not be expected to result in the generation of localized CO emissions in excess of the applicable threshold of significance.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-5 Create objectionable odors affecting a substantial number of people?

Impact Analysis

According to the YSAQMD's CEQA guidance, analysis of potential odor impacts should be conducted for the following two situations:

- **Generators:** projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
- **Receivers:** residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

The YSAQMD has determined the common land use types that are known to produce odors in the Air Basin. These types and screening distances are shown in Table 3.3-7.

Table 3.3-7: Screening Levels for Potential Odor Sources

Odor Generator	Distance
Wastewater Treatment Facilities	1 mile
Sanitary Landfill	1 mile
Transfer Station	1 mile
Compositing Facility	1 mile
Petroleum Refinery	1 mile
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shop)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile
Source: YSAQMD 2007	

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.4 BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☒	☐

3.4.1 Environmental Setting

The 1.76 acre project site is an undeveloped lot located within the Southtown Project Area, off Vanden Road and Cogburn Circle in Vacaville, Solano County, California. The proposed project is located in the Southtown Project Area in southeast Vacaville. The project site is located in a suburban residential community on the northwest corner of the intersection of Vanden Road and Cogburn Circle. There are no existing structures on the project site. The project site is a relatively flat undeveloped lot, with a gentle upslope gradient trending toward the eastern portion of the project site. Most of the project site consists of non-native vegetation, grasses, and low-lying plants. In addition, ornamental trees and low-lying plants have been planted along the southern edge of the project site. There is a six foot decorative masonry wall constructed along the north, east, and west boundaries of the project site.

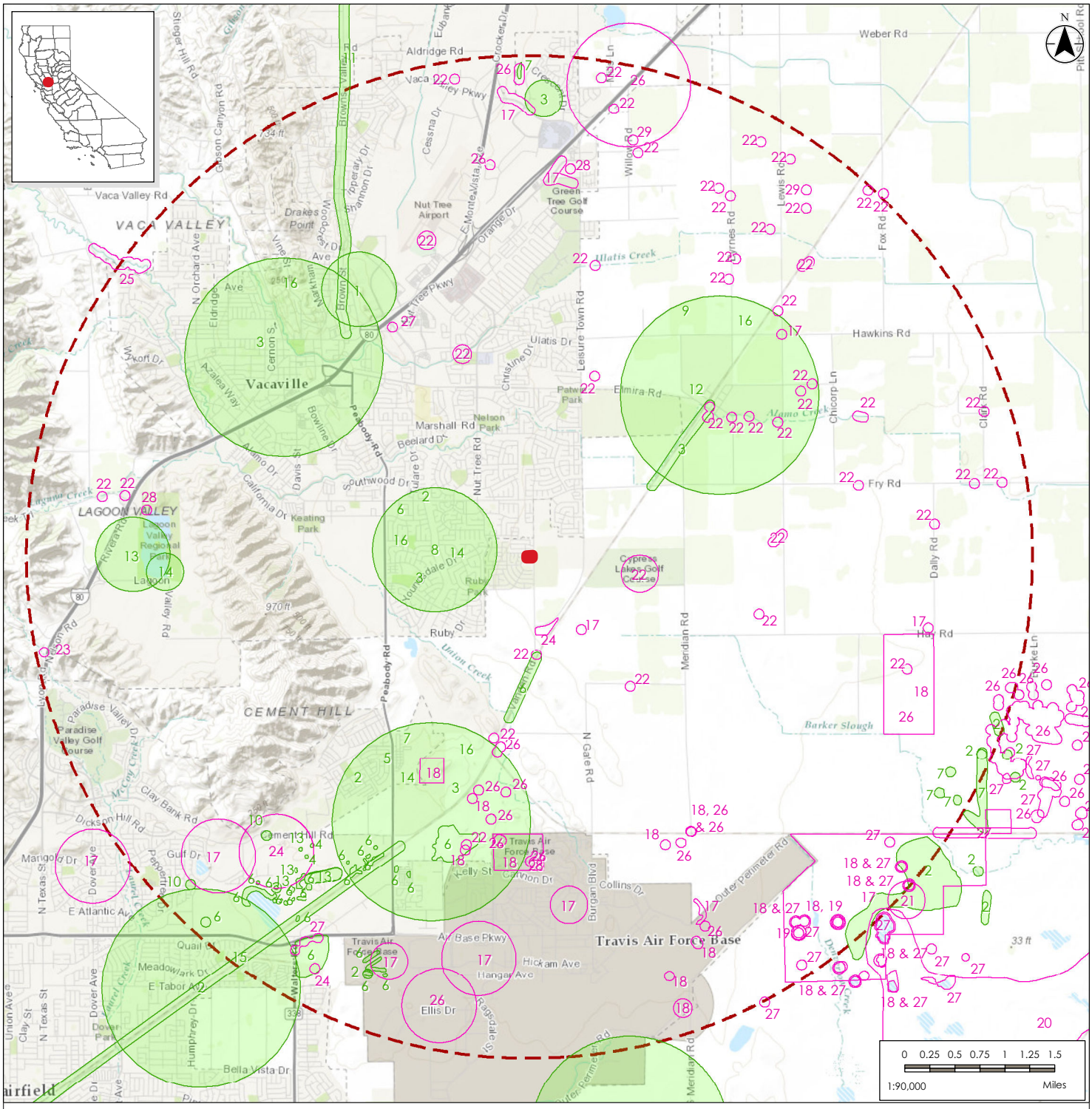
3.4.2 Methodology

Prior to field surveys, Stantec conducted background research for existing biological resources within the project site and the project area. Background research was focused on reviewing federally listed species as defined by the U.S. Fish and Wildlife Service (USFWS), California State listed species and State sensitive species as defined by California Department of Fish and Wildlife (CDFW), as well as those that have a degree of concern as defined by the California Native Plant Society (CNPS) California Rare Plant Ranking (CRPR). Environmental setting baseline data on sensitive species known to occur in the project vicinity from the California Natural Diversity Database (CNDDB) is included in Figure 3.4-1.

Specifically, the resources reviewed include:

- CNDDB records for occurrences of special-status species within five miles of the project site (CNDDB 2016).
- Federally threatened or endangered species list from the USFWS Information for Planning and Conservation (IPaC) website (USFWS 2016a).
- CNPS Inventory of Rare and Endangered Plants of California (CNPS 2016).
- National Wetlands Inventory (USFWS 2016b).
- Aerial photographs and topographic maps of the study area.
- Biological assessment from the Environmental Impact Report: Southtown Project prepared for the City of Vacaville (Southtown Project EIR 2003).

CDFW and the CNPS have developed a standard classification system for floristically describing vegetation communities/habitats Statewide, further translating to the National Vegetation Classification. The CDFW and CNPS system has been compiled in *A Manual for California Vegetation, 2nd Edition* (Sawyer et al. 2009), and has been accepted and adopted by State and federal agencies. The Manual of California Vegetation (MCV) classifications assist in



Legend

- Project Area
- 5 Mile Buffer

CNDDB OCCURRENCES*

Plant Species

1. Adobe-lily
2. Alkali milk-vetch
3. Baker's navarretia
4. Brittlescale
5. Carquinez goldenbush
6. Contra Costa goldfields
7. Dwarf downingia
8. Heartscale
9. Legenere
10. Pappose tarplant
11. Recurved larkspur
12. Round-leaved filaree
13. Saline clover
14. San Joaquin spearscale
15. Suisun Marsh aster
16. Two-fork clover

Wildlife Species

17. Burrowing owl
18. California tiger salamander
19. Conservancy fairy shrimp
20. Delta green ground beetle
21. Northern Claypan Vernal Pool
22. Swainson's hawk
23. Townsend's big-eared bat
24. Tricolored blackbird
25. Valley elderberry longhorn beetle
26. Vernal pool fairy shrimp
27. Vernal pool tadpole shrimp
28. Western pond turtle
29. White-tailed kite

*California Natural Diversity Database (CNDDB) Data: Downloaded September, 2016, from the California Department of Fish and Wildlife

Stantec

Ashton Place Unit 3 Project
Vacaville, California

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Figure 3.4-1. Known Occurrences of Special Status Species

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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defining vegetation based on quantitative based rules to distinguish between vegetation community types, local variation, ecological land classification /composition, species rarity and significance, and historical and current land management practices. The MCV defines vegetation communities by dominant and/or co-dominant species present as: 1A) alliance–a broad unit of vegetation with discernable and related characteristics; 1B) provisional alliance–a temporary vegetation community and/or candidate alliance; and/or 2) association–a basic secondary unit of classification, not as broad as an alliance, with uniform composition and conditions. The MCV classifications replace lists of vegetation types developed for the CNDDB. The biological community in the project site has been classified using MCV standards (Sawyer et al. 2009) and is detailed below.

Reconnaissance-Level Biological Resources Survey

A reconnaissance-level survey of the 1.76 acre project site was conducted from 8:00 a.m. to 10:00 a.m. on September 2, 2016. The Southtown Project EIR biological assessment (Southtown Project EIR 2003) was also utilized as a reference, and results of the reconnaissance-level survey were compared with EIR biological analysis for consistencies. The primary objective of the reconnaissance-level survey was to document and confirm existing conditions and determine the potential presence of sensitive biological resources. The object of the survey was not to extensively search for every species occurring within the project site, but to ascertain general project site conditions and identify potentially suitable habitat areas for various sensitive plant and wildlife species, as well as potential wetlands. During this site visit, the Stantec biologist walked transects within the project site to assure full coverage of the project site.

Field notes and photos taken during that evaluation are included in Appendix B. The impact analysis below is based on the background research completed prior to field surveys and the results of the reconnaissance-level survey. No federal- or State-listed species, special-status species, sensitive habitats, or nesting raptors or migratory birds were observed during the site visit conducted on September 2, 2016.

The project site contains non-native annual grassland habitat, as described below. In addition, based on a review of available information (including the CNDDB and USFWS species lists) and the results of the field surveys, the following special-status species are discussed below given their potential to occur within and/or adjacent to the project site: Swainson's hawk (*Buteo swainsoni*, white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). A discussion for each of these species is presented below.

<u>Non-Native Annual Grassland Herbaceous Alliance</u>

The project site is characterized by non-native annual grasses and other ruderal species. The project site has been subject to historic and modern disturbances including earthmoving to create landscaped berms, agricultural disking, and refuse dumping. At the time of the reconnaissance survey (September 2, 2016), the project site had been recently mowed and spread with straw. Common plants noted at the site include yellow starthistle (*Centaurea solstitialis*), purple starthistle (*Centaurea calcitrapa*), prickly lettuce (*Lactuca serriola*), shortpod

mustard (*Hirschfeldia incana*), and bindweed (*Convulvulus arvensis*). Stunted *Populus* saplings were scattered throughout the site. The southern border of the site features a sidewalk and has been landscaped with crepe myrtle (*Lagerstroemia* sp.), day lilies (*Hemerocallis* sp.), and other ornamental plants.

Common wildlife species that utilize non-native annual grasslands include birds protected under the Migratory Bird Treaty Act (MBTA) such as house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), American crow (*Corvus brachyrhynchos*), and red-tailed hawk (*Buteo jamaicensis*); and birds not protected under the MBTA such as house sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*). Killdeer (*Charadrius vociferus*) were heard calling during the reconnaissance survey conducted on September 2, 2016. However, no individuals were seen within the project site. Other animals potentially occurring in this habitat include western fence lizard (*Sceloporus occidentalis*), Mexican free-tailed bat (*Tadarida brasiliensis*), pocket gopher (*Thomomys bottae),* California vole (*Microtus californicus*), California deer mouse (*Peromyscus maniculatus*), and black-tailed jackrabbit (*Lepus californicus*). A number of small (one- to two- inch) burrows were observed in mounded soils along the masonry walls of the project site during the reconnaissance survey. These appeared to be burrows of small mammals such as voles or mice; the burrows were too small to be attributed to California ground squirrel, and would not represent potential nesting habitat for burrowing owl.

Special-Status Plants

A comprehensive list of special-status plant species considered for this analysis was developed based on previous biological information for the Southtown Project development (Southtown Project EIR 2003) and on queries of IPaC (USFWS 2016a); CNPS Inventory of Rare and Endangered Plants of California (CNPS 2016); and CNDDB (CNDDB 2016). The comprehensive list of plants is provided in Table 3.4-1. Several species listed in Table 3.4-1 may occur in grassland habitat and therefore could theoretically occur at the project site. However, due to ongoing disturbance and the degraded nature of the project site as observed on September 2, 2016, no special-status plant species would be expected to occur.

Table 3.4-1: Comprehensive List of Special-Status Plant Species Potentially Occurring in the Vicinity of the Proposed Project

Scientific Name Common Name	Status	Habitat Characteristics	Flowering Period	Recorded Occurrence within Five Miles?	Likelihood for Occurrence
Astragalus tener var *tener* Alkali milkvetch	CRPR 1B	Valley grassland, vernal pools, and playas	Mar-Jun	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Atriplex cordulata var. *cordulata* Heartscale	CRPR 1B	Valley and foothill grasslands, meadows and seeps	Apr-Oct	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Atriplex depressa Brittlescale	CRPR 1B	Valley and foothill grasslands, vernal pools	Apr-Oct	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Atriplex joaquinana San Joaquin saltbrush	CRPR 1B	Alkaline grassland and scrub	April–Sept	No	No potential for occurrence. Project site does not support alkaline grassland or scrub habitat.
California macrophylla Round-leaved filaree	CRPR 1B	Valley and foothill grasslands, woodlands	Mar-May	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.

Scientific Name Common Name	Status	Habitat Characteristics	Flowering Period	Recorded Occurrence within Five Miles?	Likelihood for Occurrence
Centromadia parryi ssp *parryi* Pappose tarplant	CRPR 1B	Valley and foothill grasslands, marshes and swamps, meadows and seeps	May-Nov	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Cordylanthus mollis Soft bird's-beak	FE/SR/1B	Coastal salt marsh	Jul–Nov	No	No potential for occurrence. Project site does not support coastal salt marsh habitat.
Delphinium recurvatum Recurved larkspur	CRPR 1B	Woodlands and valley and foothill grasslands	Mar-Jun	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Downingia pusilla Dwarf downingia	CRPR 2	Vernal pools	Mar–May	Yes	No potential for occurrence. Project site does not support vernal pools.
Extriplex joaquinana San Joaquin spearscale	CRPR 1B	Valley and foothill grasslands, meadows and seeps	Apr-Oct	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Fritillaria pluriflora Adobe-lily	CRPR 1B	Chaparral, woodland, grassland on adobe soil	Feb–Apr	Yes	No potential for occurrence. Project site does not support appropriate soils.

Scientific Name **Common Name**	**Status**	**Habitat Characteristics**	**Flowering Period**	**Recorded Occurrence within Five Miles?**	**Likelihood for Occurrence**
Isocoma argute Carquinez goldenbush	CRPR 1B	Valley and foothill grasslands	Aug-Dec	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Juglans hindsii California black walnut	CRPR 1B	Riparian forests and woodlands	Apr-May	Yes	No potential for occurrence. Project site does not support riparian habitat. No walnut trees observed on project site during reconnaissance surveys.
Lasthenia conjugens Contra Costa goldfield	FE/CRPR 1B	Low flats and borders of vernal pools. USFWS has established Critical Habitat for this species.	Apr–May	Yes	No potential for occurrence. Project site does not support vernal pools. There is no Critical Habitat for this species in the project site.
Lathyrus jepsonii Delta tule pea	CRPR 1B	Brackish water marshes and swamps	May–Jun	No	No potential for occurrence. Project site does not support brackish marshes or swamp habitat.
Legenere limosa Legenere	CRPR 1B	Vernal pools	May–Jun	Yes	No potential for occurrence. Project site does not support vernal pools.

Scientific Name Common Name	Status	Habitat Characteristics	Flowering Period	Recorded Occurrence within Five Miles?	Likelihood for Occurrence
Lilaeopsis masonii Mason's lilaeopsis	SR/CRPR 1B	Brackish water marshes and swamps	Jun-Aug	No	No potential for occurrence. Project site does not support brackish marshes or swamp habitat.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	CRPR 1B	Woodlands, valley and foothill grasslands, vernal pools	Apr-Jul	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Orcuttia inaequalis San Joaquin Orcutt grass	FT/SE CRPR 1B	Valley grassland, vernal pools	Apr–Sep	No	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Symphyotrichum lentum Suisun marsh aster	CRPR 1B	Brackish water marshes and swamps	May–Oct	Yes	No potential for occurrence. Project site does not support marshes or swamp habitat.
Trifolium amoenum Showy Indian clover	FE/CRPR 1B	Valley grassland	Apr–Jun	No	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.

Scientific Name **Common Name**	**Status**	**Habitat Characteristics**	**Flowering Period**	**Recorded Occurrence within Five Miles?**	**Likelihood for Occurrence**
Trifolium amoenum Two-fork clover	FE, CRPR 1B	Valley and foothill grasslands	Apr-Jun	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Trifolium hydrophilum Saline clover	CRPR 1B	Valley and foothill grasslands, vernal pools	Apr-Jun	Yes	No potential for occurrence. Grassland habitat within project site is highly disturbed and unlikely to support sensitive species.
Source: (Southtown Project DEIR 2003), (USFWS 2016a), and CNDDB 2016).					

Special-Status Wildlife

A comprehensive list of special-status wildlife species considered for this analysis was developed based on previous biological information for the Southtown Project development (City of Vacaville 2003), and on queries of IPaC (USFWS 2016a) and CNDDB (CNDDB 2016). The comprehensive list of wildlife is provided in Table 3.4-2. All but four of the species identified in Table 3.4-2 have been eliminated from consideration because the project site does not support appropriate habitat. Provided below is a brief discussion of the remaining species, including three birds and one bat species.

Swainson's hawk (*Buteo swainsoni*) is protected under the MBTA and is listed as State threatened. Swainson's hawks migrate annually from winter areas in South America to breeding locations in northwestern Canada, the western United States, and Mexico. In the Central Valley, Swainson's hawks forage in large, open agricultural habitats, including alfalfa and hay fields mainly for small rodents. Nest sites are found in trees in riparian corridors or adjacent to agricultural fields. Breeding season occurs from approximately late March through late August, with peak activities occurring from late May through July. Threats to the Swainson's hawk include loss of habitat primarily from development and pesticide poisoning (Zeiner et al 1988).

Table 3.4-2: Comprehensive List of Special-Status Wildlife Species Potentially Occurring in the Vicinity of the Proposed Project

Scientific Name Common Name	Status	Habitat Characteristics	CNDDB Occurrence within Five Miles?	Likelihood for Occurrence
Invertebrates				
Branchinecta conservatio Conservancy fairy shrimp	FE	Vernal pools, swales, and depressions in grassland. USFWS has established Critical Habitat for this species.	Yes	No potential for occurrence. Project site does not support vernal pools. There is no Critical Habitat for this species in the project site.
Branchinecta lynchi Vernal pool fairy shrimp	FT	Vernal pools, swales, and depressions in grassland. USFWS has established Critical Habitat for this species.	Yes	No potential for occurrence. Project site does not support vernal pools. There is no Critical Habitat for this species in the project site.
Lepidurus packardi Vernal pool tadpole shrimp	FE	Vernal pools with prolonged inundation. USFWS has established Critical Habitat for this species.	Yes	No potential for occurrence. Project site does not support vernal pools.
Elaphrus viridis Delta green ground beetle	FT	Shoreline of vernal pools in grassland. USFWS has established Critical Habitat for this species.	Yes	No potential for occurrence. Project site does not support vernal pools. There is no Critical Habitat for this species in the project site.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	Elderberry shrubs within the Central Valley, below 3,000 feet in elevation. USFWS has established Critical Habitat for this species.	Yes	No potential for occurrence. Project site does not support elderberry shrubs. There is no Critical Habitat for this species in the project site.
Fish				
Hypomesus	FT/SE	Brackish zone of Delta;	No	No potential for

Scientific Name Common Name	Status	Habitat Characteristics	CNDDB Occurrence within Five Miles?	Likelihood for Occurrence
transpacificus Delta smelt		adjacent freshwater zones for spawning. USFWS has established Critical Habitat for this species.		occurrence. There is no aquatic habitat within or adjacent to Project site. There is no Critical Habitat for this species in the project site.
Pogonichthys macrolepidotus Sacramento splittail	CSC	Sloughs and other slow-moving waters of Delta	No	No potential for occurrence. There is no aquatic habitat within or adjacent to Project site.
Oncorhynchus (=Salmo) mykiss Steelhead	FT	Open water of Bay and Delta, tributary rivers and streams.	No	No potential for occurrence. There is no aquatic habitat within or adjacent to Project site.
Amphibians				
Ambystoma californiense California tiger salamander	FT/ST	Vernal pools, ponds, streams and adjacent grassland. USFWS has established Critical Habitat for this species.	Yes	No potential for occurrence. Project site does not support vernal pools or other aquatic breeding habitat. In addition, project site is not within dispersal distance of any aquatic breeding habitat for CTS. Therefore, grassland habitat in the project site would not be considered upland/dispersal habitat for CTS. There is no Critical Habitat for this species in the project site.
Rana draytonii California red-legged frog	FT/CSC	Ponds, streams, adjacent riparian and upland.	No	No potential for occurrence. Project site does not

Scientific Name Common Name	Status	Habitat Characteristics	CNDDB Occurrence within Five Miles?	Likelihood for Occurrence
		USFWS has established Critical Habitat for this species.		support aquatic breeding habitat for CRLF. In addition, project site is not within dispersal distance of aquatic breeding habitat for CRLF. Therefore, grassland habitat in the project site would not be considered upland/dispersal habitat for CRLF. There is no Critical Habitat for this species in the project site.
Rana boylii Foothill yellow-legged frog	CSC	Permanent streams with cobbles	No	No potential for occurrence. There is no aquatic habitat within or adjacent to Project site.
Reptiles				
Thamnophis gigas Giant garter snake	FT/ST	Freshwater marsh, drainages, riparian and adjacent grassland	No	No potential for occurrence. There is no aquatic habitat within or adjacent to Project site.
Emys marmorata Western pond turtle	CSC	Pond, rivers, and streams and adjacent grassland	Yes	No potential for occurrence. There is no aquatic habitat within or adjacent to Project site.
Birds				
Athene cunicularia Western burrowing owl	CSC	Grassland and agricultural fields with large burrows for nesting.	Yes	No potential for occurrence. No appropriate burrows for nesting observed during reconnaissance surveys conducted in September 2016.

Scientific Name **Common Name**	**Status**	**Habitat Characteristics**	**CNDDB Occurrence within Five Miles?**	**Likelihood for Occurrence**
Laterallus jamaicensis ssp coturniculus California black rail	ST/CFP	Salt or freshwater marsh	No	No potential for occurrence. Project site does not salt or freshwater marsh habitat.
Rallus longirostris obsoletus California clapper rail	FE/SE/CFP	Salt marsh	No	No potential for occurrence. Project site does not support salt marsh habitat.
Aquila chrysaetos Golden eagle	CFP	Open grassland, savanna, and agricultural fields with cliffs or large trees for nesting.	No	No potential for occurrence. Project site does not provide appropriate foraging or nesting habitat for this species.
Lanius ludovicianus Loggerhead shrike	CSC	Grassland and agricultural fields with shrubs or trees for nesting.	No	Low potential for occurrence. Project site provides marginal foraging and nesting habitat for this species. .
Circus cyaneus Northern harrier	CSC	Grassland and agricultural fields with tall, dense, undisturbed vegetation for nesting.	No	No potential for occurrence. Project site does not provide appropriate foraging or nesting habitat for this species.
Falco peregrinus Peregrine falcon	CFP	Woodland, forest, and coastal habitats with high cliffs, banks, or human-made structures for nesting.	No	No potential for occurrence. Project site does not provide appropriate foraging or nesting habitat for this species. This species is generally only present in the Central Valley during winter (non-breeding).
Geothlypis trichas sinuosa Salt marsh yellowthroat	CSC	Woody, swamps or brackish/salt water marshes.	No	No potential for occurrence. Project site does not

Scientific Name Common Name	Status	Habitat Characteristics	CNDDB Occurrence within Five Miles?	Likelihood for Occurrence
				support marsh habitat.
Melospiza melodia ssp. maxillaris Suisun song sparrow	CSC	Salt and brackish water marsh	No	No potential for occurrence. Project site does not support marsh habitat.
Buteo swainsoni Swainson's hawk	ST	Grassland and agricultural fields with large trees for nesting.	Yes	Low potential for occurrence. Large trees within 0.5 mile of the project site may provide nesting habitat for Swainson's hawk. This species may forage in close vicinity of the project site.
Agelaius tricolor Tricolored blackbird	CSC	Freshwater marshes and fields with dense thickets for nesting. This is a colonial species.	Yes	No potential for occurrence. Project does not provide appropriate habitat for this colonial-nesting species.
Elanus leucurus White-tailed kite	CFP	Grassland and agricultural fields with trees for nesting.	Yes	Low potential for occurrence. Project site provides marginal foraging and nesting habitat for this species. .
Mammals				
Sorex ornatus sinuosus Suisun shrew	CSC	Salt marsh	No	No potential for occurrence. Project site does not support salt marsh habitat.
Corynorhuinus townsendii Townsend's big-eared bat	SCT/CSC	Forages over grasslands/riparian and roosts in caves, buildings	Yes	Low potential for occurrence. Project site provides marginal foraging habitat for this species. .
Salt march harvest mouse	FE/SE	Salt marsh and adjacent grassland	No	No potential for occurrence. Project site does not

Scientific Name Common Name	Status	Habitat Characteristics	CNDDB Occurrence within Five Miles?	Likelihood for Occurrence
				support salt marsh habitat.
Source: (Southtown Project DEIR 2003), (USFWS 2016a), and CNDDB 2016).				

There are multiple known occurrences of this species nesting within five miles of the project site (Figure 3.4-1). The project site provides only marginal foraging habitat for Swainson's hawk, and no Swainson's hawks were observed in the project site during field survey conducted on September 2, 2016. There is no suitable nesting habitat for Swainson's hawk within the project site, however, large trees within approximately 0.5 mile of the project site could provide suitable nesting locations for this species.

White-tailed kite (*Elanus leucurus*) is a California fully protected species and is also protected under the MBTA. White-tailed kites nest in trees adjacent to grasslands, oak woodland, and on edges of riparian habitats (CDFW 1990). They are year-round residents in California often observed in agricultural areas, herbaceous, and open cismontane habitats (Zeiner et al 1988).

There are known occurrences of this species nesting within five miles of the project site (Figure 3.4-1). The project site provides only marginal foraging habitat for white-tailed kite, and no white-tailed kites were observed in the project site during the field survey conducted on September 2, 2016. However, large trees in the vicinity of the project site provide suitable nesting locations for this species.

Loggerhead shrike (*Lanius ludovicianus*) is a California species of special concern that is resident throughout most of California in grasslands and foothills. This species prefers open habitats with shrubs, trees, utility lines, or other structures for perching. Loggerhead shrikes nest in shrubs and trees where the nests can be well-concealed by foliage (Zeiner et al 1988).

There are no recorded occurrences of this species within five miles of the project site. However, habitat requirements for this species are relatively general. Therefore, while habitat within the project site would be considered marginal, this species could potentially nest in trees immediately surrounding the project site and forage within the project site.

Townsend's big-eared bat (*Corynorhinus townsendii*) is a candidate for listing and a California species of special concern. This species utilizes a wide variety of habitats and is typically found in association with water. Caves, mines, tunnels, buildings, or other human-made structures are required for night, day, hibernation, and maternity roosts. Maternity roosts are generally small, with 100 individuals or fewer. Night, day, and hibernation roosts are also generally small. Townsend's big-eared bats are not migratory, although they make short seasonal movements. The active season is May to September (Zeiner et al 1988).

There are known occurrences of this species within five miles of the project site (Figure 3.4.1). The project site does not have caves, mines, or man-made structures that provide roosting habitat

for this species. However, Townsend's big-eared bats could potentially forage in open areas over the project site.

3.4.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact BIO-1 Have a substantial adverse effect, either directly or through habitat modifications on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact Analysis

Special-Status Plant Species

Non-native annual grasslands are dominant throughout the extent of the project site. Given the disturbed and ruderal nature of the project site, no special-status plant species would be expected to occur within the project site.

Special-Status Wildlife Species

During the reconnaissance-level biological field survey of the project site on September 2, 2016, no special-status wildlife species were identified onsite. However, the project site represents marginal habitat for various birds protected under the MBTA, including loggerhead shrike. In addition, large trees in the vicinity of the project site represent potential nesting habitat for special-status raptors including Swainson's hawk and white-tailed kite. Construction impacts (such as loss of trees or interruption of breeding) to nesting birds protected under State or federal law is considered a potentially significant impact. Standard nesting bird pre-construction mitigation is proposed (Mitigation Measure BIO-1) to reduce potentially significant impacts to a level of less than significant. This mitigation would only apply to ground disturbing and vegetation removal activities that occur between February 15 and August 31. Ground disturbance and vegetation removal that occurs outside of this window would not require additional measures. With the implementation of Mitigation Measure BIO-1 any potential impacts to special-status birds would be less than significant.

In addition, there are known occurrences of Townsend's big eared bats in the project vicinity, and open areas over the project site represent marginal foraging habitat for bat species, including Townsend's big-eared bat. Therefore, construction activities could potentially disturb foraging Townsend's big-eared bats during their active season, May to September. In order to minimize the potential for impacts to foraging bats, standard construction measures which limit construction activities to daylight hours (between 8 a.m. and 6 p.m.) are proposed (Mitigation Measure NOI-1). Since bats forage at dawn and dusk, limiting construction activities to daylight hours would avoid disruption of foraging bats. With the implementation of Mitigation Measure NOI-1 any potential impacts to special-status bats would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM BIO-1: Avoid Disturbance of Nesting Special-Status and Non-Special-Status Raptors and other Migratory Birds, including Swainson's Hawk, White-tailed Kite, and Loggerhead Shrike.

Depending on the specific construction timeframe, to avoid disturbing nesting raptors and other migratory birds, the following measures shall be implemented:

a. If construction activities are scheduled to occur during the nesting season (approximately February 15 through August 31), a qualified wildlife biologist shall be retained to conduct a pre-construction nesting survey within the appropriate habitat.

    - Surveys shall be conducted within the project site and all potential nesting habitat within 500 feet of this area (this distance covers recommended Swainson's hawk and western burrowing owl buffers);

    - The surveys shall be conducted within one week before initiation of construction activities at any time between February 15 and August 31. If no active nests are detected, then no additional mitigation is required; or

    - If surveys indicate that migratory bird nests are found in any areas that would be directly or indirectly affected by construction activities, a no-disturbance buffer shall be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (typically late June to mid-July). The extent of these buffers shall be determined by a qualified biologist and shall depend on the special-status species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors shall be analyzed to make an appropriate decision on buffer distances.

b. If construction activities begin outside the breeding season (approximately September 1 through February 14) then construction may proceed until it is determined that an active migratory bird or raptor nest would be subject to abandonment as a result of construction activities. Optimally, all necessary vegetation removal shall be conducted before the breeding season so that nesting birds would not be present in the construction area during construction activities. If any bird nests are in the project site under pre-existing construction conditions, then it is assumed that they are habituated (or would habituate) to the construction activities. Under this scenario, the pre-construction survey described previously shall still be conducted on or after February 15 to identify any active nests in the vicinity. Active sites shall be monitored by a qualified biologist periodically until after the breeding season or after the young have fledged (typically

late June to mid-July). If active nests are identified on or immediately adjacent to the project site, then all non-essential construction activities (e.g., equipment storage and meetings) shall be avoided in the immediate vicinity of the nest site, but the remainder of construction activities may proceed.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact BIO-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish or U.S. Fish and Wildlife Service?

Impact Analysis

The project site is not located within any riparian habitat or other sensitive natural community identified within a local or regional plan, policy, and regulation, or by CDFW and USFWS. Therefore, the proposed project would have no impact to sensitive habitats.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact BIO-3 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact Analysis

The project site does not contain any federally protected wetlands and would not be subject to regulations covered under Section 404 of the Clean Water Act; therefore, no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact BIO-4 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Impact Analysis

Wildlife movement corridors are important habitats that allow wildlife to travel, migrate, or disperse between significant habitats (Harris and Gallagher 1989). Wildlife movement corridors have been recognized by federal agencies such as the USFWS and the State of California as important habitats worthy of conservation. In general, movement corridors are comprised of areas of undisturbed land cover that connects larger, contiguous habitats.

The project site is approximately 1.76 acres, highly disturbed, and bordered by masonry walls on three sides, and Cogburn Circle a local roadway, on the fourth side. The project site represents low quality wildlife habitat and is surrounded by residential development to the north and west, and Magnolia Park to the south. Magnolia Park is a public park and human activity precludes the possibility of wildlife movement across the park. The Agricultural fields to the east provide some wildlife habitat value; however, development of the project site would not affect wildlife movement to or within nearby agricultural field. Considering the fact that the project site is not in itself an important habitat and does not provide connectivity to other important habitats worthy of conservation, the proposed project would not interfere with the movement of any wildlife species.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact BIO-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Impact Analysis

The proposed project does not conflict with any local policy or ordinance protecting biological resources, including any policy or ordinance related to tree preservation. Several small crepe

myrtle trees are growing within the landscaping on the southern border of the project site. These trees do not meet the City's criteria for Landmark and/or Heritage tree status; nor are they included on the City's Indigenous Tree List. No Impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact BIO-6 Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?

Impact Analysis

The City falls within the jurisdiction of the Solano Multispecies Habitat Conservation Plan (HCP). The Solano HCP encompasses the Cities of Vacaville, Fairfield, Suisun City, Vallejo, Dixon, and Rio Vista. The Solano County Water Agency (SCWA) assumes overall responsibility for coordination, reporting, and oversight of the Conservation Program. The HCP boundaries encompasses the entire project site, however the project site is not located within a protected conservation area. In the unanticipated event a special-status species is encountered on the project site, the proposed project would be required to abide by the mitigation measures and species protection measures set forth in the HCP.

The proposed project is a development project and the removal of landscape trees may be required. Approval of the proposed project is a discretionary action, and therefore, approval of the development project by the decision-maker shall constitute a permit to remove any trees per the project plan. If the City deems an application for tree removal permit is required, the Applicant would submit an application.

In addition to the above, as special-status species are not anticipated to be present at the project site and if present, mitigation measures and species protection measures set forth in the HCP would be followed, the proposed project would not conflict with the provisions of an adopted HCP, or other approved local, regional, or State habitat conservation plan. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.5 CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

Cultural resources are classified by the State Office of Historic Preservation (OHP) as sites, buildings, structures, objects, and districts, each of which is described below:

Site. A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archeological value regardless of the value of any existing structure.

Building. A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also refer to a historically and functionally related unit, such as a courthouse and jail, or a house and barn.

Structure. The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.

Object. The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.

District. A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

Significance Criteria

When a project has the potential to affect a cultural resource it is necessary to determine the importance of resources that could be affected. An important historical resource is one that meets any of the criteria listed below, or if it is already listed on the California Register of Historical Resources or a local register of historical resources.

An important historical resource is one which:

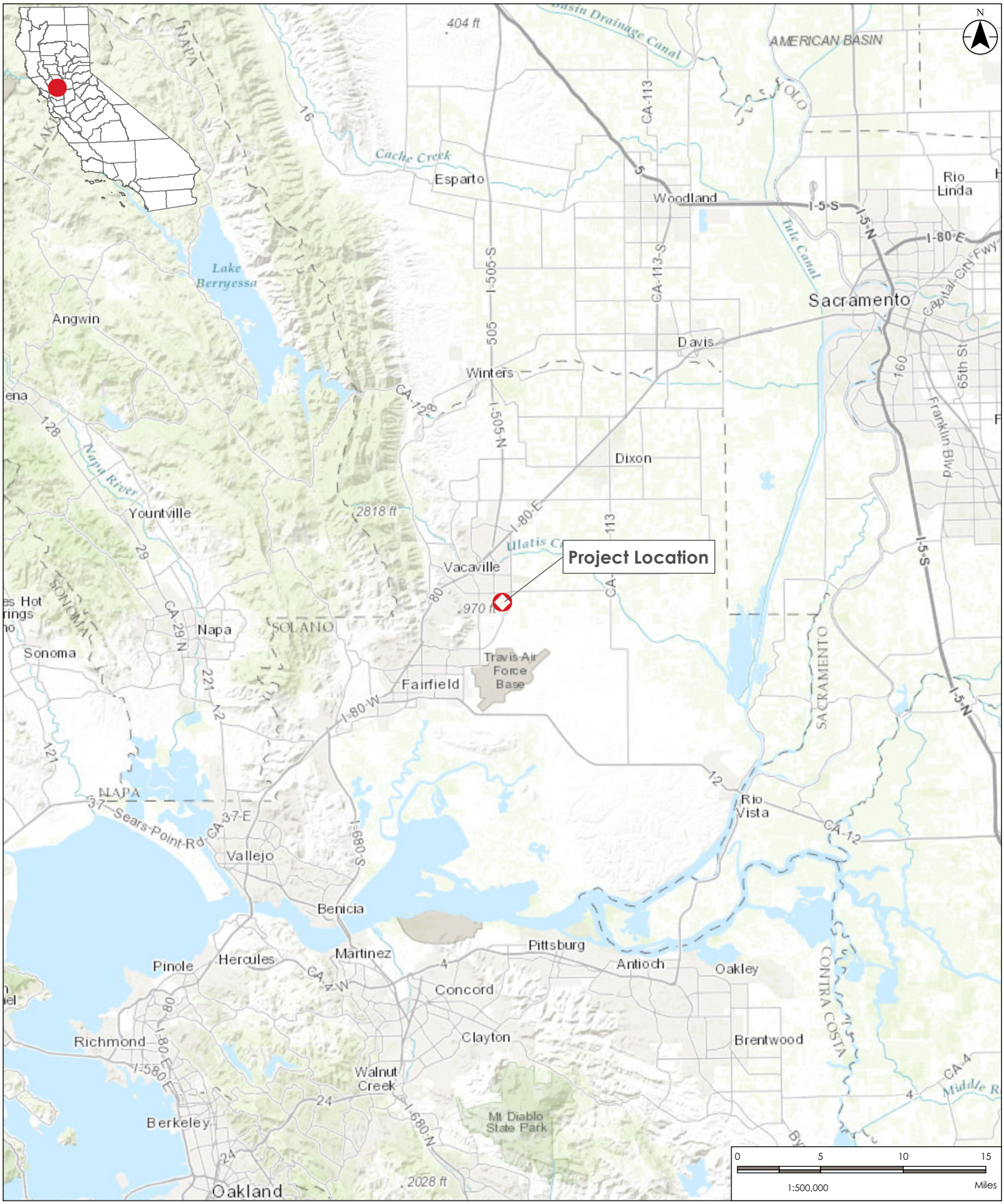
1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

2. Is associated with the lives of persons important in our past.

3. Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

4. Has yielded, or may be likely to yield, information important in prehistory or history.

To determine the presence of cultural and historical resources within the project site and vicinity, Stantec reviewed available archival records search results completed for the Southtown Project EIR (Cotton/Bridges/Associates 2004; McElroy 2003) and conducted a cultural resource survey (Figure 3.5-1 and Figure 3.5-2). The Southtown Project was located in the same area as the proposed project. The archival records search and cultural resources survey were completed to satisfy environmental issues specified in CEQA and its guidelines by (1) identifying all cultural resources within the project area; (2) offering a preliminary significance evaluation of the identified cultural resources; (3) assessing resource vulnerability to effects that could arise from project activities; and (4) offering suggestions designed to protect resource integrity, as warranted.



Stantec

Ashton Place Unit 3 Project
Vacaville, California

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Figure 3.5-1. Project Vicinity Map

Prepared: MNugent, 9/14/2016

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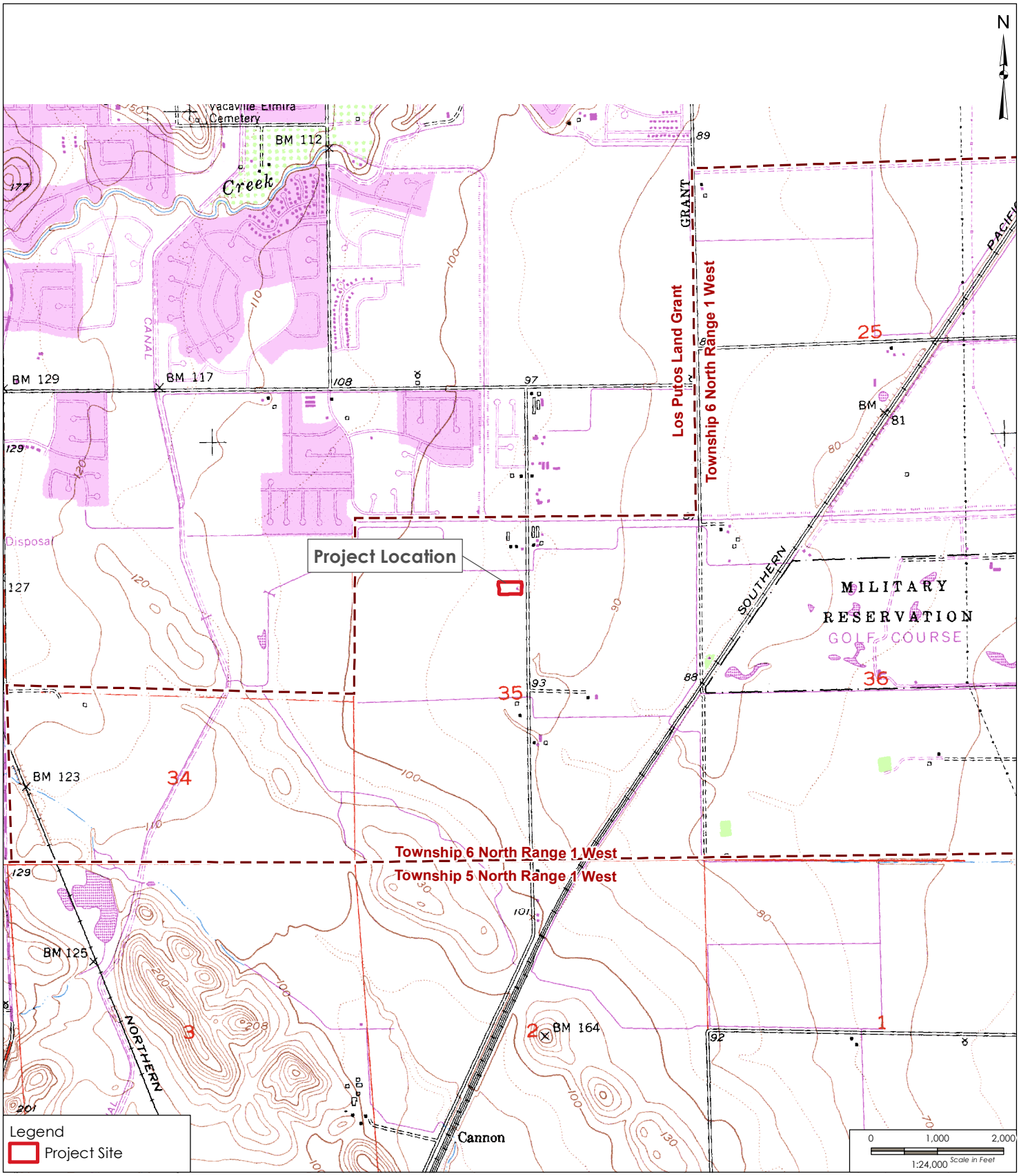

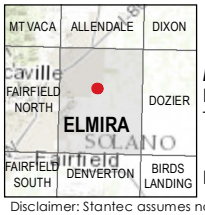

Stantec

Map Information:
Projection: UTM, NAD83 Zone 10 North
Topo Date: Linear Unit: Meter

Project Information:
PLSS: T6N, R1w, S4 and 5

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Prepared: MNugent, 9/14/2016

Ashton Place Unit 3 Project
Vacaville, California

Figure 3.5-2. Project Location Map

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Assembly Bill (AB) 52 Consultations

Per the City's requirement of consultation under AB 52, the Yocha Dehe Wintun Nation was contacted in a letter dated September 2, 2016. Per the statute, no correspondence had been received from the Tribe within the 30 day window. Subsequently, the Tribe requested additional information from the City. In response to the Tribe's request, the City provided the Tribe with all available appropriate documentation. At the time of this document, the Tribe has not further engaged in consultation for the proposed project[1].

3.5.2 Methodology

The existing cultural resources setting and potential impacts from project implementation are based on record searches conducted by the Northwest Information Center (NWIC) for the City of Vacaville's Southtown Project (State Clearinghouse Number 2003062071) (Cotton/Bridges/Associates 2004; McElroy 2003), as well as a pedestrian survey conducted within the project area in September 2016. The project area has changed due to development since the 2003 pedestrian survey (McElroy 2003). Only the subject parcel (project area) remains undeveloped, although several structures once located on the parcel have been demolished subsequent to the 2003 pedestrian survey.

Records Search and Literature Review

As part of the study, a previously conducted records search completed for the City of Vacaville's Southtown Project by the NWIC was reviewed (Cotton/Bridges/Associates 2004; McElroy 2003). The records search included the project site and 0.5 mile buffer and was conducted by the NWIC of the CHRIS on May 14, 2003 (NWIC File No. 02-0847). The NWIC is the official state repository of archaeological and historic built environment records and reports for a fourteen-county area that includes Solano County and is housed at Sonoma State University in Rohnert Park. An updated records search for the proposed project has not been undertaken.

The records search for this study was performed in order to: (1) determine whether known cultural resources had been recorded within or adjacent to the study area; (2) assess the

[1] The City conducted AB 52 tribal outreach by sending a Tribal Consult letter to the Yocha Dehe Wintun Nation on September 2, 2016. On October 17, 2016, the City received the Yocha Dehe Wintun Nation comment letter dated October 10, 2016, in which the Tribe noted concerns that the project could impact known archaeological/cultural sites and requested that the City send the Tribe the cultural resource study for the proposed project. On October 17, 2016, the City responded to the Tribe with a phone message and email reply. In the email reply, the City explained that the project site is the continuation of development of a larger subdivision (Southtown) that was approved in 2004 with a certified EIR (SCH#2003062071) and that the proposed project is to change the land use on the site from commercial to residential. The City further explained that because the site was analyzed by a certified EIR and the IS shows that the proposed land use change impacts can be mitigated to a less than significant impact, the City has determined that the appropriate CEQA document is a MND that also tiers off the Southtown Project EIR. In the City's reply email to the Tribe, the City provided the Tribe with three attachments: the Cultural Resources mitigation measures from the proposed project's ISMND document, the Cultural Resources section of the Southtown Project EIR, and a figure from the Southtown Project EIR showing the project site location. At the time of this document, the Tribe has not further engaged in consultation for the proposed project.

likelihood of unrecorded cultural resources based on archaeological, ethnographic, and historical documents and literature; and (3) to review the distribution of nearby archaeological sites in relation to their environmental setting.

The record search included a review of all cultural resources and reports within a 0.5 mile of the project area. The records search was conducted by reviewing the OHP records, base maps, historic maps, and literature for Solano County on file at the office. Other sources reviewed included the OHP Historic Properties Directory, California Inventory of Historical Resources, Caltrans Bridge Survey, ethnographic information, and soil survey maps.

The records search revealed that no previously recorded resources had been recorded within the project area and no surveys have been conducted within the project area. One resource, a segment of historic road, was identified as being with the 0.5 mile records search radius of the proposed project; however, this resource is not located within the project area. The results of the NWIC records search are confidential and not for public distribution. Therefore, the full records search results are not included in this document.

A variety of historical maps were consulted for this project and revealed the presence of various trails, roads, and other features in the vicinity of the project area. Although it can be difficult to pinpoint a location on some of these maps, the only historic-era features present in the vicinity of the project area prior to 1953 include a road running north to south. This road alignment is now the modern, paved Vanden Road. As early as 1953, a structure is depicted within the project area. By 1980, that structure appears to have been removed and replaced by a new structure. A review of historic aerial imagery indicates that a yard and at least one structure and several trees were located within the project area in 1968. By 2009, the area appears completely cleared, with no evidence of structures or trees (historicaerials.com 2016). Table 3.5-1 below lists the features depictured on historic maps within the project vicinity.

Review of the Southtown Project EIR for the City of Vacaville identified one historic farm, identified as Farmstead One, as being located within the project area (Figure 3.5-3). It was identified from field survey for the technical report supporting the EIR that the farm consisted of a single-family residence, storage shed, corral and outbuildings; all of which had been abandoned for at least several decades (Cotton/Bridges/Associates 2004; McElroy 2003). A review of historic aerial imagery indicated that the farm dated to at least 1937. According to the EIR:

"Given the modified state of Farmstead One, it does not retain sufficient historical integrity to be considered a valuable historic resource. These properties do not meet the criteria required for listing. Impacts resulting from Project implementation to Farmstead One is considered less than significant (City of Vacaville 2004)."

Table 3.5-1: Features Depicted on Historic Maps Within the Project Vicinity

Map Name	Date	Features Present
Vacaville USGS (1:62500 scale)	1908	Yes, Vanden Road
Elmira USGS (1:62500 scale)	1917	Yes, Vanden Road
Elmira USGS (1:24000 scale)	1953	Yes, Vanden Road and one structure
Vacaville USGS (1:62500 scale)	1953	Yes, Vanden Road and one structure
Elmira USGS (1:24000)	1968	Yes, Vanden Road and two structures
Elmira USGS (1:24000)	1973	Yes, Vanden Road and five structures
Elmira USGS (1:24000)	1980	Yes, Vanden Road and two structures

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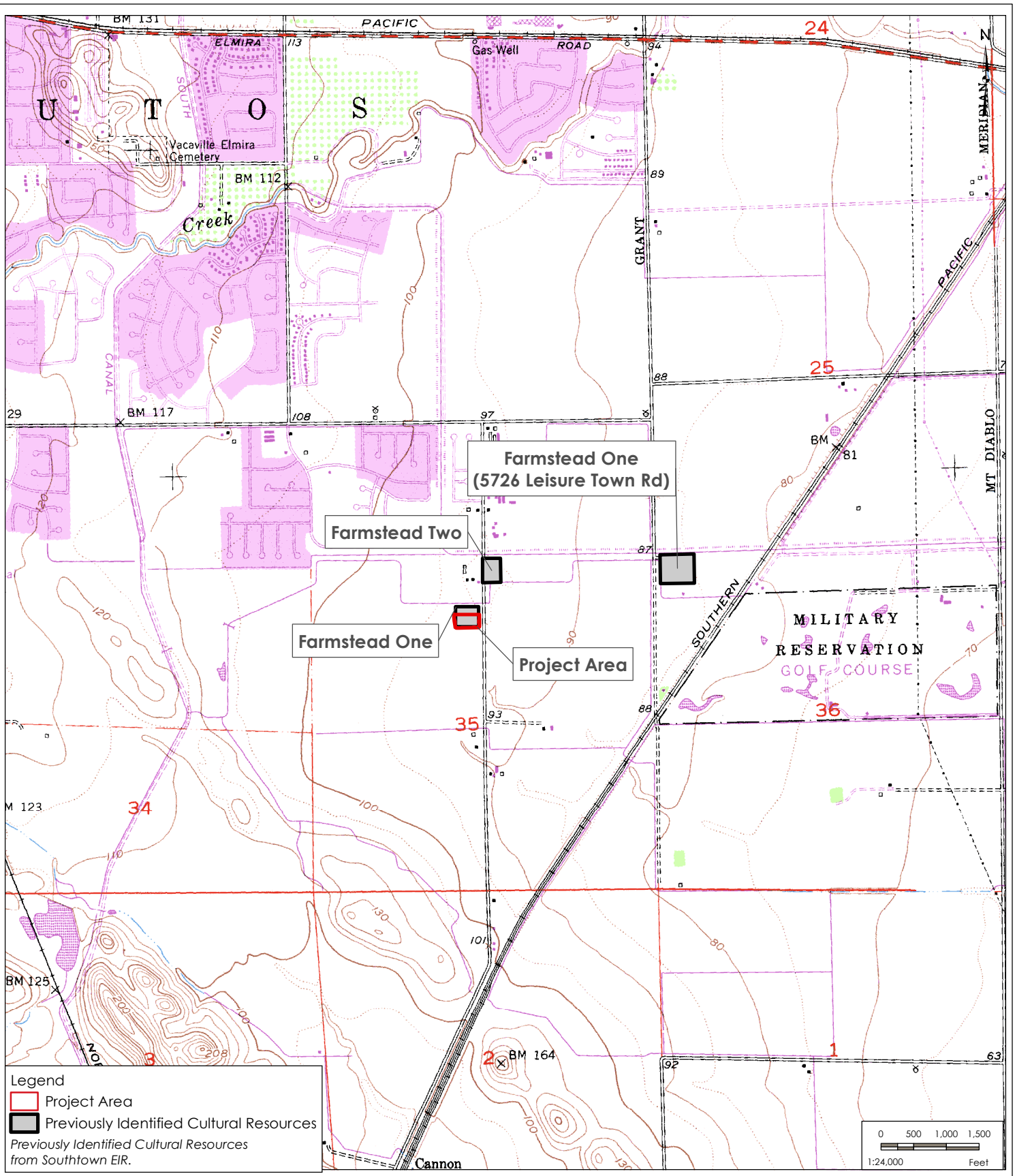

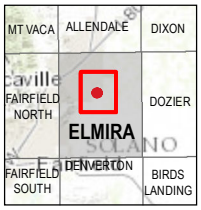

Stantec

Map Information:
Projection: UTM, NAD83 Zone 10 North
Topo Date: Linear Unit: Meter

Project Information:
PLSS: T6N, R1w, S4 and 5

Ashton Place Unit 3 Project
Vacaville, California

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Figure 3.5-3. Previously Identified Cultural Resources Map

Prepared: MNugent, 10/5/2016

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Field Survey

A Stantec archaeologist conducted an intensive-level pedestrian survey of the project area on September 2, 2016 (Figure 3.5-4). The project area was evaluated for the presence of prehistoric and historic-era site indications as well as the presence of historic-era built environment resources (Appendix C).

Site indicators for the presence of prehistoric sites in this area may include, but are not limited to: ground depressions; darkened soil areas indicative of middens; fire scorched and/or cracked rock; modified obsidian, cryptocrystalline silica (CCS), or other vitreous materials; and groundstone milling equipment. Historic-era archaeological sites may include: metal objects such as nails, containers or miscellaneous hardware; glass fragments; ceramic or stoneware objects or fragments; milled or split lumber; trenches; feature or structure remains such as buildings or building foundations; and trash dumps.

The survey used transects spaced no more than 10 meters apart and examined the entire project area. Ground visibility was fair to poor and was covered with invasive weeds, grasses, and evidence from prior construction staging, including bark dust piles and soil piles. Yellow star thistle (*Centaurea solstitialis*), Lactuca, and Morning glory were all observed within the project area. All exposed mineral soils, including rodent back dirt piles, were examined in detail. The survey found no indications of either prehistoric or historic-era archaeological sites and no built environment resources. No evidence of "Farmstead One" was noted. The farm and all associated buildings have been demolished and no evidence of their former existence was noted on the surface. The project area has been subject to historic and modern disturbances including earthmoving to create landscaped berms, agricultural disking, and refuse dumping.

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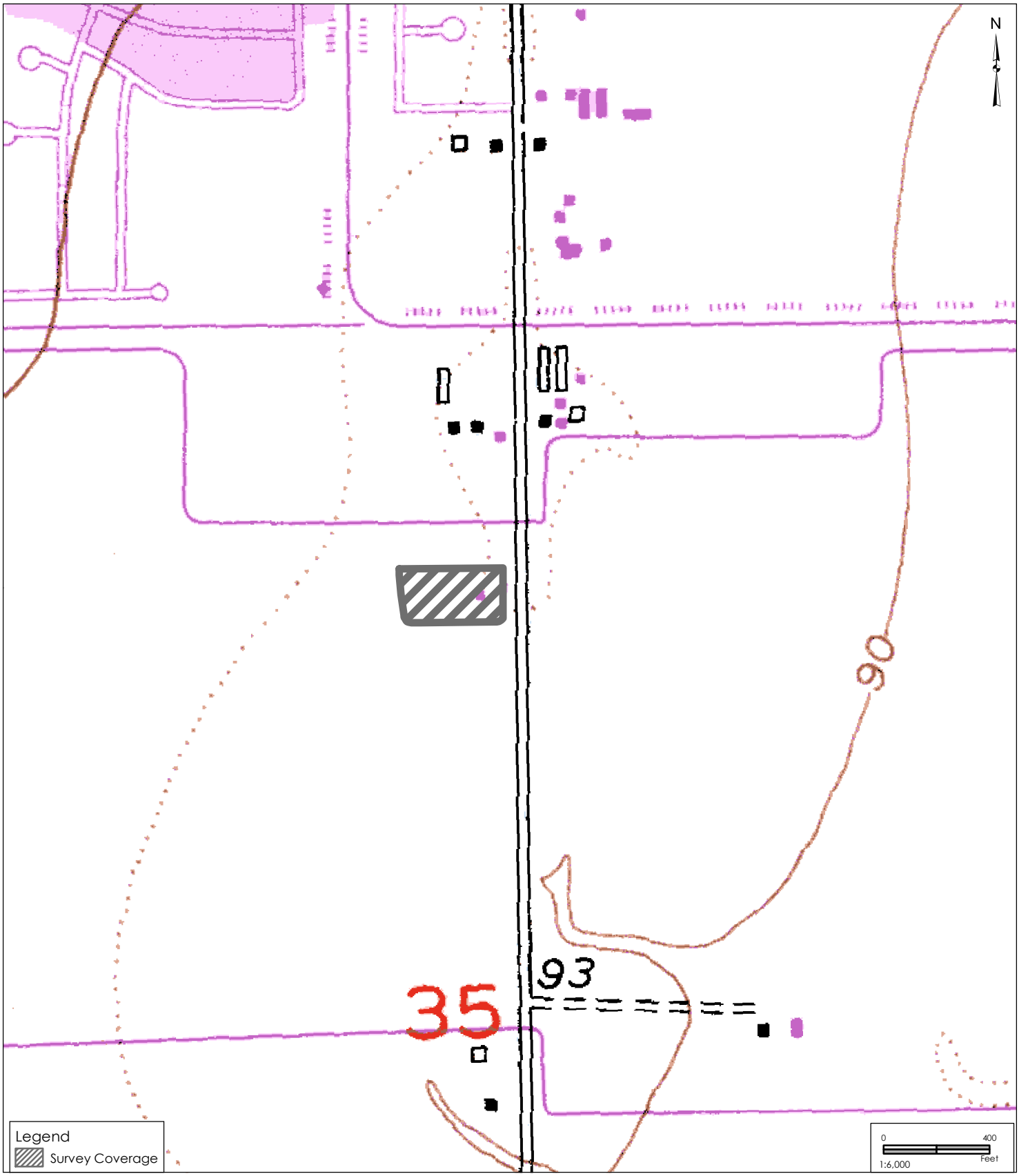

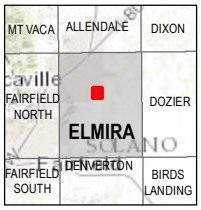

Stantec

Map Information:
Projection: UTM, NAD83 Zone 10 North
Topo Date: Linear Unit: Meter

Project Information:
PLSS: T6N, R1w, S4 and 5

Ashton Place Unit 3 Project
Vacaville, California

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Figure 3.5-4: Survey Coverage Map

Prepared: MNugent, 10/5/2016

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3.5.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact CUL-1 Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?

Impact Analysis

The archival records search performed as part of the cultural resources analysis resulted in the identification of one now demolished historic resource within the project area ("Farmstead One"). Furthermore, initial field review of the project area did not identify any potential historic resources within or adjacent to the project area, and did not identify any surface evidence of "Farmstead One" in the project area. Thus, the proposed project is not anticipated to have an impact on any known or potential historical resources.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered historical resources. Therefore, Mitigation Measure CUL-1 is proposed requiring implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface historic resources. With the implementation of Mitigation Measure CUL-1, potential impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-1: If any cultural resource is encountered during ground disturbance or subsurface construction activities (e.g., trenching, grading), all construction activities within a 50 foot radius of the identified potential resource shall cease until a Secretary of the Interior qualified archaeologist evaluates the item for its significance and records the item on the appropriate State Department of Parks and Recreation (DPR) 523 series forms. All forms and associated reports will be submitted to the NWIC of the CHRIS. The archaeologist shall determine whether the resource requires further study. If after the qualified archaeologist conducts appropriate technical analyses, the resource is determined to be eligible for listing on the California Register of Historical Resources or as a unique archaeological resource as defined in PRC Section 15064.5, the archaeologist shall develop a plan for the treatment of the resource. This shall contain appropriate mitigation measures, including avoidance, preservation in place, data recovery excavation, or other appropriate measures, as outlined in Public Resources Code Section 21083.2.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact CUL-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Impact Analysis

The archival records search performed as part of the cultural resources analysis resulted in the identification of no known prehistoric archaeological resources within or near the study area. However, the historic farm "Farmstead One" (c. 1937) was identified within the project area. However, initial field review of the project area did not identify any signs of previously unidentified subsurface archaeological resources within or adjacent to the project area. Thus, the proposed project is not anticipated to have an impact on any known or potential historical resources.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered unique archaeological resources. Therefore, Mitigation Measure CUL-1 is proposed requiring implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface unique archaeological resources. With the implementation of Mitigation Measure CUL-1, potential impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure CUL-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact CUL-3 Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074?

Impact Analysis

The archival records search performed as part of the cultural resources analysis resulted in the identification of no known tribal cultural resources within or near the study area. Furthermore, initial field review of the project area identified that the project site is previously disturbed and did not identify any signs of previously unidentified subsurface tribal cultural resources within or adjacent to the project area. Thus, the proposed project is not anticipated to have an impact on any known or potential tribal cultural resources. Per the City's requirement of consultation under AB 52, the Yocha Dehe Wintun Nation was contacted in a letter dated September 2, 2016. In response to the Tribe's request, the City provided the Tribe with all available appropriate documentation[1]. The proposed project will change the land use on the previously disturbed

project site from commercial to residential. Thus, the proposed project is not anticipated to have an impact on any known or potential tribal cultural resources.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered unique tribal cultural resource. Therefore, Mitigation Measure CUL-1 is proposed requiring implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface unique tribal cultural resources. With the implementation of Mitigation Measure CUL-1, potential impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure CUL-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact CUL-4 Disturb any human remains, including those interred outside of dedicated cemeteries?

Impact Analysis

There are no known human remains within the project area, however, ground disturbance and subsurface construction activities such as trenching and grading associated with the proposed project could potentially disturb previously undiscovered human burial sites. Therefore, Mitigation Measure CUL-2 would be implemented to reduce impacts to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-2: If ground-disturbing activities uncover previously unknown human remains, Section 7050.5 of the California Health and Safety Code applies, and the following procedures shall be followed:

There shall be no further excavation or disturbance of the area where the human remains were found or within 50 feet of the find until the Solano County Coroner and the appropriate City representative are contacted. Duly authorized representatives of the Coroner and the City shall be permitted onto the project site and shall take all actions consistent with Health and Safety Code Section 7050.5 and Government Code Sections 27460, et seq. Excavation or disturbance of the area where the human remains were found or within 50 feet of the find shall not be permitted to re-commence until the Coroner determines that the remains are not subject to the provisions of law concerning investigation of the circumstances, manner, and cause of any

death. If the Coroner determines the remains are Native American, the Coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. If the MLD does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the MLD's recommendations, the owner or the MLD may request mediation by NAHC.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

3.6 GEOLOGY AND SOILS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, involving:	☐	☐	☒	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on strata or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

3.6.1 Environmental Setting

The City is located at the edge of two geographic provinces: the Sacramento portion of the Central Valley province and the Coast Ranges. Geologic conditions in this area are the result of activity occurring during the Mesozoic and Cenozoic eras. The physiography of the region is varied. Generally from west to east, landforms common to the Vacaville area are the low hills and uplands, low alluvial plains and fan, and flooded basins. Low hills and uplands are evident in the north from Vacaville to Putah Creek. The eastern two-thirds of the county is comprised mostly of low alluvial plains and fans ranging in elevation from about 100 feet at the edge of the Coast Ranges foothills to near sea level at the eastern border.

The City is vulnerable to seismic activity with several prehistoric earthquake faults in the area. A magnitude 6.4 earthquake on April 19, 1892 caused the destruction of most brick buildings in Vacaville (Stover and Coffman 1993). This earthquake was estimated to be a magnitude 6.5, and was followed by numerous aftershocks for the next several days. The source of the earthquake is unknown, but a possible source is an unrecognized or concealed fault located along the western margin of the Great Valley (Bennett 1987). The Vaca-Kirby Hills Fault system, which has not been active in the past 11,700 years but has shown displacement during the past 700,000 years, is the only fault system that passes through the City (General Plan 2015). The Vaca-Kirby Fault system is located approximately one mile southwest of the project site (California Geological Survey 1981).

The Green Valley Fault system, which lies 12 miles southwest of the project site, has been active within the past 200 years (General Plan 2015). While more likely than the Vaca Fault to have seismic impacts on Vacaville, the United States Geological Survey (USGS) estimates the probability of a magnitude 6.7 or greater earthquake along this fault prior to 2036 to be only three percent (General Plan 2015). The Rodgers Creek and Hayward Faults are located approximately 24 miles southwest of the City, and have an estimated 16 percent probability of producing a magnitude 6.7 or greater earthquake prior to 2036 (General Plan 2015).

Liquefaction and densification are phenomena associated with loose, cohesionless, sands and gravels subjected to ground shaking during earthquakes, and can result in unacceptable total and/or different settlements. The City is generally characterized by areas of very low, low, and moderate risk of liquefaction. According to the General Plan, the project site is located in an area with moderate liquefaction risk.

Landslides are a result of slope instability and characterized by the movement of soils and bedrock down steep slopes. Movement results from wet weather, seismic shaking, and/or improper construction, grading, and drainage. The majority of the City is described as flatland, with some areas having had small scattered landslides, specifically in the western region of the City in the Vaca Mountains and surrounding foothills. The topography of the project site is generally flat, and ranges from 90 feet to 94 feet above mean sea level. As such, the project site is located in an area where no landslides typically occur (General Plan 2015).

Certain types of soils have characteristics that make them more susceptible to erosion and expansion. The primary soil types in the City are silty, sandy, and clay loams. The soils at the

project site are comprised mainly of Capay silty clay loam, and Rincon clay loam; zero to one percent slope (USDA, NRCS 2016).

Subsidence is the downward shift of ground surface relative to sea-level. Subsidence typically occurs as a result of the dissolution of limestone, subsurface mining, extraction of natural gas, earthquakes, groundwater pumping, and fault rupture. Subsidence can occur in the City; however, typically occurs in areas where groundwater has been extracted. According to USGS Areas of Land Subsidence in California Map, no historic or current records of subsidence have been documented in the City (USGS 2016).

3.6.2 Methodology

Evaluation of potential geologic and soil impacts was based on a review of documents pertaining to the project site, including the General Plan, the General Plan EIR, Natural Resources Conservation Science Web Soil Survey, USGS earthquake seismic hazard maps, and USGS land subsidence in California Map, Southtown Project EIR, and Section 2.0, Project Description, of this ISMND. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, State, and local ordinances and regulations, as well as the General Plan's goals, policies, and actions.

3.6.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact GEO-1 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

Fault Rupture

The 1972 Alquist-Priolo Earthquake Fault Zoning Act required the State Geologist to establish regulatory "Earthquake Fault Zones" around the surface ruptures of active faults, in order to mitigate the hazard of surface fault rupture to structures for human occupancy. A fault is considered active if it has ruptured within the last 11,000 years. The project site is not located within or near an Alquist-Priolo Earthquake Fault Zone. According to the General Plan, there are no known active faults in the City. The closest Alquist-Priolo Earthquake Fault Zones are the Green Valley fault zone, located 13 miles southwest of the project site, and the Rodgers Creek and Hayward fault zones, located 24 miles southwest of the project site (General Plan 2015). Surface rupture is associated with being located close to an active fault, and because the nearest Alquist-Priolo Earthquake Fault Zone is approximately 30 miles from the project site, the risk of surface rupture near the project site is low. However, due to the sheer number of faults in the region, the possibility of a rupture in the future exists. The Southtown Project Area was previously studied under the Southtown Project EIR. Geotechnical investigations were previously submitted, evaluating the Southtown Project Area, including the general project vicinity. The proposed project would be required to comply with the latest adopted edition of the California Building Standards Code, and implement recommended design measures as outlined in the previous geotechnical reports. Therefore, impacts associated with fault rupture would be less than significant.

Ground Shaking

Strong ground shaking would likely occur at the project site during an earthquake, and because of the proximity of active faults in the region, there would be a strong potential for ground shaking. The Southtown Project Area was previously studied under the Southtown Project EIR. Geotechnical investigations were previously submitted, evaluating the Southtown Project Area, including the general project vicinity. The proposed project would be required to comply with the latest adopted edition of the California Building Standards Code, and implement recommended design measures as outlined in the previous geotechnical reports. Therefore, impacts associated with ground shaking would be less than significant.

Liquefaction

According to the General Plan Figure SAF-2, Liquefaction Potential, the potential for liquefaction to occur on the project site is moderate. According to the USGS maps, the project site is composed primarily of Capay silty clay loam, and Rincon clay loam; zero to one percent slope (USDA, NRCS 2016). These soils are typically found on basin rims, alluvial fans, deltas, and in basins. The Southtown Project Area was previously studied under the Southtown Project EIR. Geotechnical investigations were previously competed evaluating the Southtown Project Area, including the general project vicinity. The proposed project would be required to comply with the latest adopted edition of the California Building Standards Code, and implement design measures as outlined in the previous geotechnical reports. Therefore, impacts associated with liquefaction would be less than significant.

Landslides

The project area contains generally flat relief; therefore, the project site's potential for landslides to occur is low. As shown in Figure SAF-3, Historic Mapped Landslides, in the General Plan the project site is not located within an area identified as being susceptible to landslides. This condition precludes the possibility of landslides. No impacts from landslides would occur.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GEO-2 Result in substantial soil erosion or the loss of topsoil?

Impact Analysis

Approximately 1.76 acres of the project site would be disturbed. Construction activities associated with the project site would include removal of vegetation, excavation, and grading; as such, there is potential for erosion to occur. Mitigation Measure HYD-1 is proposed requiring the implementation of standard stormwater pollution prevention measures to prevent erosion. With the implementation of mitigation, impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact GEO-3 Be located on strata or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Impact Analysis

Landslide

As discussed in Impact GEO-1, the project area contains generally flat relief; therefore, the potential for landslides to occur on or surrounding the project site is low. As shown in the General Plan, Figure SAF-3 Historic Mapped Landslides, the General Plan the project site is not located within an area identified as being susceptible to landslides (General Plan 2015). Therefore, no impact associated with landslides would occur.

Lateral Spreading

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits toward a stream bank, open side of a fill embankment, the side of a levee, or another open face; typically lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. As failure tends to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form. However, there are no open faces within 1,000 feet of the project site where lateral spreading could occur. Therefore, no impact associated with lateral spreading would occur.

Subsidence

Subsidence is most often attributed to human activity mainly from the removal of subsurface water. More than 80 percent of the identified subsidence in the United States is a result of exploitation of groundwater, with the increasing development of land water resources threatening to exacerbate existing land subsidence problems and initiate new ones (USGS 2013). According to USGS, Areas of Land Subsidence in California Map, no historic or current records of subsidence have been documented in the City (USGS 2016). Therefore, no impact associated with subsidence would occur.

Liquefaction

The project site is comprised of Capay silty clay loam and Rincon clay loam; zero to one percent slope (USDA, NRCS 2016). As described above in Impact GEO-1, the Southtown Project Area was previously evaluated under the Southtown Project EIR. Geotechnical investigations were previously submitted, evaluating the Southtown Project Area, including the general project vicinity. The proposed project would be required to comply with the latest adopted edition of the California Building Standards Code, and incorporate recommended design measures outlined in the previous geotechnical reports for the Southtown Project Area. As such, impacts associated with liquefaction would be less than significant.

Collapse

The project site is not underlain by natural or manmade subsurface features that are typically associated with collapse, including mining or extraction operations or karst topography. Therefore, no impact associated with collapse would occur.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GEO-4 Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code, creating substantial risks to life or property?

Impact Analysis

The soils at the project site are comprised mainly of Capay silty clay loam, and Rincon clay loam; zero to one percent slope (USDA, NRCS 2016). These soils are moderate to highly expansive surficial soils. Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wet, and are susceptible to soil expansion, and can threaten the stability of the proposed project without engineered foundations. The Southtown Project Area was previously evaluated under the Southtown Project EIR. Geotechnical investigations were previously completed, evaluating the Southtown Project Area, including the general project vicinity. The proposed project would be required to comply with the latest adopted edition of the California Building Standards Code, and incorporate recommended design measures, as outlined in the previous geotechnical reports. This would eliminate the potential for hazards associated with expansive soils to occur. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than Significant Impact.

Impact GEO-5 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Impact Analysis

The proposed project would connect directly to the City's existing municipal sewer system and would not require septic tanks or any other alternative wastewater disposal system. Therefore, no impact would occur.

Level of Significance before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance after Mitigation

No Impact.

3.7 GREEENHOUSE GASES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒	☐	☐

3.7.1 Environmental Setting

The issue of combating climate change and reducing greenhouse gas emissions (GHG) has been the subject of State legislation (AB 32 and Senate Bill [SB] 375). The Governor's Office of Planning and Research has adopted changes to CEQA Guidelines, and the environmental checklist which is used for Initial Studies such as this one. The changes to the checklist, which were approved in 2010, are incorporated above in the two questions related to a project's GHG impact.

The City of Vacaville adopted its General Plan Update and Energy and Conservation Action Strategy (ECAS) on August 11, 2015. The ECAS was created for Vacaville in compliance with State requirements that address the reduction of major sources of GHG emissions. The ECAS is a detailed, long-range strategy to reduce GHG emissions and achieve greater conservation of resources with regards to transportation and land use, energy, water, solid waste, and open space. Implementation of the ECAS is intended to guide Vacaville's actions through a series of communitywide and municipal GHG emissions reduction measures to decrease the city's contribution to GHG emissions. Communitywide GHG emission reduction measures are exclusively aimed to increase energy independence; reduce spending on gas, electricity, and water; and improve air quality from non-City operations. Municipal GHG emission reduction measures apply exclusively to City operations.

Greenhouse Gases (GHGs)

GHGs and climate change are cumulative global issues. The CARB and EPA regulate GHG emissions within the State of California and the U.S., respectively. While the CARB has the primary regulatory responsibility within California for GHG emissions, local agencies can also adopt policies for GHG emission reduction.

Many chemical compounds in the earth's atmosphere act as GHGs, as they absorb and emit radiation within the thermal infrared range. When radiation from the sun reaches the earth's surface, some of it is reflected back into the atmosphere as infrared radiation (heat). GHGs

absorb this infrared radiation and trap the heat in the atmosphere. Over time, the amount of energy from the sun to the earth's surface should be approximately equal to the amount of energy radiated back into space, leaving the temperature of the earth's surface roughly constant. Many gases exhibit these "greenhouse" properties. Some of them occur in nature (water vapor, carbon dioxide (CO2), methane [CH4], and nitrous oxide [N2O]), while others are exclusively human-made (like gases used for aerosols) (EPA 2014).

The principal climate change gases resulting from human activity that enter and accumulate in the atmosphere are listed below:

Carbon Dioxide

CO2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane

CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide

N_2O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases

Hydrofluorocarbons (HFCs), perfluorinated chemicals (PFCs), and Sulfur hexafluoride (SF_6) are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high global warming potential (GWP) gases.

Emissions Inventories and Trends

California is the second-largest contributor in the U.S. of GHGs and the sixteenth-largest in the world (CARB 2014a). According to the CARB's recent GHG inventory for the State, released May 2014, California produced 459 million metric tons of carbon dioxide equivalent (MTCO2e) in 2012 (CARB 2014a). The major source of GHGs in California is transportation, contributing 37 percent of the State's total GHG emissions in 2012.

Potential Environmental Impacts

For California, climate change in the form of warming has the potential to incur/exacerbate environmental impacts, including, but not limited to, changes to precipitation and runoff patterns, increased agricultural demand for water, inundation of low-lying coastal areas by sea-level rise, and increased incidents and severity of wildfire events (Moser et al. 2009). Cooling of

the climate may have the opposite effects. Although certain environmental effects are widely accepted to be a potential hazard to certain locations, such as rising sea level for low-lying coastal areas, it is currently infeasible to predict all environmental effects of climate change on any one location.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on earth. A project's GHG emissions are at a micro-scale relative to global emissions, but could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact.

In September 2006, then-Governor Arnold Schwarzenegger signed AB 32, which requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. AB 32 delegated the authority for implementation to the CARB and directs the CARB to enforce the statewide cap. In accordance with AB 32, CARB prepared the Climate Change Scoping Plan (Scoping Plan) for California, which was approved in 2008. The Scoping Plan provides the outline for actions to reduce California's GHG emissions. Based on the reduction goals called for in the 2008 Scoping Plan, a 29 percent reduction in GHG levels relative to a Business-As-Usual (BAU) scenario would be required to meet 1990 levels by 2020. A BAU scenario is a baseline condition based on what could or would occur on a particular site in the year 2020 without implementation of a proposed project or any required or voluntary GHG reduction measures. A project's BAU scenario is project- and site-specific, therefore varies from project to project.

In 2011, the baseline or BAU level for the Scoping Plan was revised to account for the economic downturn and State regulation emission reductions (i.e., Pavley, Low Carbon Fuel Standard [LCFS], and Renewable Portfolio Standard [RPS]). Again, the BAU condition is project – and site-specific and varies. The BAU scenario is based on what could or would occur on a particular site in the year 2020 without implementation of a proposed project or consideration of any State regulation emission reductions or voluntary GHG reduction measures. Accordingly, the Scoping Plan emission reduction target from BAU levels required to meet 1990 levels by 2020 was modified from 29 percent to 21.7 percent (where BAU levels is based on 2010 levels). The amended Scoping Plan was re-approved August 24, 2011.

3.7.2 Methodology

As discussed in Section 3.3, the project is located within the YSAQMD, therefore the YSAQMD thresholds are the most appropriate to use for the project, however the YSAQMD has not established quantitative significance thresholds for GHGs. The YSAQMD recommends that Lead Agencies analyze GHGs for larger projects as a part of the full CEQA analysis. The SMAQMD, located within the same regional air basin, has established quantitative significance thresholds of 1,100 $MTCO_2e$ per year for the construction or operational phases of land use projects. Recommended thresholds were developed by the SMAQMD to ensure at least 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to GHG emissions reduction goals of AB 32 and the Scoping Plan (SMAQMD 2015). The BAAQMD

similarly established 1,100 $MTCO_2e$ for project operations as a screening level for ensuring 90 percent of the new GHG emissions would be reviewed and assessed for mitigation (BAAQMD 2010). Projects below the 1,100 $MTCO_2e$ would have a less than significant cumulative impact on GHGs. Additional discussion is provided in the Air Quality and Greenhouse Gas Assumptions Memorandum on the BAAQMD thresholds (Appendix A). It should also be noted that the project would not exceed the BAAQMD's preliminary operational screening threshold of 56 dwelling units; therefore it would not have the potential to exceed the BAAQMD's operational threshold of 1,100 $MTCO_2e$.

Construction-related and operations-related GHG emissions were estimated using the CalEEMod. Greenhouse gas emissions associated with project construction were estimated using CO_2e emissions as a proxy for all GHG emissions. The primary sources of proposed project-related GHG emissions are anticipated to be combustion of fossil fuels from the operation of internal combustion engines used during project construction (e.g., portable equipment, off road equipment, and vehicles) and VMT from operations. As discussed under Section 3.3 Air Quality, the baseline (i.e. existing condition) does not include a commercial use; therefore, the potential for VMT increase is already being experienced. The implementation of the proposed project with the land use change would reduce the City's ability to reduce future emissions in the cumulative context. However, the removal of this commercial site would not alter the conclusions of the Southtown Project EIR because the original South Town Project did not utilize local-serving retail as a mechanism for achieving vehicle trip reductions and thus VMT and emission reductions. The emissions estimates presented in the South Town EIR would not be increased through the removal of the commercial use of the site. Furthermore, the South Town EIR was prepared in 2003, when GHG emissions were not included in air quality model analyses, and there are no GHG estimates that were disclosed..

3.7.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis

The proposed project may contribute to climate change impacts through its contribution of GHGs. The proposed project would generate a variety of GHGs during construction, including several defined by AB 32, such as CO2, CH4, and N2O from the exhaust of equipment, construction hauling trips, and worker commuter trips. The proposed project may also emit GHGs that are not defined by AB 32. For example, the proposed project may generate aerosols from diesel particulate matter exhaust. Aerosols are short-lived GHGs, as they remain in the atmosphere for approximately one week.

CalEEMod was used to estimate emissions from construction of the proposed project. Detailed information on the assumptions is included in Section 3.3 Air Quality. Modeling results are

included in this Initial Study as Appendix A. As mentioned above, the YSAQMD has not established quantitative GHG emissions thresholds.

Constructions Emission Inventory

Construction emissions would be generated from the exhaust of equipment and the exhaust of construction hauling trips and worker commuter trips. The construction phases included demolition, site preparation, site grading, paving, building construction, and architectural coating. $MTCO_2e$ emissions during construction of the project are presented in Table 3.7-1.

Table 3.7-1: Construction Greenhouse Gas Emissions

Construction Year	$MTCO_2e$
2017	**187**
2018	**31**
Total	**218**
SMAQMD construction significance thresholds	1,100
Potential to exceed recommended thresholds	None
Source: SMAQMD 2015	

During the construction of the project, approximately 218 $MTCO_2e$ would be emitted. Estimated construction emissions would not exceed the SMAQMD district recommended significance thresholds; therefore, impacts would be considered less than significant.

Operational Emission Inventory

Operational or long-term emissions occur over the life of the project. The operational emissions for the project are shown in Table 3.7-2. Sources for operational emissions include:

- Motor Vehicles: These emissions refer to greenhouse gas emissions contained in the exhaust from the cars and trucks that would travel to and from the project site.
- Natural Gas: These emissions refer to the greenhouse gas emissions that occur when natural gas is burned on the project site. Natural gas uses include heating water, space heating, dryers, stoves, or other uses.
- Indirect Electricity: These emissions refer to those generated by offsite power plants to supply electricity required for the project.
- Water Transport: These emissions refer to those generated by the electricity required to transport and treat the water to be used on the project site.

- Waste: These emissions refer to the greenhouse gas emissions produced by decomposing waste generated by the project. These include: waste removed from car interior during the cleaning process; waste generated in the restrooms; and/or waste generated from the operations of the facility.

The CalEEMod default assumptions were used for each of these sources of emissions. The operational emissions are shown in Table 3.7-2.

Table 3.7-2: Proposed Project Operational Greenhouse Gas Emissions

Source Category	MTCO2e
Area	50
Energy Consumption	59
Mobile	250
Solid Waste Generation	8
Water Usage	7
Total	**374**
SMAQMD Operational Thresholds	*1,100*
Potential to exceed recommend thresholds	None

As shown in Table 3.7-2, operation of the project would produce approximately 374 $MTCO_2e$ per year. Thus, the SMAQMD significance threshold of 1,100 $MTCO_2e$ per year is not exceeded. Accordingly, this impact would be less than significant.

In order to compare the proposed project with the previously contemplated commercial use of the site and the development of the other 2.0 acre commercial site as residential, two CalEEMod scenarios were run using the development potential for the sites as commercial uses and as 26 residential homes. (Ashton Place Unit 3's 15 homes and development of the 2.0 acre site at a density of 8.3 dwelling units per acre). Table 3.7-3 shows that the proposed project would generate fewer GHGs.

Table 3.7-3: GHG Emissions Comparisons between Residential and Commercial Use

Scenario	MTCO2e (Annual)	Annual VMT
Commercial Use (43,516 sf)	1,465	2,719,608
Residential Homes (32 du)	690	1,118,317
Increase or decrease as a result of the project	Decrease	Decrease
Cumulative change as a result of proposed project	Increase[1]	Increase[1]
Note:		

Scenario	MTCO2e (Annual)	Annual VMT
[1] The proposed project itself would not increase GHG emissions from baseline conditions (i.e. existing condition) does not include a commercial use; therefore, there is no potential for an emissions, but the removal of commercial uses from the South Town area would reduce the City's ability to reduce future emissions in the cumulative context. This cumulative increase would not alter the conclusions of the Southtown Project EIR, or result in a new impact because the original Southtown Project did not utilize local-serving retail as a mechanism for achieving vehicle trip reductions and thus VMT and emission reductions. The emissions estimates presented in the Southtown Project EIR would not be increased through the removal of the commercial use of the site.		

As shown in Table 3.3-3, the proposed project would generate fewer GHGs as a residential project compared to a commercial use. The project would change the commercial land use designation and remove the potential for the City to decrease VMT and GHG emissions in the future cumulative context, however, the project individually would not not alter the conclusions of the Southtown Project EIR, or result in a new impact exceeding a GHG threshold. Because the original Southtown Project EIR did not utilize local-serving retail as a mechanism for achieving vehicle trip reductions and thus VMT and emission reductions, the emissions estimates presented in the Southtown EIR would not be increased through the removal of the commercial use of the site. The impact would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact Analysis

The City of Vacaville has adopted its ECAS with the goal of reducing GHG emissions from communitywide and municipal sources. The ECAS is to be utilized for tiering and streamlining future development within Vacaville, pursuant to CEQA Guideline Sections 15152 and 15183.5.

The City of Vacaville established a GHG reduction target of 21.7 percent below Vacaville's 2020 BAU forecast. As discussed in the ECAS, in order to achieve the target of reducing 2020 BAU emissions by 21.7 percent, 2020 BAU GHG emissions in Vacaville must be reduced by 260,988 $MTCO_2e$ to achieve no more than 941,722 $MTCO_2e$ in total emissions in 2020. Federal and State regulations regarding fuel standards, renewable energy generation, energy conservation, and

green building materials will substantially reduce GHG emissions in Vacaville, regardless of actions by the City. After taking those reductions into account in the 2020 adjusted forecast, the 2020 emissions in Vacaville would be 940,780 $MTCO_2e$, just below the 941,722 $MTCO_2e$. As such, the federal and State regulations alone would achieve the City's GHG emissions reduction target. However, the City has identified additional measures to implement at the local level in order to further reduce GHG emissions in Vacaville and provide flexibility and assurances that the reduction target will be achieved. The City's measures are divided into nine sectors:

1. Transportation and Land Use
2. Green Building
3. Renewable Energy and Low Carbon Fuels
4. Energy Conservation
5. Water and Wastewater
6. Solid Waste
7. Parks, Open Space, and Agriculture,
8. Purchasing
9. Community Action

In order to demonstrate that an individual development project complies with the ECAS, the City developed a New Development Workbook to assist in the review process. Table 3.7-4 shows the project's compliance with applicable measures from the ECAS New Development Workbook.

Table 3.7-4: Proposed Project ECAS Compliance Determination

ECAS Reduction Measure #	ECAS Measure Description	Compliance Determination (Yes, No, Not Applicable)
Transportation and Land Use Measures		
LU-1	Encourage all new residential, commercial, and public buildings and places of assembly to include a principal functional entry that faces a public space such as a street, square, park, paseo, or plaza, in addition to any entrance from a parking lot. For other, less public buildings such as warehouses, manufacturing, and storage buildings, encourage entries to ancillary office, break room, or staff uses to face a public space.	Yes. The proposed project has been designed to maximize the use of the project site by creating a residential neighborhood complete with pedestrian-friendly walkways and direct access to an existing park.
LU-2	Require that new neighborhoods be based on traditional residential development patterns (i.e. interconnected streets or grid pattern) in a variety of densities with a pedestrian-friendly network of streets and parks, unless prohibited by topographical conditions or other site-specific constraints.	Yes. The project provides medium density housing opportunities with an interconnected street pattern and provides a pedestrian friendly neighborhood with rear entry garages.
LU-4	Require adequate pedestrian access to or through all new commercial, residential, and mixed-used development. New pedestrian infrastructure shall incorporate amenities such as trees to shade sidewalks, lighting, benches, signage, and pedestrian signalization at major transportation points to increase pedestrian convenience, comfort, and safety.	Yes, and No. The proposed project has been designed to maximize the use of the project site by creating a residential neighborhood complete with landscaping, pedestrian-friendly walkways, and street trees.

ECAS Reduction Measure #	ECAS Measure Description	Compliance Determination (Yes, No, Not Applicable)
		But, removes the close proximity of neighborhood commercial uses, therefore requires more driving.
LU-6	Encourage street and house orientation in new neighborhoods and roof types that maximize the south-facing exposure of new homes, unless prohibited by topographical conditions or other site-specific conditions.	Yes. The development provides for south facing exposure of new homes.
LU-8	Discourage density reductions on infill sites within 1/4 mile of retail and employment centers and transit routes.	Not Applicable. The proposed project does not include a density reduction. The project proposes medium density housing.
LU-9	Require development on infill sites within 1/4 mile of retail and employment centers, transit routes, and recreation areas to provide pedestrian and bicycle connections to those destinations.	Not Applicable. Future residents will be able to utilize existing sidewalks constructed in compliance with City requirements in this area. Future residents will also be near an existing Class II bikeway on Vanden Road.
TR-3	Revisit off-street parking ordinances to encourage shared parking and parking maximums. Reduce required parking as incentive for infill development and the installation of bikeways and bicycle parking.	Not applicable. This is a city-wide measure. The proposed project includes four parking stalls per dwelling unit in keeping with the parking standard for single-family homes on a private street. The proposed project provides 60 parking stalls (30 garage spaces along with 30 additional onsite spaces) for the 15 units. This provides a ratio of 4.0 parking stalls per unit, as required.
TR-11	Require the provision of secure bike parking, protected from the elements, for multi-unit residential developments that lack individual garages.	Not applicable. The proposed project is a single-family development.
TR-12	Require developments requiring specific plans to provide land for multi-use trails that connect to existing or future bikeways, according to the adopted bikeway plan.	Not applicable. The proposed project is not a specific plan.
Renewable Energy and Low Carbon Fuels		
RE-2	Encourage residential projects of ten units or more to participate in the California Energy Commission's New Solar Home Partnership, which provides rebates to developers of six units or more who offer solar power in 50 percent of new units, or similar programs with equal or greater requirements.	Not applicable. This is a city-wide measure. And this is at developer discretion.
RE-5	Require that new buildings be constructed to allow for easy, cost-effective installation of future solar energy	Yes. The single-family homes will be developed in accordance

ECAS Reduction Measure #	ECAS Measure Description	Compliance Determination (Yes, No, Not Applicable)
	systems, unless prohibited by topographical conditions or other site-specific constraints	with California Building Standards requiring solar-ready roofs.
RE-6	Encourage the installation of solar photovoltaic arrays in new parking lots and replacement in existing parking lots.	Not applicable. The parking lot would be a shared lot without the ability to designate the generated energy to a single-user.
Water and Wastewater		
WW-1	Sub A. Support conservation measures outlined in the City's Urban Water Management Plan. For all new development, require all water use and efficiency measures to comply with City Codes.	Yes. The proposed project would comply with applicable City codes.
Energy Conservation		
EC-1	Mandate the use of energy-efficient appliances in new development that meet Energy Star standards and the use of energy-efficient lighting technologies that meet or exceed Title 24 standards.	Yes. The proposed project would include energy-efficient appliances and would be required to meet the most current Title 24 requirements at time of construction.
EC-3	Require all new development and major rehabilitation projects to incorporate strategies to reduce heat gain for 50 percent of the non-roof impervious site landscape including roads, sidewalks and parking lots.	Yes. MM GHG-1 would require the project to incorporate strategies such as providing shade within five years of occupancy, using paving materials with a Solar Reflective Index (SRI) of at least 29, using an open grid pavement system, incorporating parking under a roof, and requiring any roof used to shade or cover parking to have an SRI of at least 29. SRI is defined as a measure of the roof's ability to reject solar heat, as shown by a small temperature rise.
EC-4	Require street lights with LED, induction, or other energy efficient lighting in new development.	Yes. The proposed project would comply with City standards for LED street lights.
Solid Waste		
SW-1	Sub A. Continue to require at least 50 percent diversion of non-hazardous construction waste from disposal, consistent with CalGreen. Sub B. Require all new and existing multi-family developments that are redeveloping or remodeling to provide recycling areas for their residents. Allow a reduction in the parking requirement of necessary to allow adequate space for the recycling area.	Yes. The proposed project would comply with City requirements for the diversion of non-hazardous construction waste. Not applicable.

ECAS Reduction Measure #	ECAS Measure Description	Compliance Determination (Yes, No, Not Applicable)
Green Building		
GB-1	Allow greater permitting-related development flexibility and other incentives for LEED-Silver, Built It Green, Green Point or equivalent rating; for example, by giving green projects priority in plan review, and field inspection services.	Not applicable. The proposed project is not proposed as a "Green" project.
GB-2	Require measures that reduce energy use through solar orientation by taking advantage of shade, prevailing winds, landscaping, and sun screens, unless prohibited by topographical conditions or other site-specific constraints.	Yes. The proposed project takes into account solar orientation and provides landscaping to reduce energy use.
GB-5	Develop a "heat island" mitigation plan that includes guidelines for cool roofs, cool pavements, and strategically placed shade trees.	Not applicable. This is a City-wide measure, however, the proposed project will comply with Southtown Project EIR mitigation measures requiring the use of reflective roofing materials, such as EPA Energy Star roofing materials. Additionally, the proposed project will comply with the City's land use code to reduce heat gain through the use of paving materials with a Solar Reflective Index of at least 29. The proposed project also includes landscaping and shade trees.
Source of Measures: City of Vacaville ECAS 2015. Source of Compliance Determination: Stantec, 2016.		

The proposed project would be subject to Title 24 energy efficiency standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions. The project will comply with the California Green Building Standards Code, which includes requirements to increase recycling, reduce waste, reduce water use, increase bicycle use, and other measures that will reduce greenhouse gas emissions. Motor vehicle emissions associated with the project would be reduced through compliance with state regulations on fuel efficiency and fuel carbon content. The regulations include the Pavley fuel efficiency standards that require manufacturers to meet increasing stringent fuel mileage rates for vehicles sold in California and the Low Carbon Fuel Standard that requires reductions in the average carbon content of motor vehicle fuels. Emissions related to electricity consumption by the project would be reduced as the electric utility complies with the Renewable Portfolio Standard, which requires utilities to increase its mix of renewable energy sources to 33 percent by 2020. As discussed in the Scoping Plan Update prepared by CARB in 2015, California is on track to meet the 2020 goal of reducing GHG emissions back to 1990 levels by 2020 with GHG reduction measures implemented by the State. The ECAS acknowledges that federal and State regulations alone would achieve the City's GHG

emissions reduction target. Nevertheless, the City has identified additional measures to implement at the local level in order to further reduce GHG emissions in Vacaville. The project has complied with applicable local measures.

In summary, although the proposed project would generate temporary GHG emissions during construction and increased GHG emissions during operation when compared to existing conditions, as discussed in Impact GHG-1, emissions from the project would not exceed the SMAQMD significance thresholds nor would they exceed BAAQMD thresholds. The proposed project is located within the Sacramento region and the SMAQMD has established recommended thresholds to ensure at least 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to GHG emissions reduction goals of AB 32 and the Scoping Plan. Additionally, as shown in Table 3.7-3, the proposed project would be in compliance with applicable ECAS measures through the incorporation of features that minimize GHG emissions. These mitigation measures and features are consistent with project-level strategies identified in the ECAS and the CARB's Scoping Plan. As such, the proposed project would not conflict with an applicable plan; therefore, impacts would be considered less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GHG-1: Prior to construction, the project plans shall demonstrate that the project incorporates strategies such as providing shade of sidewalks, paved areas, and common areas within five years of occupancy, using paving materials with a Solar Reflective Index (SRI) of at least 29, using an open grid pavement system, incorporating parking under a roof, and requiring any roof used to shade or cover parking to have an SRI of at least 29 in order to minimize heat gain.

MM GHG-2: Prior to construction, the project applicant shall demonstrate that the homes would be constructed with solar ready roofs in accordance with California Green Building Standards.

MM GHG-3: Prior to occupancy, the project applicant shall demonstrate that the residences are equipped with energy-efficient appliances that meet Energy Star standards and with energy-efficient lighting technologies that meet or exceed Title 24 standards.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

3.8 HAZARDS AND HAZARDOUS MATERIALS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely-hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to *Government Code Section 65962.5* and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

3.8.1 Environmental Setting

Hazardous materials, as defined by the California Code of Regulations (CCR), are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are grouped into the following four categories, based on their properties:

- Toxic – Causes Human Health Effects
- Ignitable – Has the Ability to Burn
- Corrosive – Causes Severe Burns or Damage to Materials
- Reactive – Causes Explosions or Generates Toxic Gases

Hazardous waste is any hazardous material that is discarded, abandoned, or slated to be recycled. The criteria that define a material as hazardous also define a waste as hazardous. If improperly handled, hazardous materials and hazardous waste can result in public health hazards if released into the soil or groundwater or through airborne releases in vapors, fumes, or dust. Soil and groundwater having concentrations of hazardous constituents higher than specific regulatory levels must be handled and disposed of as hazardous waste when excavated or pumped from an aquifer. The California Government Code, Title 22, Sections 66261.20–24 contains technical descriptions of toxic characteristics that could cause soil or groundwater to be classified as hazardous waste.

California Government Code, Section 65962.5 requires the California Environmental Protection Agency (Cal EPA) to compile, maintain, and update specified lists of hazardous material release sites. The CEQA (California Public Resources Code, Section 21092.6) requires the Lead Agency to consult the lists compiled pursuant to California Government Code, Section 65962.5 to determine whether the proposed project and any alternatives are identified on a federal or State listing database. The required lists of hazardous material release sites are commonly referred to as the "Cortese List" after the legislator who authorized the legislation. Since the statute was enacted more than 20 years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases; the information required in the Cortese List does not exist. Those requesting a copy of the

Cortese List are now referred directly to the appropriate information resources contained on internet websites hosted by the boards or departments referenced in the statute, including the online EnviroStor database from the Department of Toxic Substances Control (DTSC) and the online GeoTracker database offered by the State Water Resources Control Board (SWRCB). These two databases include hazardous material release sites, along with other categories of sites or facilities specific to each agency's jurisdiction.

Federal regulations and regulations adopted by the YSAQMD apply to the identification and treatment of hazardous materials during demolition and construction activities. Failure to comply with the regulations respecting asbestos and dust control may result in a Notice of Violation being issued by the YSAQMD (YSAQMD 2015), civil penalties under State and/or federal law, and possible action by the EPA under federal law. Federal law covers a number of different activities involving asbestos, including demolition and renovation of structures (40 CFR § 61.145). The California Department of Conservation (CDC) and California and US Geologic Surveys (CGS, USGS) map naturally-occurring asbestos (NOA) areas throughout the State of California for research purposes.

The undeveloped project site is bordered to the north by residential developments; to the south by Cogburn Circle, beyond which lies VFD Station 75 and Magnolia Park; to the west by Vega Way, beyond which lies residential developments; and to the east by Vanden Road, beyond which lies undeveloped land. The project site is not included on a list of hazardous materials sites compiled pursuant to California Government Code, Section 65962.5 and the project site is not known or expected to contain any existing contaminated soils. A search of EnviroStor, GeoTracker and NOA maps in September 2016 revealed no listings within the project site, (CDC 2011; CGS 2011; USGS 2011). The project site is void of development, eliminating the possibility of structural asbestos onsite.

The nearest public airports to the project site are the Nut Tree Airport and the Travis Air Force Base Airport, located approximately 3.5 miles northwest and approximately 3.8 miles south from the project site, respectively. There is one private airport, Vaca Valley Hospital Heliport, located approximately 2.02 miles northwest of the project site (Tollfree 2015). The project site falls outside the Area of Influence of the Nut Tree Airport as defined in the Nut Tree Airport Land Use Compatibility Plan and presented in the City's General Plan (Solano County 1988). The project site is located within land use Zone D of the Travis Air Force Base Land Use Compatibility Plan (Solano County 2002). Zone D includes all locations beneath any of the Travis Air Force Base airspace protection surfaces delineated in accordance with Federal Aviation Regulations Part 77. Compatibility Zone D does not place any restrictions on the types of land uses allowed, with the exception of land uses that could cause hazard to flight, such as physical, visual, and electric forms of interference and land uses that attract birds. Any object over 200 feet tall requires airspace review. Though the project site is located beyond the Area of Influence of the Nut Tree Airport, it is located within land use Zone D of the Travis Air Force Base Airport; thus, the proposed project would be subject to a determination of consistency from the Solano County Airport Land Use Commission (ALUC) to ensure the proposed project is compatible with the ALUC Plan, in accordance with California State Public Utility Code, Section 21670 et seq. (Solano County 1988). The Solano County ALUC guides airport development in the County and governs the area surrounding airports to prevent issues relating to noise and safety.

There are no wildlands located within the City. CAL FIRE evaluates fire hazard severity risks according to areas of responsibility (i.e., federal, State, and local). According to CAL FIRE, there are no very high fire hazard severity zones within the Local Responsibility Area on or near proximity to the proposed project. Likewise, there are no moderate, high, or very high fire hazard severity zones in the State Responsibility Areas located in the vicinity of the proposed project (CAL FIRE 2007).

3.8.2 Methodology

This analysis considers the range and nature of foreseeable hazardous materials use, storage, and disposal resulting from the proposed project and identifies the primary ways that these hazardous materials could expose individuals or the environment to health and safety risks. Local and State agencies would be expected to continue to enforce applicable requirements to the extent that they do so now.

The following reports documenting potential hazardous conditions at the project site were reviewed for this analysis: preliminary site plan for the proposed project; available literature, including documents published by federal, State, and local agencies; applicable chapters from the General Plan, General Plan EIR, the Southtown Project EIR; and Section 2.0, Project Description. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental impacts. In determining the level of significance, the analysis assumes that development of the project site would comply with relevant federal, State, and local ordinances and regulations.

3.8.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact HAZ-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact Analysis

The project site is currently zoned CN which allows for uses which generally provide goods and services in small retail centers intended to accommodate a neighborhood area. Permitted uses under CN zoning include such uses as food stores and restaurants and conditional uses including convenience markets and service stations. Solano County has prepared and adopted a Hazardous Materials Business Plan (HMBP) Program for all waste projected to be generated in the County. State law requires all businesses to prepare an inventory of hazardous materials they use and store. The Solano County Department of Environmental Management (SCDEM) is the State Certified Unified Program Agency (CUPA) for Solano County. As the Solano County CUPA, SCDEM oversees the HMBP Program, inspects businesses, and enforces State requirements for hazardous materials usage and storage. A HMBP is required for any site that handles any individual hazardous material or mixture in excess of any of the following quantities: 55 gallons (liquid); 500 pounds (solid); or 200 cubic feet (gases). Commercial uses on the project site would

have a higher likelihood to routinely transport, use, or dispose of hazardous materials than residential uses on the project site.

The proposed project consists of the development of the 1.76 undeveloped project site as a 15 lot single-family subdivision. Residential uses would not involve the regular use, storage, transport, or disposal of significant amounts of hazardous materials. Construction of the proposed project would involve the minor routine transport and handling of hazardous substances such as diesel fuels, lubricants, solvents, asphalt, paints, building materials, finishing materials, pesticides, and fertilizers. Handling and transportation of these materials could result in the exposure of workers to hazardous materials. However, the proposed project would not create a significant hazard to the public or the environment, because project construction and operation would be in compliance with applicable federal, State, and local laws pertaining to the safe handling and transport of hazardous materials. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Impact Analysis

A search of EnviroStor, Geotracker, and NOA maps in September 2016 revealed no listings within the project site; the potential for NOA due to geologic fault lines in the City is confined to rifts located remotely from the proposed project, to the southwest (CDC 2013; CGS 2010; USGS 2011). The project site is void of development, eliminating the possibility of structural asbestos onsite.

As previously noted in Impact HAZ-1, the proposed project would involve the minor use of hazardous materials, including fuels, lubricants, solvents, paint, finishing materials, pesticides, and fertilizers. The use of these substances is not expected to create a significant hazard to the public or the environment through reasonably foreseeable upset or accident. Furthermore, all project construction and operation activities would be in compliance with applicable federal, State, and local laws pertaining to the safe handling and transport of hazardous materials. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-3 Emit hazardous emissions or handle hazardous or acutely-hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact Analysis

There are no schools within 0.25 mile of the project site. Additionally, the proposed project would not involve the use of significant quantities of hazardous materials, and therefore would not have the potential to expose any school to such substances. No impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HAZ-4 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Impact Analysis

Pursuant to CEQA, the California DTSC maintains a Hazardous Waste and Substances Sites List (Cortese List). As part of the Cortese List, DTSC also tracks "Calsites," which are mitigation or brownfield sites (previously used for industrial purposes) that are not currently being worked on by DTSC. Before placing a site on the backlog, DTSC ensures that all necessary actions have been taken to protect the public and environment from any immediate hazard posed by the site. The proposed project is not included in the DTSC Cortese List and according to the State Water Resources Control Board "Geotracker," an online hazardous materials database, the project site is not listed as a hazardous materials site. No commercial or industrial land use activities have occurred previously onsite. As such, no impacts would occur.

Level of Significance before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance after Mitigation

No Impact.

Impact HAZ-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Impact Analysis

The proposed project is not within two miles of a public airport. The closest public airport, Nut Tree Airport, is located approximately 3.5 miles to the northwest of the proposed project, and does not encompass the project site in its airport influence area, as shown in the relative Nut Tree Airport Land Use Compatibility Plan (Solano County 1988). Travis Air Force Base Airport is located 3.8 miles southeast of the project site. The project site is within land use Zone D of the Travis Air Force Base Land Use Compatibility Plan (Solano County 2002). Limitations on the height of structures are the only compatibility factors within this zone. As the proposed homes will be 23 feet to 25 feet tall, the proposed project is anticipated to comply with the Travis Air Force Base Land Use Compatibility Plan.

Though the project site is located beyond the Area of Influence of the Nut Tree Airport, it is located within land use zone D for the Travis Air Force Base Airport; thus, the proposed project would be subject to a determination of consistency from the Solano County ALUC to ensure the proposed project is compatible with the ALUC Plan, in accordance with California State Public Utility Code, Section 21670 et seq. (Solano County 1988). For the reasons outlined above, the proposed project is anticipated to be consistent with the Solano County ALUC.

Although the proposed project is located within an airport land use plan, the proposed project is not anticipated to result in a safety hazard for people residing or working in the project area due to the proposed homes ranging from 23 feet to 25 feet. Therefore, the proposed project would result in a less than significant impact.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-6 For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Impact Analysis

A private airstrip occurs within the vicinity of the proposed project. There is one private airport, Vaca Valley Hospital Heliport, located approximately 2.02 miles northwest of the project site (Tollfree 2015). The proposed project would not include any improvement that would occur at a height that could potentially interfere with air traffic patterns. Therefore, no impacts associated with private airstrip hazards would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HAZ-7 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact Analysis

The VFD Station 75 is located directly south of the project site, on Cogburn Circle. The VFD considers its service levels adequate for existing developments and response areas; the proposed project would not alter or interfere with the provision of emergency services or existing evacuation plans to these existing developments and response areas. The proposed project would not result in the blocking or changing of any roadways. As such, the proposed project would have a less than significant impact to emergency service plans and no mitigation would be required.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-8 Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Impact Analysis

There are no wildlands within the City. According to the Solano County Fire Hazard Severity Zone Maps of State and Local Responsibility Areas, the proposed project is located in an Unzoned Area, indicating no moderate, high, or very high fire hazard severity surrounds the proposed project or vicinity of the proposed project (CAL FIRE 2007). The proposed project is located in a residential area and is surrounded by residential and community development and infrastructure. These land use types are not associated with wildland fires and preclude the possibility of exposure thereof. Therefore, impacts from wildland fires would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.9 HYDROLOGY AND WATER QUALITY

	Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☒	☐	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐

	Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j)	Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.9.1 Environmental Setting

The following paragraphs describe the hydrologic and water quality setting within the City of Vacaville.

Climate and Precipitation

Vacaville's climatic conditions are consistent with the temperate conditions that dominate the Sacramento Valley. The summers are hot and dry, and the winters cool and moist. Average monthly temperatures range from lows in the 40s and highs in the 50s during the winter months, to lows in the 60s and highs in the 100s during the summer months. The predominant rainfall season is from November through April, with the heaviest storms occurring from December through February. Spatial rainfall distribution over the Vacaville area consists of higher intensities and volumes in the upper elevations of the western portion of the Ulatis Creek watershed and lower intensities and volumes to the east. Mean annual precipitation varies from 45 inches at the ridgeline of the Vaca Mountains to 23 inches in the flat southeastern portion of the watershed near Elmira.

Topography

Topography of most of the city is relatively flat. The relief of the project site is less than four feet, ranging from approximately 90 feet to 94 feet. The United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) Web Soil Survey classifies the project site with a NRCS Hydraulic Soil Group "C" designation, which has a low permeability and moderately high runoff rate (USDA 2016).

Watershed and Regional Drainage

A watershed is the geographic area draining into a river system, ocean, or other body of water through a single outlet and includes the receiving waters. The City of Vacaville contains four watershed areas, being the Alamo Creek, Ulatis Creek, Horse Creek, and Gibson Canyon Creek watersheds, all of which are part of the larger, 150-square mile Ulatis Creek watershed. The Southtown Project Area is located in the Alamo Creek watershed because the area is located immediately south of the realigned Alamo Creek. According to the Southtown Project EIR, surface runoff within the project site drains into the Brazelton Drain, located south of the project site and immediately south of the Southtown Project Area. The Brazelton Drain drains in a southeastern direction discharging into Barker Slough and ultimately into the Sacramento River. The major stream courses in the City include the following: Alamo Creek, including tributaries Laguna Creek and Encinosa Creek; Ulatis Creek; Horse Creek, including its tributary Pine Tree Creek; and Gibson Canyon Creek.

Onsite Drainage

The project site is located in the southeast part of the City and is served by the City's storm drain system, maintained by the City. Proposed stormwater runoff from the project site would be directed to proposed area drains. These area drains would be connected to two12 inch and one 10 inch proposed onsite storm drain lines with laterals to area lines. The three onsite storm drain lines would then connect to the existing 18 inch public storm drain line located on the north side of Cogburn Circle. The stormwater would then be conveyed through existing public storm drain lines to the existing detention basin on the east side of Leisure Town Road. The proposed project would be served with drainage service by the City of Vacaville.

Groundwater

The City owns and operates twelve permitted municipal groundwater wells with very high quality groundwater, drawing water from the deep aquifer in the basal zone of the Tehama Formation. Most City wells are located in the Elmira well field with new wells being sited further north, near Interstate-80. As documented in groundwater monitoring reports for various sites on GeoTracker in the regional vicinity of the project site, approximate depth to groundwater in the area has been encountered at depths varying from 16 to 23 feet below ground surface (bgs) (GeoTracker 2016).

Water Quality

Under Section 303(d) of the 1972 Clean Water Act, States, territories, and authorized tribes are required to develop a list of waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water on the lists and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality. According to the 2006 list, Alamo Creek, Brazelton Drain, and Barker Slough are not listed under the Clean Water Act 303(d).

Flooding

Flood hazard zones are areas subject to flood hazards that are identified on an official Flood Insurance Rate Map (FIRM), issued by the Federal Emergency Management Agency (FEMA). Flooding can be earthquake induced or the result of intense rainfall. Areas within a 100-year floodplain have a one percent probability of flooding in a given year. The project site is located within a 100-year Zone X floodplain, as defined by FEMA, and depicted on FIRM #06095C0279E. FEMA defines Zone X floodplain as "areas of 0.2 percent annual chance flood; areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from one percent annual chance flood."

The California Office of Emergency Services has compiled inundation maps for most dams, showing areas within the potential dam failure inundation zone. According to the General Plan, the northeastern portion of the City is subject to potential dam inundation by the Monticello Dam. Constructed between 1953 and 1957 in Napa County, the Monticello Dam forms Lake Berryessa, which stores over 1.6 million acre-feet of water when full. The project site is located over five miles southwest of the boundary of the potential Monticello Dam inundation area, and therefore is not considered to be at risk from dam flooding.

The California Department of Water Resources (DWR) has an Awareness Floodplain Mapping program to identify pertinent flood areas not mapped under the FEMA National Flood Insurance Program with the intent of identifying all pertinent flood hazard areas by 2015. The State has deemed the areas mapped as prone to flooding. The designation is advisory only and not subject to federal or State regulations. The project site is not located within an awareness floodplain area and therefore, is not considered to be at risk from flooding.

The project site and the City are more than 10 miles away from Suisin Bay, the nearest large body of water, and is therefore is not at risk of tsunamis.

Seiches are waves that oscillate in landlocked water bodies, such as reservoirs, lakes, ponds, swimming pools. There no major landlocked bodies of water within the City or nearby, therefore, the project site is not at risk from seiches.

3.9.2 Methodology

Evaluation of potential hydrologic and water quality impacts was based on a review of FEMA Flood Insurance Rate Maps of the project site, General Plan, General Plan EIR, Southtown Project EIR, and the ECAS. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, State, and local ordinances and regulations.

3.9.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact HYD-1 Violate any water quality standards or waste discharge requirements?

Impact Analysis

Development of the proposed project would result in the conversion of approximately 0.40 acres of undeveloped, permeable land, resulting in a largely impervious surface with the potential to result in an increased volume and velocity of surface water runoff.

Construction Impacts

Construction activities could result in the degradation of water quality, releasing sediment, oil and greases, and other chemicals to nearby water bodies. Construction materials such as fuels, solvents, and paints may present a risk to surface water quality. Refueling and parking of construction vehicles and other equipment onsite during construction may result in oil, grease, or related pollutant leaks and spills that may discharge into the storm drain system.

To minimize these potential impacts, the proposed project would be required to comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit (GCP), as well as prepare a Storm Water Pollution Prevention Plan (SWPPP) that requires the incorporation of Best Management Practices (BMPs) set forth by the City's Stormwater Management Plan to control sedimentation, erosion, and hazardous materials contamination of runoff during construction. The SWRCB mandates that projects that disturb one or more acres must obtain coverage under the Statewide GCP. Since the proposed project would involve development of 1.76 acres, it would be subject to these requirements. The GCP also requires that prior to the start of construction activities the Applicant must file Permit Registration Documents (PRDs) with the SWRCB, which includes a Notice of Intent (NOI), risk assessment, site map, annual fee, signed certification statement, SWPPP, and post-construction water balance calculations.

In addition, the proposed project must comply with the City's Grading, Erosion, and Sediment Control Ordinance. A Stormwater Control Plan and Grading Plan would be prepared and submitted to the City for review and approval, which would satisfy all City requirements and meet or exceed all requirements in order to reduce impacts from impervious surfaces. Furthermore, the selection, sizing, and preliminary design of stormwater treatment, and other control measures would be required to comply with the requirements of the Regional Water Quality Control Board (RWQCB) Order R2-2009-0074 and Order R2-2011-0083.

Therefore, implementation of Mitigation Measure HYD-1 would reduce the temporary, short-term construction-related drainage and water quality impacts to a less than significant level.

Operational Impacts

Runoff from residential developments typically contain oils, grease, fuel, byproducts of combustion (such as lead, cadmium, nickel, and other metals), roofing, gutter, and trim runoff, as well as fertilizers, herbicides, pesticides, and other pollutants associated with landscaping.

In order to control runoff from roofs, asphalt pavement, concrete curbs, sidewalks, patios and driveways, integrated management practices (IMPs) would be implemented. The proposed project would implement BMPs to provide small-scale treatment, retention, and/or detention is

integrated into site layout, landscaping, and drainage design. Additionally, Section DS 4-13 of the City's Storm Drain Design Standards provides requirements for water quality control. This section requires that storm drain system improvements be designed to prevent any net detrimental change in runoff quality resulting from new development and requires that BMPs be implemented with development projects. Due to the size of the proposed project, the project site would require treatment and source control measures as well as hydrologic modification. Surface flows would be graded to the onsite storm drains which connect to the onsite storm drain lines, and then discharged to the City maintained storm drain system located within Cogburn Circle and then Vanden Road.

With the implementation of the proposed site designs and BMPs the potential operational impact to water quality would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HYD-1: Prior to the issuance of any construction related permits, the City would prepare and submit an NOI to the State Water Board and prepare a SWPPP in compliance with the NPDES GCP requirements. The final drainage plan shall demonstrate the ability of the planned onsite storm drainage to adequately collect onsite stormwater flows in accordance with all applicable standards and requirements by: minimizing impervious surfaces, and directing flows to BMPs; integrating appropriately sized BMPs to minimize impact on local water quality by controlling runoff from erosion and potential contaminants; and incorporating dispersion of runoff in combination with site planning to meet Low Impact Development (LID) requirements.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Impact Analysis

New construction could result in impacts related to groundwater if areas currently available for the infiltration of rainfall runoff are reduced and permeable areas are replaced by impermeable surfaces. The proposed project would result in the development of 1.36 acres of impermeable surface consisting of 15 single-family detached residential units. The proposed project would provide permeable landscaped areas and open land in order for some groundwater recharge to continue.

According to the General Plan, the City's water supply comes from both surface water and groundwater, and is drawn from a variety of reserves. Therefore, the City would serve the project

site with potable water sourced from groundwater supplies. Water supply and water demand for the Southtown Project Area was previously evaluated under the Southtown Project EIR in 2003. Since the 2003 evaluation of the Southtown Project Area, the City's Urban Water Management Plan (UWMP) was updated in July 2015. The 2015 UWMP evaluates the past, current, and projected water use, along with water supply projections through 2040. According to the 2015 UWMP, future water supply will be adequate to offset future water demands during normal, single-dry, and multi-dry years (UWMP 2015).

The City's current water use is less than half of the City's total water allocation. Residential uses make up the vast majority of water use in the City (approximately 70 percent) (General Plan 2015). Based on the US Census Average Household Size estimate of 2.71 persons per household in the City, the proposed project would generate approximately 41 residents.. Therefore, the increased population of approximately 41 residents associated with the proposed project is not anticipated to be a substantial additional source to substantially deplete groundwater supplies, or substantially interfere with groundwater recharge. Impacts would be less than significant.

Level of Significance before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation necessary.

Level of Significance after Mitigation

Less Than Significant Impact.

Impact HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Impact Analysis

The proposed project does not involve alteration of any natural drainage channels or any watercourse. The proposed project would involve site improvements that would require grading and soil exposure during construction. If not controlled, the transport of these materials into local waterways could temporarily increase suspended sediment concentrations. In order to minimize such impacts, implementation of Mitigation Measure HYD-1 would control the treatment and flow of site drainage prior to discharge into the City storm drain system. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measures HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact with Mitigation.

Impact HYD-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Impact Analysis

The proposed project would result in the development of 15 single-family residential units on a 1.76 acre undeveloped lot. The proposed project would result in approximately 1.36 acres of impermeable surface, increasing stormwater runoff. The proposed project would implement Mitigation Measure HYD-1 for treatment and flow of site drainage prior to discharge into the City storm drain system. Treated runoff would be discharged from the BMPs to the existing storm drain on Cogburn Circle. No runoff would be directly discharged to the drainage systems outside of the project site. Therefore, with the implementation of Mitigation Measure HYD-1 and BMPs the proposed project would not substantially increase the rate or amount of surface runoff which would result in flooding on or off-site. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-5 Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Impact Analysis

As required by the City and County stormwater management guidelines, BMPs would be implemented across the project site, during both the construction and operational phases. These BMPs would control and prevent the release of sediment, debris, and other pollutants from entering the storm drain system.

As described in Impacts HYD-1, HYD-2, and HYD-3 above, construction generated runoff would be required to comply with all of the requirements in the State GCP, including preparation of PRDs and submittal of a SWPPP to the SWRCB prior to the start of construction activities. All operational project-generated runoff would be treated prior to discharge from the permanent

BMPs to the storm drain line on Cogburn Circle. No runoff would be directly discharged to the drainage systems outside of the project site.

As part of the Southtown Project EIR, stormwater drainage capacity was assessed. The project site is zoned for CN and originally intended for commercial use. The Applicant is requesting a zone change from CN to RM, and would develop 15 two-story detached residential units. Commercial projects typically result in a greater increase in impermeable surface area, compared to residential land uses, and as a result generate greater surface water runoff. The proposed project would not exceed the surface water runoff volumes previously considered in the Southtown Project EIR (pers. comms. Thomas Phillippi 2016).

The stormwater drainage facilities would be designed to meet all applicable requirements and performance standards as outlined in the City's Stormwater Management Plan. During the City's Design Review of the proposed project, the Applicant would submit Stormwater Drainage Plans for review prior to the issuance of building permits to ensure all storm drains are designed to meet the City's performance standards. In addition, the proposed project would comply with the requirements of the Regional Water Quality Control Board (RWQCB) Order R2-2009-0074 and Order R2-2011-0083.

As a result, with implementation of Mitigation Measure HYD-1 and BMPs, the proposed project is not anticipated to be a substantial additional source of polluted runoff. Therefore, impacts would be less than significant with mitigation.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-6 Otherwise substantially degrade water quality?

Impact Analysis

Implementation of BMPs during construction would be in accordance with the provisions of the SWPPP, as identified in Mitigation Measure HYD-1. Implementation of BMPs would minimize the release of sediment, soil, and other pollutants. Operational BMPs would be required to meet the standards set forth by the City's Stormwater Management Plan. The Applicant would be required to submit a SWPPP to the City for approval prior to the start of construction. These requirements include the incorporation of site design, source control, and treatment control measures to treat and control runoff before it enters the storm drain system. As such, with the implementation of Mitigation Measure HYD-1 the proposed project would not result in substantial degradation of water quality. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-7 Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Impact Analysis

FIRM Map #06095C0279E indicates that the project site is located in Zone X, which is defined as areas outside of a 100-year flood hazard zone. Alamo Creek is located approximately 0.5 mile north of the project site, and located within a 100-year floodplain. However, the floodplain is contained within the Realigned Alamo Creek channel and does not extend onto the project site. Therefore, the proposed project would not be placed within a 100-year flood zone and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Impact Analysis

The project site is located outside of an identified Flood Hazard Area (either a one percent or 0.2 percent annual chance for flooding), according to FIRM Map #06095C0279E prepared by FEMA. Alamo Creek is located approximately 0.5 mile north of the project site, and located within a 100-year floodplain. However, the floodplain is contained within the Realigned Alamo Creek channel and does not extend onto the project site. As a result, although the proposed project would include 15 residential units, these improvements would not impede or redirect flood flows. Therefore, no impacts associated with placing structures within a 100-year flood hazard area would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-9 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Impact Analysis

The northeastern portion of the City is subject to potential dam inundation by the Monticello Dam. The project site is located over five miles southwest of the boundary of the potential Monticello Dam inundation area as shown in the General Plan and therefore, would not be subject to flooding as a result of failure of a dam. The project site is located outside of a 100-year floodplain, as defined by FEMA and depicted on the FIRM Map #06095C0279E. Therefore, no impacts associated with flooding would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-10 Inundation of seiche, tsunami, or mudflow?

Impact Analysis

The project site, primarily because of its location and topographical characteristics, would not be susceptible to seiche, tsunami, or mudflow. Seiche effects locations adjacent to larger water bodies such as lakes or reservoirs; the project site is not located near any such water body. The project site is located over 45 miles from the Pacific Ocean, and over 10 miles from Suisin Bay, which substantially reduces the potential for impacts from tsunami. In addition, based upon the gently sloping topography of the project site, as well as the lack of adjacent hillsides and embankments, the potential for mudflow on the project site would also be greatly minimized. Therefore, no impacts associated with seiche, tsunami, or mudflow would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation necessary.

Level of Significance After Mitigation

No Impact.

3.10 LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐
c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?	☐	☐	☒	☐

3.10.1 Environmental Setting

Land Use

The proposed project is located in the Southtown Area in southeast Vacaville. The project site is located in a suburban residential community on the northwest corner of the intersection of Vanden Road and Cogburn Circle. With the exception of a temporary trailer, masonry walls, and a power pole, there are no other existing structures on the project site. The project site is a relatively flat undeveloped lot, with a gentle upslope gradient trending toward the eastern portion of the project site. Most of the project site consists of non-native vegetation, grasses, and low-lying plants within the masonry walls that have been maintained for weed abatement. In addition, ornamental trees and low-lying plants have been planted along the public streets within the public right of way on the east, south, and west potions of the project site. There is a six foot decorative masonry wall constructed along the north, east, and west property lines of the project site. The surrounding development is primarily residential with the exception of the project site and the parcel to the east, both designated for neighborhood commercial with requests to change to residential.

Surrounding Area

North
Single-family residences lie immediately north of the project site.

South
Cogburn Circle, a public residential collector street, forms the southern boundary of the project site and separates the project site from the VFD Station 75 and Magnolia Park

West
Vega Way, a public standard residential street, forms the western boundary of the project site with additional single-family residential homes.

East
Vanden Road, a two-lane collector street, forms the eastern boundary of the project site. Undeveloped land lies on the other side for approved commercial as part of Southtown Phase 3.

Land Use Designations

The City of Vacaville General Plan and Zoning Ordinance designate the project site as CN. The Solano County Water Association (SCWA) has prepared a draft Solano Multispecies HCP that covers the project site, but has not been adopted. The draft plan identifies the project site as Urban Zone.

3.10.2 Methodology

Evaluation of potential land use impacts are based on a review of documents pertaining to the proposed project, including the General Plan, the City's Municipal Code, and the Southtown Project EIR, and Section 2.0 - Project Description of this ISMND. In determining the level of significance, this analysis assumes that the proposed project would comply with relevant State and local ordinances and regulations, as well as the City's General Plan goals, policies, and actions.

3.10.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact LU-1 Physically divide an established community?

Impact Analysis

The proposed project consists of abandoning 0.43 acres of City Right of Way to add to an existing 1.33 acre parcel to create the 1.76 acre undeveloped project site, then subdividing and developing the site with 15 single-family residential units and one common parcel. Development of the proposed project would not create any new roadways that would divide existing or proposed communities. The project site is surrounded by three roadways that would connect the proposed project to adjacent neighborhoods thereby, becoming an extension of the existing residential developments surrounding the project site. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact LU-2	**Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

Impact Analysis

The proposed development of single-family detached homes on the site, requires a General Plan Amendment to re-designate the project site from CN to RMD in order to change the zoning from CN to RM. Additionally, a text amendment to General Plan Policy LU-P23.1 is necessary to be consistent with the General Plan. The following discussion evaluates the consistency with proposed amendments and land use compatibility.

General Plan Amendment

The proposed project conflicts with the current General Plan Land Use Designation of Commercial Neighborhood and is proposing to redesignate the project site to RMD. The RMD designation allows for multi-family and single-family housing with the base density of 8.1 units per gross acre, and the maximum potential density of 14.0 units per gross acre. The proposed project would develop 15 units on 1.76 acres resulting in a density of 8.52 units per gross acre, which is within the allowed density range. The proposed residences would be compatible with the surrounding land uses that include residential to the north and west, and a park and fire station to the south. The parcel east of the project site is currently zoned CN. A General Plan amendment application from CN to RMD is underway for this parcel. The parcel could be developed as intended with neighborhood commercial, or residential development if the City Council approves the project. The proposed project would be compatible with either of the land uses. A detailed policy consistency determination is provided in Table 3.10-1.

Zoning Amendment

Development of single-family detached homes in a RM Density district is a Conditional Use that requires a Planned Development (PD) Application for development standards. The proposed project would be subject to the development standards established in the City's municipal code, Residential Development Standards in the Land Use and Development Code (Code Standards) and the Residential Design Requirements for New Single-Family Development. Considering the small size of the parcel, the proposed project requests for deviations from the City's development standards for the RM zoning district with the PD.

The project requests deviations from minimum setbacks, site coverage, and exemption from 1-story home requirements set in the Code Standards for RM zoning district. The site plan includes

the dedication of existing landscaped portions of the public right-of-way along Cogburn Circle, Vega Way, and Vanden Road from the City to the Applicant, in order to provide some additional land for the project to use as onsite setback area. Table 3.10-1 discusses the proposed project's development standards and provides analysis for differing from the zoning standards for residential development.

Table 3.10-1: Municipal Code Requirements and Planned Development

Setback	Municipal Code Requirements (Conditional Use)	Planned Development	Consistency Analysis
Minimum Lot Size	12,000 square feet	57,934.8 square feet Request additional 18,730.8	Consistent. However, subdivided lots range from 1,736 sq. ft. to 2,254 sf. ft
Minimum Front Yard	20 feet	≥ 21.5 feet, with approval of ROW dedication	Privately owned lots do not include front yards. Request setbacks to be measured from the back of the curb to the foremost plane of the structure. Interior units measured by distance from eachother.
Side Yard	20 feet + 5 feet for each additional story	5 feet and 10 feet	Request to meet the side yard setback of the adjacent lots for compatibility.
Site Width	300 feet	>300 feet	Consistent.
Site Depth	100 feet	>100 feet	Consistent.
Max. Building Height	40 feet	29'-7"	Consistent.
Distance Between Structures	10 feet	15 feet	Consistent. Request to meet the side yard setbacks of

Setback	Municipal Code Requirements (Conditional Use)	Planned Development	Consistency Analysis
			the adjacent lots for compatibility.
Rear Yard	20 feet	0 feet	Privately owned lots do not include front yards. Request setbacks to be measured from the back of the structure to the back of the curb on the internal shared/common driveways.
Private Open Space	400 square feet	≥ 400 square feet	Consistent.
Housing mix	Mix of one- and two- story	All two-story	A two-story structure would provide more floor area considering the smaller lot sizes.
Max Site Coverage	30%	33% of entire project site	Request to determine lot coverage based on percent of entire 1.76 acres that is covered by structures (homes plus patios), similar to that of a multifamily site.
Notes: Setbacks are calculated from the face of the curb.			

The project site is a suitable location for a residential development. Similar residential uses currently exist within close proximity of the project site. However, because the site is small, the proposed project requests the City to abandon public right of way and requests variations to the development standards to be able to fit 15 single-family detached homes. Pursuant to Municipal Code 14.09.111.060, the Planned Development application allows the project to make such requests as follows:

A. Alternate standards may be approved if such standards are offset by the application of other improvements or increased standards elsewhere in the project which results in an overall benefit to the project.

1. Standards which may be modified include, but are not limited to, site area and minimum lot dimensions, site coverage, yard area and setbacks, heights of structures, distances between structures, off-street parking, off-street loading facilities, and landscaping.

Policy Consistency

The proposed project would preclude commercial development at the site, and develop lots smaller than the adjacent residences; thereby, conflicting with the General Plan Policy LU-P23.1. Amendments to Policy LU-P23.1 have been proposed to remove the commercial requirement and to exempt the project site from compliance with lot size requirements for new development that would meets/exceed standards of adjacent development. A detailed policy consistency determination is provided in Table 3.10-2.

Energy and Conservation Action Strategy

The City of Vacaville has adopted its ECAS as means of providing mitigation measures to be applied to projects with the goal of reducing GHG emissions from communitywide and municipal sources. The ECAS is to be utilized for tiering and streamlining future development within Vacaville, pursuant to CEQA Guideline Sections 15152 and 15183.5. In order to demonstrate that an individual development project complies with the ECAS, the City developed a New Development Workbook to assist in the review process. Refer to Section 3.7, Greenhouse Gases for proposed project's consistency with applicable measures in the ECAS. With the stated mitigation measures GHG-1 through GHG-3, from AIR and GHG sections, and LU-1, the proposed project would not conflict with an applicable plan and ECAS policies; therefore, impacts would be considered less than significant.

Table 3.10-2: General Plan and ECAS Consistency Analysis

General Plan Element	Goal, Policy, or Action	Consistency Analysis Summary
Land Use	**Goal LU-1.** Preserve, promote and protect the existing character and quality of life within Vacaville	The proposed project would provide a high-quality, well planned residential development that will be compatible with the surrounding residential uses. This is consistent with the objective of preserving and promoting the existing character of the neighborhoods and the City.
	Policy LU-P1.5. With the exception of Priority Development Areas, require that infill projects be designed to complement	The project site is surrounded by residential development. The proposed project would develop

General Plan Element	Goal, Policy, or Action	Consistency Analysis Summary
	the neighborhood and surrounding zoning with respect to the existing scale and character of surrounding structures, and blend, rather than compete, with the established character of the area.	residential uses on a site previously planned for neighborhood commercial uses. The proposed houses will be two stories and would be designed to be compatible with the adjacent developments. This will ensure consistency with this policy of compatibility with surrounding neighborhood.
	Goal LU-23.1. Require that the South Vanden Area, including the Southtown and Moody Project Areas, facilitate the development of a range of housing densities and opportunities, pedestrian and bicycle friendly design, ~~neighborhood commercial sites,~~ and recreational and neighborhood facilities, by including the following requirements: • A network of landscaped pedestrian/bike corridors shall connect key elements of the area, such as the community park and arterial streets. • New development adjacent to existing homes within the city limits shall match or exceed the size, character, and quality of adjacent homes and lots. This applies only to the exterior of the Southtown and Moody projects and not internally within said projects. • All new residential development shall conform to the Residential Design Requirements for New Single Family Development. • The Southtown project area will include a range of housing types and densities and attached, detached, and cluster housing. • Land shall be reserved for community uses such as private schools, membership organizations, day care centers, and senior centers. • A financing mechanism for all public facility improvements shall be established before	The proposed project would develop 15 residential units and will be consistent with this policy as explained below: • The proposed project would install landscaping for the front yard and corner lot street side yard for all residential units to enhance the project site. Final Landscape Plans would be reviewed and approved by the Community Development Director. This will ensure consistency with this policy. • Four of the proposed lots on the northern boundary are smaller than the adjacent residential lots to the north. However, the policy has been amended to exclude development within the Southtown Area from this requirement. Therefore, the proposed project is not inconsistent with this policy. • The proposed project has been designed in compliance with the new residential development standards as described in Section 2.0, Project Description, and therefore, is consistent with this policy. • The proposed project would develop 15 detached single-family homes and the scale

General Plan Element	Goal, Policy, or Action	Consistency Analysis Summary
	development occurs. • Nut Tree Road and Vanden Road shall be widened to the City standard width through the project sites for all projects that front on these streets. • Leisure Town Road shall be widened and improved to the standards for the Jepson Parkway along the frontage of all projects that abut Leisure Town Road. • Foxboro Parkway shall be extended between Nut Tree Road and Vanden Road. The extension will be completed prior to the reconstruction and reconfiguration of Vanden Road. • A 1-acre site for a future fire station site shall be reserved within the Southtown project area. • A site within the Vanden Road loop shall be reserved for a park. • ~~A multi-family project on Leisure Town Road shall begin construction in the first phase of development within the Southtown project area.~~ • Public areas adjacent to Alamo Creek shall be landscaped to enhance the view of the creek channel, within the requirements of Solano County Water Agency. • Different development projects within the Southtown project area shall coordinate their respective roads, bike paths, landscape corridors, and design standards to create a unified sense of place and identity. • ~~Commercial buildings shall be no more than an average of 30 feet in height, and be designed to front on the sidewalk, with parking at the rear of the property, when feasible, so as to enhance neighborhood aesthetics and to encourage pedestrian-friendly design.~~ • Infrastructure master plans for	of the project does not allow for variation in density, or housing configuration. However, the project is part of the Southtown Area and would add to range of housing types in the Southtown Area. • Not applicable. • The Applicant would be required to pay a development impact fee for public facilities and will be consistent with this policy. • Not applicable. • Not applicable. • Not applicable. • Not applicable. • Not applicable. • The project site does not lie adjacent to Alamo Creek. • The proposed project will adhere to development standards and municipal code and will be subject to design review and approval of a landscape plan. • The proposed project would not require any new infrastructure master plan and would connect to existing utilities in the project area. The Applicant will submit Stormwater Drainage Plans prior to the issuance of building permits to ensure all storm drains are designed to meet the City's performance standards. • See above Not applicable

General Plan Element	Goal, Policy, or Action	Consistency Analysis Summary
	sewer, water, storm drain, and traffic improvements shall be prepared prior to or in conjunction with the processing of subdivision maps for all development within the South Vanden areas, including the Southtown and Moody project areas. • Prior to the approval of any subdivision applications, the developers shall assure that all required domestic water supply and distribution systems, wastewater collection and treatment facilities, stormwater management facilities, and roadway segment and intersection improvements will be incorporated into the final project plans. • The lands to the south of the Southtown and Southtown Commons project areas will be subject to subsequent General Plan Amendments, Prezonings, and other prerequisites to annexation.	
Parks and Recreation	**Goal PR-1**. Develop and maintain a high-quality public park system that provides varied recreational opportunities for city residents, workers, and visitors.	Project is part of the Southtown developer and would be subject to the standard park DIF fees and Southtown assessment and maintenance districts. Additionally, the project requests to pay an additional fee for increased enhancements to Magnolia Park in lieu of providing onsite recreation/open space.
Notes: 1. The consistency determination only includes policies provided by the City.		

Although the proposed project would have different setbacks than that required under the RM zoning district and that from the adjacent zoning, the proposed project would be generally compatible with the intent of the proposed General Plan and Zoning designations. A design review is required for the house plans and would help the project's compatibility with applicable zoning and General Plan requirements. Therefore, the proposed project's conflicts with the land

use plan, policy, and regulation would be less than significant with the approval of the variations to development standards through the Planned Development application.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM LU-1: Implementation of the following multi-part mitigation measure is required to reduce the GHG emissions and be consistent with the applicable plan and policies.

- Prior to construction, the project Applicant shall demonstrate that all water use and efficiency measures comply with City Codes.
- During construction, the Applicant shall ensure that at least 50 percent diversion (i.e. reuse or recycling) of non-hazardous construction waste from disposal, consistent with CALGreen - the Statewide Green Building code is implemented.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact LU-3 Conflict with any applicable habitat conservation plan or natural communities conservation plan?

Impact Analysis

The City falls within the jurisdiction of the Solano Multispecies HCP. CN. The SCWA is currently preparing the Solano Multispecies HCP that covers the project site. The draft plan identifies the project site as Urban Zone but it has not been officially adopted. Based on the review of the draft HCP, the project site is not located within a protected conservation area. Refer to Section 3.4, Biological Resources, for further discussion. As such, impacts would be less than significant. CN.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.11 MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

3.11.1 Environmental Setting

According to the U.S. Geological Survey, the Vacaville Planning Area contains limited mineral resources that are being extracted. Southwest of the project site in the vicinity of Cement Hill, limestone deposits show evidence of some historic use. Stone quarries in the Vaca Mountains produced dimensioned and ornamental stone. The western hills contain sandstone and conglomerates that may be used for sands, gravel, and stone; however, none of these resources are currently being mined (General Plan 2015).

3.11.2 Methodology

The following analysis is based on a review of the General Plan, General Plan EIR, and available maps and documents published by the CDC Office of Mines Reclamation Map Viewer. The following impact discussions consider the effect of the proposed project related to mineral resources.

3.11.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact MIN-1 Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the State?

Impact Analysis

No mineral extraction activities exist on or near the project site and mineral extraction is not included as a part of the proposed project. According to the CDC Office of Mine Reclamation Map Viewer and the General Plan, the project site does not contain any known mineral resources. Additionally, the CDC Mineral Resources Map classifies the project site as a MRZ-1

indicating no known valuable minerals or other natural resources that would be of value to the region are located on or near the project site. Therefore, the proposed project would not result in the loss of availability of a known mineral resource, and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact MIN-2 Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Impact Analysis

As mentioned in Impact MIN-1, the project site is not identified in the General Plan or by the CDC as containing valuable mineral resources. The proposed project includes a land use designation from CN to RM, neither of which allow for mineral resource recovery. Therefore, the proposed project would not result in the loss of availability of a locally important mineral resource recovery site. No impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

3.12 NOISE

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.12.1 Environmental Setting

Characteristics of Noise

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. The zero point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as

this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness.

Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for a number of various sound level metrics, including the day/night sound level (Ldn) and the Community Noise Equivalent Level (CNEL), both of which represent how humans are more sensitive to sound at night. In addition, the equivalent continuous sound level (Leq) is the average sound energy of time-varying noise over a sample period and the Lmax is the maximum instantaneous noise level occurring over a sample period.

Existing Ambient Noise Levels

The existing noise environment in a project area is characterized by the area's general level of development due to the high correlation between the level of development and ambient noise levels. Areas which are not urbanized are relatively quiet, while areas which are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities. According to Table 3.12-1 and Figure 3.12-1, given the residential nature of the project area, ambient noise levels are expected to be in the range of 50 to 60 Ldn.

The City of Vacaville is exposed to noise generated by traffic on Interstate 80 and Interstate 505. To a lesser extent, noise is also generated along major arterial roads such as Elmira Road, Vaca Valley Parkway, Alamo Drive, Peabody Road, and Browns Valley Road. Traffic noise depends primarily on traffic speed (tire noise increases with speed) and the proportion of truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise). Changes in traffic volumes can also have an impact on overall traffic noise levels. For example, a doubling of traffic volumes results in a 3 dB increase in noise levels. Existing roadway noise contours are shown in Figure 3.12-1. As shown in Figure 3.12-1, the existing noise levels at the proposed project site are below 60 Ldn (City of Vacaville 2015).

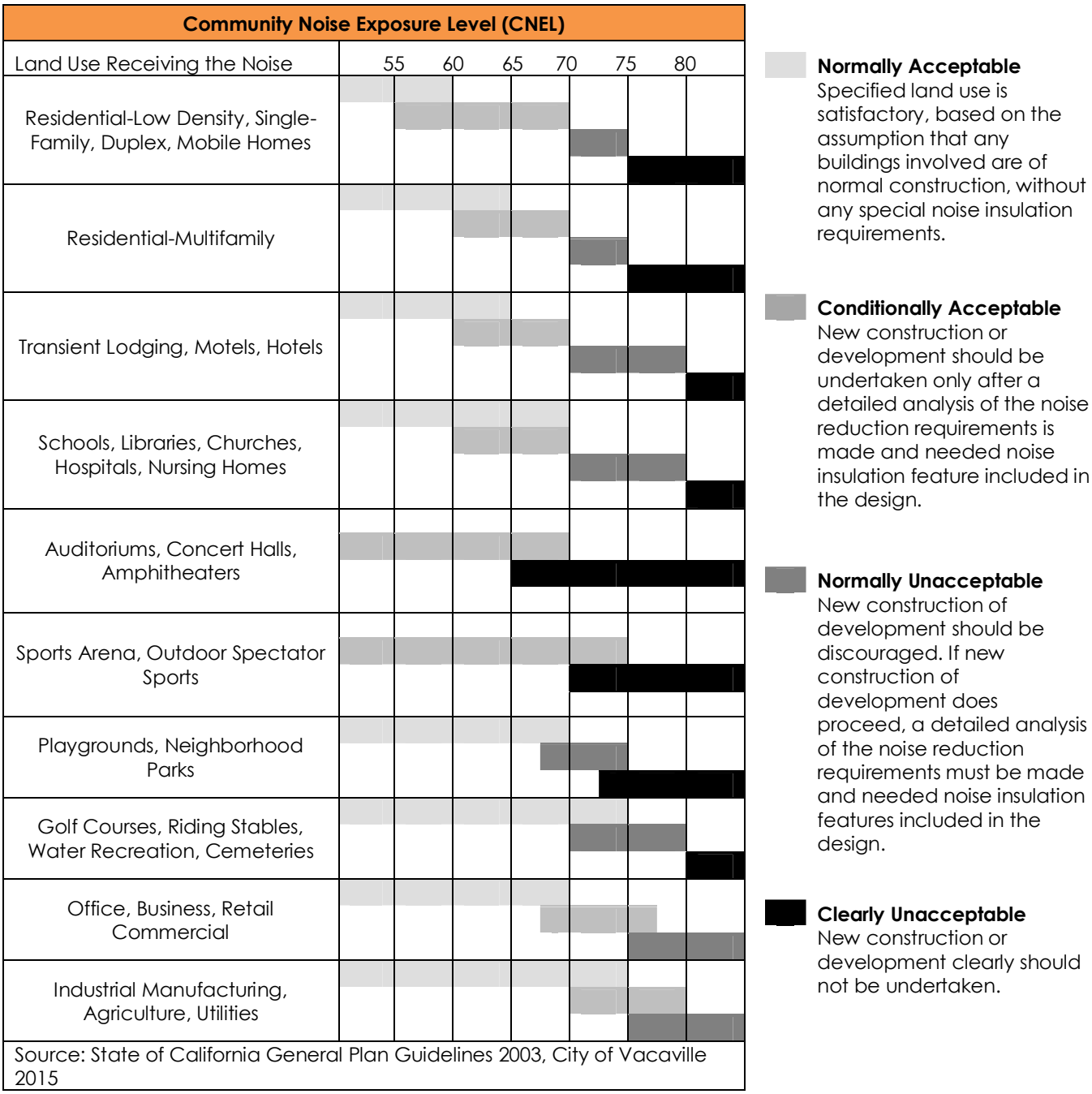
Rail operations are a source of noise in Vacaville. Factors that influence the overall impact of railroad noise on adjacent uses include the distance of buildings from the tracks, surrounding land topography, frequency of train operations, and the lack or presence of sound walls or other barriers between the tracks and adjacent uses.

According to the City of Vacaville General Plan, the train activity along the Union Pacific rail line bordering the southeast portion of the city includes Amtrak passenger trains and freight trains. Noise from existing train operations are estimated to be up to 76 dBA Ldn at 50 feet from the railroad centerline without warning horns, and up to approximately 91 dBA Ldn at 50 feet from at-grade railroad crossings when warning horns are sounded. The contributions to the existing noise contours from current rail operations are shown in Figure 3.12-1. The proposed project is located outside the 60 – 65 Ldn noise contours generated by the Union Pacific rail line.

For this project site, another noise generator will be from the fire station directly across Cogburn Circle. This is an unusual noise generator in that noise will be intermittent as emergency calls for service require.

Aircraft overflights contribute to the ambient noise levels from the Travis Air Force Base in the project area. However, the project site is outside the significant noise contours, per the General Plan Figure NOI-2.

Table 3.12-1: Noise and Land Use Compatibility Matrix



Source: State of California General Plan Guidelines 2003, City of Vacaville 2015

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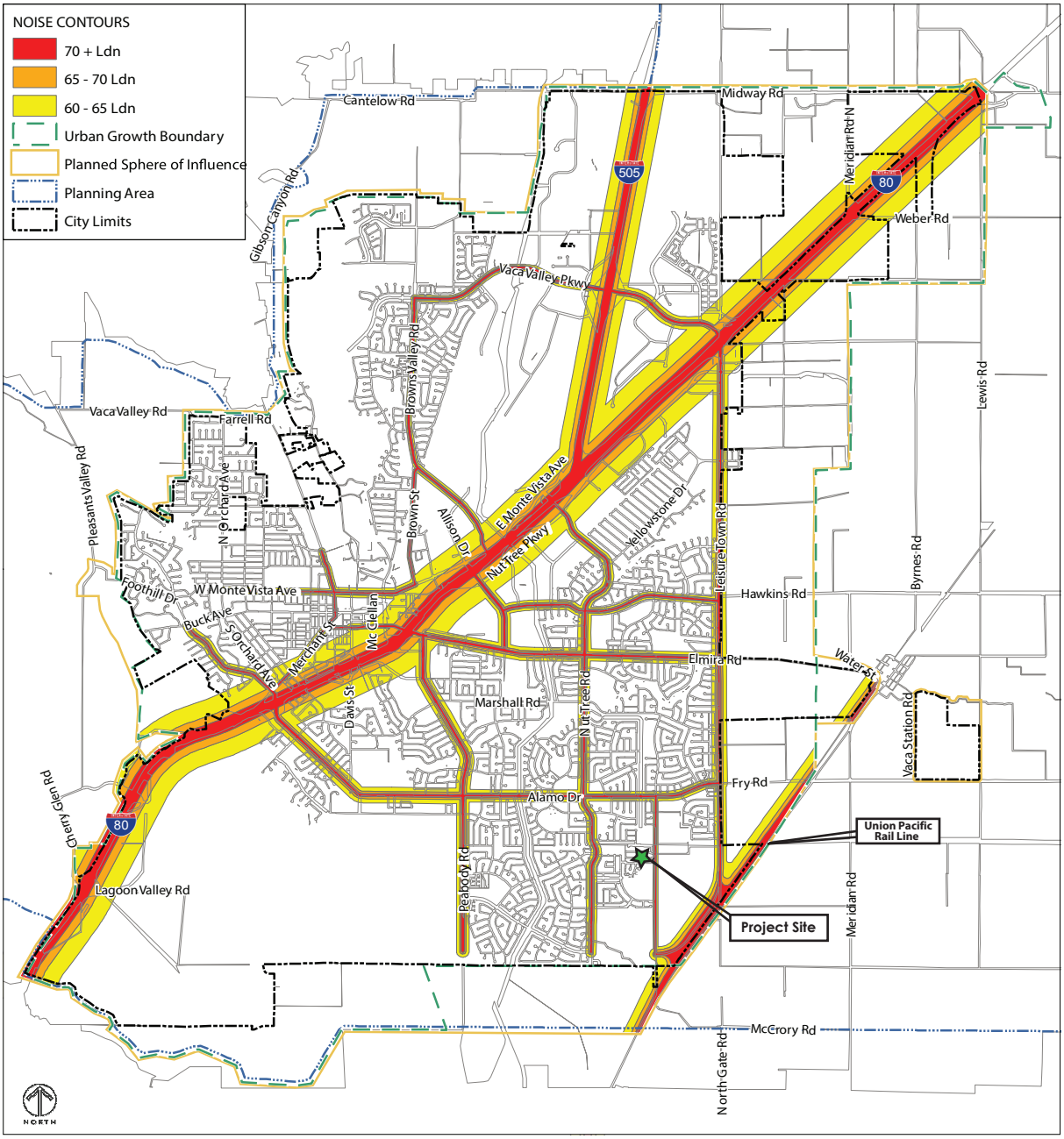

Source: LSA Associates, 2012.

Note: Noise Contour data provided by the City of Vacaville, General Plan. Not to Scale

Stantec

Ashton Place Unit 3 Project
Vacaville, California

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Figure 3.12-1. Existing Noise Contours

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Vibration Standards

Vibration is like noise such that noise involves a source, a transmission path, and a receiver. While related to noise, vibration differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system that is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities. The City does not have specific policies pertaining to vibration levels. However, vibration levels associated with construction activities and proposed project operations are addressed as potential noise impacts associated with the proposed project implementation.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 3.12-2 summarizes the general threshold at which human annoyance could occur is noted as 0.1 in/sec p.p.v. Table 3.12-3 indicates that the threshold for damage to structures ranges from 0.2 to 0.6 peak particle velocity in inches per second (in/sec p.p.v).

Table 3.12-2: Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: California Department of Transportation 2004.

Table 3.12-3: Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum PPV (in/sec)	Transient Sources Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structure	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: California Department of Transportation 2004.

Noise Regulatory Framework

The Noise Element of the City of Vacaville General Plan identifies land use compatibility noise standards for noise-sensitive land uses affected by transportation and non-transportation noise sources. As shown in Table 3.12-1, for noise sensitive land uses, including residential land uses, that are affected by transportation noise sources, the "normally acceptable" exterior and interior noise level is 60 dBA Ldn/CNEL and 45 dBA Ldn /CNEL, respectively. Exterior noise levels of up to 75 dBA Ldn /CNEL for residential land uses is considered "conditionally acceptable" provided needed noise mitigation measures have been incorporated and interior noise levels are maintained within "normally acceptable" levels. The City's exterior noise standards for residential uses exposed to non-transportation noise sources are 50 dBA Leq and 70 dBA Lmax during daytime hours and 45 dBA Leq and 65 dBA Lmax during nighttime hours. Maximum acceptable interior noise standards for residential uses exposed to non-transportation noise sources are 45 dBA Leq during the daytime hours and 35 dBA Leq during the nighttime hours (General Plan 2015). The City has adopted policies in the General Plan to reduce exposure of unacceptable noise levels to the residents of the City. The following policies are applicable to the proposed project:

Policy NOI-P4.1 Preclude the generation of annoying or harmful noise through conditions of approval on stationary noise sources, such as construction and property maintenance activity and mechanical equipment.

Policy NOI-P4.2 Require the following construction noise control measures:

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Limit hours of operation of outdoor noise sources through conditions of approval.

City of Vacaville Noise Ordinance Chapter 8.10.030 Nuisance 20. Noise from Construction Activities.

"No construction or grading equipment shall be operated nor any outdoor construction or repair work shall be permitted within 500 feet from any occupied residence between dusk (one-half hour after sunset) and 7:00 a.m. Monday through Saturday, and no such construction or grading activities shall be allowed on Sundays or holidays except as provided for herein:

> *c. A request for an exception to the permitted construction hours and days may be granted by the Director for emergency work, to offset project delays due to inclement weather, for 24-hour construction projects, or other similar occurrences."*

Sensitive Receptors

The closest noise receptors consist of residential properties located immediately adjacent to the north and west of the project site.

3.12.2 Methodology

Potential noise impacts associated with the proposed project were calculated and analyzed using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). The RCNM is used as the FHWA's national standard for predicting noise generated from construction activities. The RCNM analysis includes the calculation of noise levels (Lmax and Leq) at incremental distances for a variety of construction equipment. The spreadsheet inputs include acoustical use factors, Lmax values, and Leq values at various distances depending on the ambient noise measurement location (Appendix G). For this analysis, it was assumed that a worst-case noise scenario for construction activity would entail the operation of the three noisiest pieces of equipment (grader, dozer, and compactor) simultaneously. Noise generated from operational activities would be attributed to similar equipment used during construction, such as pneumatic tools and air compressors, fork lifts, welders, and flatbed trucks. Therefore, the RCNM results were used to estimate noise generated from operational activities.

Additionally, vehicular noise along major roadways was modeled to estimate existing noise levels from mobile traffic. The existing roadway noise levels were assessed using the FHWA TNM. The FHWA model is based upon reference energy mean emission levels (REMELS) for automobiles, medium trucks (two axles) and heavy trucks (three or more axles), with

consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The estimated trip generation rates based off of the vehicle counts calculated during the traffic survey were entered into the FHWA TNM in order determine the existing noise conditions at sensitive receptors identified along each of the roadway segments. Additional information regarding the methods of the traffic survey can be found in Section 3.16, Transportation and Traffic.

3.12.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact NOI-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact Analysis

Short-Term Construction Noise Impacts

Two types of short-term noise impacts could occur during construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the project site. The associated short-term noise increase along Vanden Road and at the nearest sensitive receptors would be perceptible; however, such a noise increase would be instantaneous and short-term. Based on the CalEEMod default values used in the Air Quality modeling for the proposed project, see Section 3.3, it was assumed that construction activities would generate approximately 35 vehicle trips per day, this includes a combination of automobiles, medium trucks, and heavy trucks. The roadway noise levels from construction workers and equipment hauling were assessed using the FHWA TNM, these were then compared to the existing roadway noise levels to determine potential impacts from construction traffic noise, see Table 3.12-4. As shown in Table 3.12-4, the noise increase from construction traffic for the proposed project is estimated to be approximately 0.7 dBA. As discussed in Section 3.12.1, Environmental Settings, audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments; therefore an increase in traffic noise of 0.7 dBA would not change the existing traffic noise conditions. Short-term, construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

Table 3.12-4: Construction Traffic Noise along Vanden Road

Roadway	Existing Traffic Noise Levels	Project Construction Traffic Noise Levels	Change in Noise Levels
Vanden Road (between Project site and Alamo Drive)	61.6 dBA	62.3 dBA	**0.7**

The second type of short-term noise impact is related to noise generated during construction. Construction activities would include excavation activities and grading, foundation work, building construction, and paving. Each construction stage has its own mix of equipment and, consequently, its own noise characteristics. These various construction operations would change the character of the noise generated at the project site and, therefore, the ambient noise level as construction progresses. The loudest phases of construction include excavation, building construction, and grading phases, as the noisiest construction equipment is earthmoving and grading equipment. Throughout construction, the following types of equipment would be used (with their estimated maximum operational noise level measured at 25 feet from the operating equipment).

Table 3.12-5: Summary of Federal Highway Administration Roadway Construction Noise Model

Source	Distance to Nearest Sensitive Receptor	Sound Level at Residence		
		Lmax	Acoustical Use Factor (%)	Leq
Backhoe	25 feet	83.6	40	79.6
Compactor (ground)	25 feet	89.3	20	82.3
Crane	25 feet	86.6	16	78.6
Concrete Mixer Truck	25 feet	84.8	40	80.8
Compressor (air)	25 feet	83.7	40	79.7
Bulldozer	25 feet	87.7	40	83.7
Excavator	25 feet	86.7	40	82.8
Front End Loader	25 feet	85.1	40	81.2
Flat Bed Truck	25 feet	80.3	40	76.3
Generator	25 feet	86.7	50	83.6
Grader	25 feet	91	40	87
Paver	25 feet	83.2	50	80.2
Pickup Truck	25 feet	81	40	77
Pneumatic Tools	25 feet	91.2	50	88.2
Welder / Torch	25 feet	80	40	76
Tractor	25 feet	90	40	86

Source	Distance to Nearest Sensitive Receptor	Sound Level at Residence		
		Lmax	Acoustical Use Factor (%)	Leq
Source: Stantec 2016, Federal Highway Administration 2006				

A reasonable worst-case noise condition for general construction activity is that a grader, pneumatic tools, and tractor would operate simultaneously. This represents a conservative scenario, as it assumes that all three pieces of equipment would be operating at the same time and same place. Construction would occur in sequential phases. Thus, in reality, it is not likely that the three loudest pieces of equipment would be operating simultaneously at the exact location of the project site closest to the nearest residence. Nevertheless, the RCNM calculated that this scenario would result in a combined noise level of 91.2 dBA-Lmax and 92.0 dBA-Leq at 25 feet.

Mitigation Measure NOI-1 would be implemented to reduce construction noise in the proximity of sensitive receptors. This would include the construction of temporary barriers where construction noise levels have the potential to exceed the maximum exterior residential noise standard. Specifically, barriers would be installed along the north boundary of the project site where the nearest sensitive receptors are located, approximately 25 feet from construction activities. Although noise levels could range into the clearly unacceptable range, as defined on Table 3.12-1, increases in noise levels from construction activities would be temporary and construction activities would be limited between 7:00 a.m. and 6.00 p.m., Monday through Friday, on weekdays within 300 feet of occupied dwellings between 8:00 am and 5:00 p.m., and between 9:00 a.m. and 5:00 p.m. on weekends, in accordance with the City's Municipal Code.

In conclusion, construction noise would be short-term and intermittent. Furthermore, implementation of Mitigation Measure NOI-1 would ensure compliance with the City's construction noise standards (including construction BMPs and restrictions on permissible hours of construction); therefore, impacts would be less than significant with mitigation incorporated.

Long-Term Operational Noise Impacts

As part of the proposed project, the Applicant is proposing to change the General Plan designation of the project property from Neighborhood Commercial to Residential Medium Density. As shown in Table 3.12-2, the normally acceptable community noise exposure level for residential, single-family is 60 dBA, whereas the normally acceptable community noise exposure level for commercial properties is 70 dBA. Therefore, changing the land use designation of the proposed project parcel would significantly decrease the future potential for noise exposure to the surrounding existing residential properties.

It is not anticipated that noise levels at the project site would expose the future residents to noise levels exceeding the City threshold of 60 dB Ldn for exterior noise. The proposed project would be located outside the 60-65 dBA noise level contours of typical noise generating uses, including outside the noise contours for the Union Pacific rail line, as identified by the City of Vacaville in the General Plan, Figure 3.12-1. Substantial noise would be generated by the fire station located across Cogburn Road from the proposed project. The operation of emergency vehicles would generate temporary noise impacts of 95 dBA when the sirens are on. The National Fire Protection Associated (NFPA) sets a maximum of 122.2 dBA for fire sirens as needed at times of emergency. However, this noise would be intermittent and the operation of emergency vehicles is expected as a part of safety services for urban development. The City has established a threshold of 45 dBA Ldn for indoor noise levels for designated residential land uses. Modern construction materials, consistent with the California Building Code (CBC), typically provide an exterior-to-interior noise level reduction of 25 to 30 dB with all exterior openings sealed (California Department of Transportation 2013). Therefore, based on the construction design, it is not anticipated that interior noise levels would exceed the City's threshold, resulting in a less than significant impact.

Additionally, the proposed project's contribution to traffic noise increase is predicted to be minimal. The traffic study prepared by Stantec, indicates that the existing average daily traffic (ADT) volume on Vanden Road is approximately 4,700 vehicles (calculated based on intersection counts), and the existing peak hour traffic volume is approximately 400 to 600 vehicles per hour. As discussed in Section 3.16, Transportation and Traffic, a total of 183 weekday daily trips would be generated by the operation of the proposed project. Of that total, 20 trips (5 inbound and 15 outbound) would be generated during the a.m. peak hour and 19 (12 inbound and 7 outbound) trips would be generated during the p.m. peak hour. The data was used as an input to the FHWA TNM to assess potential long-term increases in traffic noise from the proposed project. The results of the model indicated that traffic noise from the proposed project would increase by 0.1 dBA, see Table 3.12-6. As discussed above, a noise level increase of 0.1 dBA would be inaudible to the human and it is anticipated that impacts from traffic noise would be less than significant.

Table 3.12-6: Operational Traffic Noise along Vanden Road

Roadway	Existing Traffic Noise Levels	Project Operational Traffic Noise Levels	Change in Noise Levels
Vanden Road (between Project site and Alamo Drive)	61.6 dBA	61.7 dBA	**0.1 dBA**

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM NOI-1: Implementation of the following multi-part mitigation measure is required to reduce the potential construction period noise impacts.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Construction activities shall be limited to daylight hours between 8 a.m. and 6 p.m. Limit hours of operation of outdoor noise sources through conditions of approval.
- If construction activities are required outside of the daytime working hours allowed within the conditions of approval, the City would notify residents 48 hours in advance. If after-hour construction is required due to an emergency, the City would notify nearby residents immediately.
- The construction contractor would prohibit unnecessary idling of internal combustion engines.
- Where necessary noise-reducing enclosures or temporary barriers would be used around noise-generating equipment. Where feasible existing barrier features (terrain, structures) would be used to block sound transmission especially where sensitive receptors are located less than 50 feet from construction activities and construction noise levels are expected to exceed the maximum exterior noise standard.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact NOI-2 Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

Impact Analysis

During construction of the proposed project, equipment such as cranes, excavators, graders, loaders, backhoes, and bulldozers may be used as close as 50 feet from the nearest sensitive receptor. Construction equipment that would be used during project construction would generate vibration levels between 0.003PPV and 0.089 PPV at 25 feet, as shown below in Table 3.12-7. All of the groundbourne vibration levels are below the Federal Transit Administration (FTA) vibration threshold at which human annoyance could occur of 0.10 PPV. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours. Therefore, construction vibrations are not predicted to cause damage to

existing buildings or cause annoyance to sensitive receptors. As such, implementation of the proposed project would have a less than significant impact related to vibration.

Table 3.12-7: Vibration Source Levels for Construction Equipment

Type of Equipment	Peak Particle Velocity at 25 Feet	Peak Particle Velocity at 50 Feet	Peak Particle Velocity at 100 Feet	Threshold at which Human Annoyance Could Occur	Potential for Proposed Project to Exceed Threshold
Large Bulldozer	0.089	0.031	0.011	**0.10**	**None**
Loaded Trucks	0.076	0.027	0.010	**0.10**	**None**
Small Bulldozer	0.003	0.001	0.000	**0.10**	**None**
Auger/Drill Rigs	0.089	0.031	0.011	**0.10**	**None**
Jackhammer	0.035	0.012	0.004	**0.10**	**None**
Vibratory Hammer	0.070	0.025	0.009	**0.10**	**None**
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006					

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact NOI-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact Analysis

As discussed in the long-term operational impact discussion in Impact NOI-1, it is not anticipated that implementation of the proposed project would expose future residents to noise levels exceeding the City threshold of 60 dB Ldn for exterior noise. Additionally, the proposed project's contribution to traffic noise is predicted to be minimal and would not permanently result in an increase in ambient noise levels within the project vicinity. Traffic noise after implementation of the proposed project would not result in a perceptible permanent increase in ambient noise

levels at the project site. Therefore, noise levels with implementation of the proposed project would result in a less than significant impact. Periodic noise increases associated with construction of the proposed project are discussed in Impact NOI-1 and Impact NOI-4.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact NOI-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact Analysis

During the construction of the proposed project, including grading and building construction, noise from construction activities would add to the noise environment in the project area. Table 3.12-4 lists equipment that is expected to be used along with noise levels generated from the FHWA RCNM (Federal Highway Administration 2006). Lmax sound levels at the nearest sensitive receptor (25 feet) are shown along with the typical acoustic use factor. The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its loudest condition) during construction and is used to estimate Leq values from Lmax values. For example, the Leq value for a piece of equipment that operates at full power 50 percent of the time (acoustical use factor of 50) is 3 dB less than the Lmax value.

The nearest sensitive receptors to the project site are single-family residences located approximately 25 feet north of the project site. Due to the close proximity of the residences, the residents could potentially be affected by construction noise, or by operational noise levels generated by the proposed project construction above the City noise standard. Mitigation Measure NOI-1 would be implemented to minimize impacts from construction generated noise. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure NOI-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact NOI-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Impact Analysis

The nearest public airports to the project site are the Nut Tree Airport and the Travis Air Force Base Airport, located approximately 3.5 miles northwest and approximately 3.8 miles south from the project site, respectively. There is one private airport, Vaca Valley Hospital Heliport, located approximately 2.02 miles northwest of the project site (Tollfree 2015). The project site falls outside the Area of Influence of the Nut Tree Airport as defined in the Nut Tree Airport Land Use Compatibility Plan and presented in the City's General Plan (Solano County 1988). The project site is located within land use Zone D of the Travis Air Force Base Land Use Compatibility Plan (Solano County 2002). Zone D includes all locations beneath any of the Travis Air Force Base airspace protection surfaces delineated in accordance with Federal Aviation Regulations Part 77. Compatibility Zone D does not place any restrictions on the types of land uses allowed, with the exception of land uses that could cause hazard to flight, such as physical, visual, and electric forms of interference and land uses that attract birds. Any object over 200 feet tall requires airspace review. Although the project would be located in the Travis Air Force Base Land Use Compatibility Plan Zone D, it is located outside of the noise level contours developed for the Travis Air Force Base. Therefore, it is not anticipated that the future residents would be impacted by noise generated from the Travis Air Force Base.

Though the project site is located beyond the Area of Influence of the Nut Tree Airport, it is located within land use Zone D of the Travis Air Force Base Airport; thus, the proposed project would be subject to a determination of consistency from the Solano County Airport Land Use Commission (ALUC) to ensure the proposed project is compatible with the ALUC Plan, in accordance with California State Public Utility Code, Section 21670 et seq. (Solano County 1988). The Solano County ALUC guides airport development in the County and governs the area surrounding airports to prevent issues relating to noise and safety.

As such, the proposed project would not expose persons residing or working in the project vicinity to excessive aviation noise. Impacts would be considered less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than Significant Impact.

Impact NOI-6 For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Impact Analysis

A private airstrip, Vaca Valley Hospital Heliport, is located approximately 2.02 miles northwest of the project site (Tollfree 2015). It is not anticipated that the people residing at the project site would be exposed to excessive noise levels generated by emergency helicopters accessing the hospital. The project site is not located within the boundaries of an airport land use plan. As such, the proposed project would not expose persons residing or working in the project vicinity to excessive aviation noise. No impacts would occur.

Level of Significance Before Mitigation

Less than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than Significant Impact.

3.13 POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 Environmental Setting

Over the past several decades, Vacaville has grown from a small, rural town into a moderate-sized city. According to the U.S. Census, the City had a population of 92,428 in 2010, making it the third largest city in Solano County (U.S. Census Bureau 2016). This population has grown by 5.07 percent since 2010 to a total number of 97,114 people (Vacaville 2016). Association of Bay Area Governments (ABAG) projects that Vacaville's population will grow to a total of 111,100 by 2035, consistent with the overall growth rate projected for Solano County (General Plan 2015). Based on the most recent General Plan Update for the City, a citywide population growth of 26,045 is projected for 2035 under the General Plan, which exceeds the ABAG population growth projection of 11,400 (City of Vacaville 2015). The projected population growth for 2035 accounts for the reduction in population due to amendments to the General Plan and General Plan EIR.

The project site is located in the Southtown Project Area, considered a new residential growth area to accommodate approximately 1,410 housing units. Based on the Southtown Project EIR, development of the Southtown Project Area will result in an approximately 3,500 to 3,900 person increase in the population of the Vacaville area.

3.13.2 Methodology

The following analysis is based on general descriptions in the General Plan, General Plan EIR, Southtown Project EIR, and Section 2.0, Project Description, of this ISMND. Evaluation of potential population, housing, and employment impacts of the proposed project was based on data obtained from the U.S. Census, the California Department of Finance, and documentation from the City. The following impact discussions consider the effect of the proposed project related to employment, population and housing in the City.

3.13.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact POP-1 Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Impact Analysis

The proposed project would involve the development of 15 two-story single-family residential units. Using the U.S. Census average household size of 2.71 persons per dwelling unit in the City, the proposed project would increase the population by as much as 41 persons. This represents an increase of approximately one percent over the population estimated in the Southtown Project. Because the proposed project would result in a small incremental amount of growth, compared with growth in the neighborhood and the City, the impact of population growth generated by the increase in the number of residential units on the project site is not considered to be substantial. Additionally, there have been numerous revisions to the originally proposed land uses in the Southtown Project Area, with nearly all of the changes resulting in a reduction in the number of units, therefore, the one percent increase is further inconsequential.

Rezoning of the project site from CN to RM may result in similar rezoning of surrounding properties, thereby inducing population growth. However, the project site is surrounded by residential development to the north, and west, Magnolia Park on the south, and an undeveloped parcel zoned CN to the east. An application has been submitted to the City requesting an amendment to the General Plan and Zoning to build 17 dwelling units on the parcel to the east. The project site is located in the Southtown Project Area and both existing and proposed land uses surrounding the parcel are primarily residential. Therefore, implementation of the proposed project would not directly induce substantial population growth. The proposed project would also not indirectly induce substantial population growth in the project area because it would not involve any new extensions to area roads or other infrastructure that could enable additional development in currently undeveloped areas not planned for growth and development in the Southtown Project EIR.

Although the proposed project could incrementally increase the population at the project site, compared with existing conditions, project-specific population impacts would not be significant because they would be small relative to the number of area-wide residents in the project vicinity. The proposed project would not directly or indirectly induce substantial population growth and would result in a less than significant population impact.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact POP-2 Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Impact Analysis

The project site is currently undeveloped and does not contain existing housing. Development of the proposed project would not result in any housing displacement that would necessitate the construction of replacement housing elsewhere. Therefore, the proposed project would have no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact POP-3 Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?

Impact Analysis

Construction of the proposed project would not result in the displacement of any people, either for short-term construction or permanently as a result of project implementation that would necessitate the construction of replacement housing elsewhere. Therefore, the proposed project would have no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

3.14 PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

3.14.1 Environmental Setting

Fire Protection

The VFD provides fire and emergency medical services to approximately 28 square miles within the City, as well as provides emergency medical services to approximately 160 square miles of unincorporated county land surrounding the City (General Plan 2015). The VFD responds to calls for fires, hazardous materials emergencies, certain technical emergencies, vehicle accidents and extrication incidents, and first responder and transport services. Fire-related calls for VFD service include: structure, nuisance, vehicle, and vegetation fires; hazardous materials emergencies; technical emergencies such as trench, water, and confined space rescues; and vehicle accidents and extrication incidents involving automobiles, motorcycles, tractor trailers, and airplanes. For emergency medical service, VFD provides Advanced Life Support (ALS) first responder and ALS transport services, as well as Emergency Medical Service (EMS). These services include responding to minor injury and major traumatic injury incidents, as well as to general and major medical incidents (General Plan 2015). VFD responds to mass casualty incidents within its larger response area as part of a countywide mutual aid system for ambulances. The VFD response time goal is to be on scene within seven minutes or less, starting from receipt of a 9-1-1 call, 90 percent of the time (Vacaville Fire Department 2016).

The VFD is funded by the City's General Fund, ambulance transport fees, Special Paramedic tax, Inspections fees, impact fees from new development, and from public safety Community

Facilities Districts, which have been formed for new development areas to offset the cost of providing public safety services to such areas through the levy of special taxes (General Plan 2015). The proposed project would be part of the City's Southtown Public Safety Community Facilities District #11 (CFD #11).

The VFD has five existing fire stations in the City, Stations 71, 72, 73, 74, and the newly constructed and operation 75. In addition, the City plans to develop two new fire stations, and relocate one existing fire station. The two fire stations include Station 76, and Station 77 (General Plan 2015). . Station 75 is located at 111 Cogburn Circle, directly across from the proposed project site. Station 75's area of response includes the Southtown Area and project site.

Police Protection

The Vacaville Police Department (VPD) provides law enforcement service to the City. Responsibilities of VPD include a 24/7 communication center, crime suppression and prevention, investigations, traffic patrol, and emergency service (General Plan 2015). There is one main VPD police station located at 660 Merchant Street, adjacent to Vacaville City Hall. The VPD is located approximately 4.3 miles northwest of the project site. The VPD has adopted standards for average response times. For Priority I calls, identified as the highest priority and involve crimes in progress or people in physical jeopardy, the adopted response time standard is six minutes one second. For Priority II calls, which are calls that do not need immediate response, the adopted average response time standard is 16 minutes and 28 seconds (General Plan EIR 2013). According to the General Plan, the VPD is currently meeting or exceeding its adopted standards for response times.

The VPD employs 150 full time employees (Vacaville Police Department 2016). The VPD does not have a standard for staffing levels. As of 2013, the current ratio of officers per 1,000 residents is 1.12 (General Plan EIR 2013). This is lower than the Federal Bureau of Investigations recommended standard of two officers per 1,000 residents. Public safety CFDs have been formed to fund the increased staffing needs from new development to help maintain existing levels of service. Recent new development projects and the anticipated staffing needs are listed below; the additional staffing would be funded through the CFDs (General Plan EIR 2013):

- North Village (CFD #8): Five additional staff.
- Portofino (CFD #9): One additional staff.
- Rice McMurtry (CFD #10): Two additional staff.
- Southtown (CFD #11): Four additional staff.
- Lagoon Valley (future CFD): 8.6 additional staff.
- Residential Infill Sites (CFD #12): Two additional staff.

As the City experiences additional growth and annexations, there would be an increased call volume for Police Department services, which are funded through the City's General Fund. Additional sworn staff would continue to be provided as necessary to keep pace with development and meet the needs of the community. Increased costs associated with providing police services to new annexation areas is sometimes paid by project applicants, as negotiated with development agreements (General Plan EIR 2013).

Schools

The City is served by four school districts: Vacaville Unified School District (VUSD), Travis Unified School District (TUSD), Dixon Unified School District (DUSD), and Fairfield-Suisun Unified School District (FSUSD). The City is largely served by the VUSD and the TUSD. The project site is located within the TUSD. The TUSD consists of five elementary schools (kindergarten through sixth grade), one middle school (seventh grade through eighth grade), and one high school (ninth grade through twelfth grade) (Travis Unified School District 2016). There is one planned elementary school, Vanden Meadows Elementary School, proposed southwest of the project site, between Nut Tree Road and Leisure Town Road. The nearest school to the project site is the Cambridge Elementary School, located approximately one mile northeast of the project site.

Parks

City residents have access to a variety of City-owned and operated parks and recreational facilities. The City owns and operates three categories of parks: neighborhood, community, and regional parks. In addition, the City owns and operates accessible open space, special purpose facilities, and trails. The City has over 2,700 acres of parks and open space, including seven community parks, 25 neighborhood parks, 22 accessible open spaces, and one regional park (General Plan 2015). The nearest park is a neighborhood park, Magnolia Park, located directly across the street from the southern boundary of the project site (General Plan 2015). Magnolia Park is approximately 5.9 acres. Magnolia Park is a neighborhood park and is intended to serve the recreation needs of residential areas within 0.50 mile of the park. Magnolia Park includes a multipurpose playfield, a playground, a basketball court, and picnic facilities. In addition to Magnolia Park, the proposed project is located approximately 0.40 mile northwest from South Town Park, and approximately 0.60 mile west from Cannon Station Park.

Under the parks standards outlined in the Parks and Recreation Element of the General Plan, the City aims to provide 1.8 acres of neighborhood parkland, 1.7 acres of community parkland, and one acres of regional parkland per 1,000 Vacaville residents, for a total of 4.5 acres of developed parkland per 1,000 Vacaville residents (General Plan 2015). The City does not have standards established for trails and open space (General Plan 2015).

Other Facilities

There are two libraries located in the City, and are both maintained by the Solano County Library System in cooperation with the VUSD. The Town Square branch of the Vacaville Public Library is located at 1 Town Square Place. The Cultural Center branch is located at 1020 Ulatis Drive. Both libraries feature a meeting room, a study room, and a computer center, as well as additional equipment and technological amenities (General Plan 2015).

3.14.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the Public Facilities and Services Element of the General Plan, Parks and Recreation Element of the General Plan, the General Plan EIR, the City's Municipal Code, Southtown Project EIR, and Section 2.0; Project Description, of this ISMND. Additional information related to fire protection,

and police services was obtained from the City of Vacaville Infrastructure, Facilities, and Services Status Report. Review of other public facilities was based on the Solano County Library Facilities Master Plan.

3.14.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact PUB-1	**Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:** **Fire protection?** **Police protection?** **Schools?** **Parks?** **Other public facilities?**

Impact Analysis

Fire protection

The VFD Station 75 is the nearest fire station, located directly across the street from the southern boundary of the project site, and would serve the project site. The proposed project would develop approximately 15 single-family detached residential units, and would increase demand for fire protection service. As required by California Fire Code, the proposed project would be required to include site specific design features such as ensuring appropriate emergency access, and requiring structures to be built with approved building materials. Conformance with this code reduces risks associated with fire hazards. The proposed project would provide adequate emergency access to the project site, and include 20 feet by 60 feet fire department hammerheads at the end of each private street entrance for vehicle turn-arounds (Figure 3.14-1). Additionally, the proposed project would construct an onsite fire hydrant to support fire suppression in case of emergency. Conditions of the project would include a notice of disclosure to the new residents citing their acknowledgement of the close proximity of Fire Station 75 and the noise and light impacts associated with the operations.

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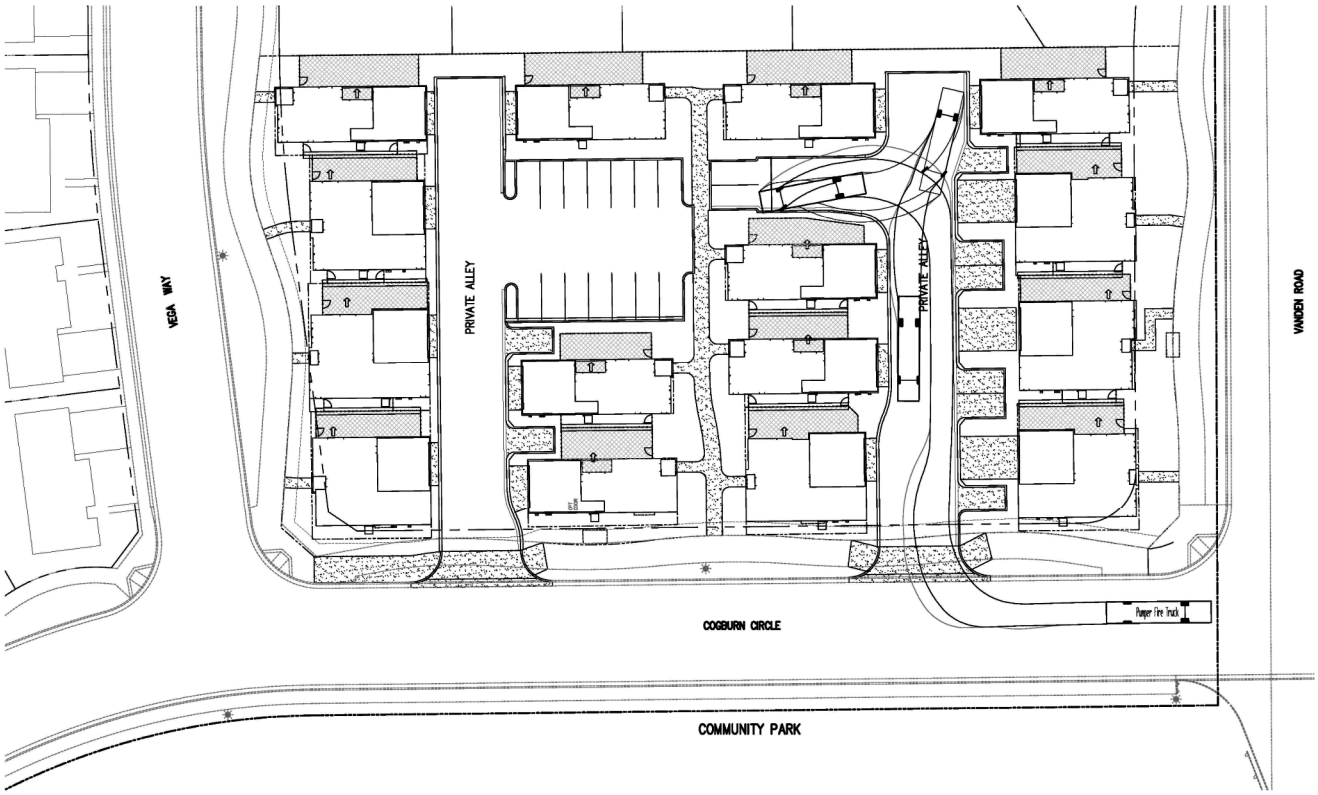

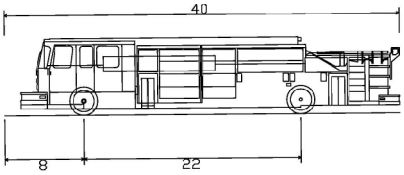

Pumper Fire Truck	
Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

Stantec

Ashton Place Unit 3 Project
Vacaville, California

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Figure 3.14-1. Emergency Access

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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As identified in the General Plan, the proposed project is located within CFD #11. The CFDs were formed for new development areas to offset the cost of providing public safety services to such areas through the levy of special taxes. Therefore, in accordance with the City Municipal Code 11.01, Development Impact Fees, the Applicant would be required to pay a public facilities impact fee. The public facilities impact fee is to provide fire protection and paramedic services by providing for the cost associated with fire stations, firefighting, and paramedic equipment to serve the additional demands for fire services from new development (City of Vacaville Municipal Code 2016). Public facilities impact fees are necessary in order to maintain adequate levels of fire protection, suppression, paramedic activities, and response times to the area served. As such, with the payment of public facilities impact fees for fire protection services, no new or physically altered fire protection facilities would be required. Impacts would be less than significant.

Police Protection

The VPD is located approximately 4.3 miles northwest of the project site. The proposed project would develop approximately 15 detached residential units, and would increase demand for police protection service. According to the Vacaville General Plan, the VPD is currently meeting its response time goals. The proposed project would include motion activated exterior lighting, and lighted addresses would be displayed on the front and rear of each unit to promote onsite safety and security. The City's development review process would ensure that areas of the site are safe and well-lit in conformance with the Design Guidelines and in coordination with the VPD. In addition, in accordance with the City's Municipal Code the Applicant would be required to pay a public facilities impact fee to offset additional demand for police services. The public facilities impact fee for police services are necessary in order to maintain existing levels of police and safety services (City of Vacaville Municipal Code 2016). As such, with the payment of public facilities impact fees for police protection services, no new or physically altered fire protection facilities would be required. Impacts would be less than significant.

Schools

The proposed project would develop 15 detached single-family residential units. Based on the US Census average household size of 2.71 persons per dwelling unit in the City, the proposed project would increase the population by as much as 41 persons. According to the US Census data for the City of Vacaville, approximately 28.5 percent of the population is between the ages of six and 17 years old, the average school age. Therefore, it is assumed approximately 12 of the 41 residents generated from the proposed project would be between the ages of six and 17 years old. This would directly increase the student enrollment in the Travis Unified School District (TUSD). Students would likely attend Cambridge Elementary School (Kindergarten through sixth grade), Golden West Middle School (seventh grade through eighth grade), and Vanden High School (ninth grade through twelfth grade). During the 2014-2015 school year approximately 569 students were enrolled at Cambridge Elementary School, approximately 828 students were enrolled at Golden West Middle School, and approximately 1,633 students were enrolled at Vanden High School (California Department of Education 2013).

In 1998, Senate Bill 50 was approved by the California Legislature and funded by Proposition 1A. Senate Bill 50 limits the power of Vacaville or any other City or county to require fiscal mitigation

on home developers as a condition of approving new development, and provides for a standardized developer fee for schools (General Plan 2015). As outlined in the City's Municipal Code, Chapter 3.28, the City has received, reviewed, and approved a large number of development projects in the boundaries of the TUSD and VUSD, and are expected to generate extensive economic and population overload impacts upon the TUSD and VUSD. As such, any developer who is issued a building permit for a project within the TUSD or VUSD is subject to pay school development impact fees. The school development impact fees would be used for mitigation of overcrowded classroom facilities (City of Vacaville Municipal Code 2016). Assuming payment of fees pursuant to the City's Municipal Code is complete, the proposed project's level of impact to schools would be less than significant.

Parks

The proposed project would result in the development of 15 new single-family detached residential units. The proposed project is located directly across the street from Magnolia Park. The proposed project is designed with small lots that provide for the minimum of 400 sf of private open space. However, the Residential Design Requirements require the single-family developments on lots less than 4,500 sf include onsite common recreation/open space equal to that of 200 sf per unit. The intent of this provision is that the common recreation area would provide recreation opportunities in lieu of those that would be provided in a standard rear yard. However, if the decision maker finds that the provision of common open space within the project site is not feasible or desirable, and alternative may be requested. By not providing adequate recreation/open space, residents are likely to rely more on nearby parks for outdoor recreation. An adopted alternative to onsite space allows for the developer to install additional improvements to off-site recreational facilities when certain triggers are met. The projects meets the triggers with Magnolia Park, however as the park it new, the project has proposed to pay a fee equivalent to the cost of installation instead. The cost for this "in-lieu" fee is based on actual per acre cost of the development of Magnolia Park. Therefore, with the collection of in-lieu fees, the proposed project's increase in population would be self-mitigated to decrease previously unforeseen impacts to the existing park and would not result in the need for other new parks and recreation facilities. Impacts would be less than significant.

Other Public Facilities

The proposed project would develop 15 new single-family detached residential units, which would directly increase population growth and potentially increase the use of other public facilities. The Solano County Library System in cooperation with the VUSD maintains the two public libraries located in Vacaville. According to the Solano County Library 2001 Facilities Master Plan, existing library facilities are inadequate to meet community needs due to the increased population growth in Solano County over the past decade. As a result, this has placed a tremendous strain on the library's ability to provide adequate services in existing library facilities (Solano County 2001). The Solano County Library Facilities Master Plan identifies needed facilities and services in general to meet the community's needs. Solano County Library has identified several funding strategies to improve and expand existing facilities. Funding strategies might include development impact fees, general obligation bonds, certificates of participation,

benefit assessment districts, parcel taxes, Mello-Roos special tax bonds, and Proposition 14- State Library Bond (Solano County 2001).

The proposed project is subject to the payment of development impact fees for other governmental services, such as public libraries. Therefore, with the payment of development impact fees, impacts associated with other public facilities, including public libraries, would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.15 RECREATION

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.15.1 Environmental Setting

Parks

City residents have access to a variety of City-owned and operated parks and recreational facilities. The City owns and operates three categories of parks: neighborhood, community, and regional parks. In addition, the City owns and operates accessible open space, special purpose facilities, and trails. The City has over 2,700 acres of parks and open space, including seven community parks, 25 neighborhood parks, 22 accessible open spaces, and one regional park (General Plan 2015). The nearest park is a neighborhood park, Magnolia Park, situated on 5.9 developed acres and located directly across Cogburn Circle, and south of the project site. Two additional neighborhood parks are located in the project vicinity; Little Oak Park located 0.40 mile west of the project site, and Cannon Station Park located 0.70 mile southwest of the project site (General Plan 2015).

Under the parks standards outlined in the General Plan, the City aims to provide 1.8 acres of neighborhood parkland, 1.7 acres of community parkland, and one acre of regional parkland per 1,000 Vacaville residents, for a total of 4.5 acres of developed parkland per 1,000 Vacaville residents (General Plan 2015). Currently, the City is deficient in meeting the service standard for neighborhood parks and community parks, but exceeds the standard for regional and total parkland categories (General Plan 2015).

3.15.2 Methodology

The following analysis is based on a review of the General Plan, the General Plan EIR, and Section 2.0, Project Description, of this ISMND. Additional information was obtained during the field review of the project site and surrounding area. The following impact discussions consider the effect of the proposed project as it relates to recreation.

3.15.3 Environmental Impact Analysis

This section discusses potential impacts to recreational facilities associated with the proposed project and provides mitigation measures where necessary.

Impact REC-1 Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Impact Analysis

The proposed project would involve the development of a maximum of 15 two-story single-family detached residential units on 1.76 acres on a site currently planned for commercial uses. Therefore, the residents of the proposed units would use the existing neighborhood park. The proposed project provides an average usable private yard area of 453 sf, with a 400 sf minimum. . The proposed project is designed with small lots that provide for the minimum of 400 sf of private open space. The Residential Design Requirements require the single-family developments with lots less than 4,500 sf include onsite common recreation/open space equal to that of 200 sf per unit. The intent of this provision is that the common recreation area would provide recreation opportunities in lieu of those that would be provided in a standard rear yard. However, if the decision maker finds that the provision of common open space within the project site is not feasible or desirable, and alternative may be requested. By not providing adequate recreation/open space, residents are likely to rely more on nearby parks for outdoor recreation. An adopted alternative to onsite space allows for the developer to install additional improvements to off-site recreational facilities when certain triggers are met. The projects meets the triggers with Magnolia Park, however as the park it new, the project has proposed to pay a fee equivalent to the cost of installation instead. The cost for this "in-lieu" fee is based on actual per acre cost of the development of Magnolia Park. Therefore, with the collection of in-lieu fees, the proposed project's increase in population would be self-mitigated to decrease previously unforeseen impacts to the existing park and would not result in the need for other new parks and recreation facilities. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact REC-2 Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Impact Analysis

Under the parks standards outlined in the General Plan, the City aims to provide 1.8 acres of neighborhood parkland, 1.7 acres of community parkland, and one acre of regional parkland per 1,000 Vacaville residents, for a total of 4.5 acres of developed parkland per 1,000 Vacaville residents (General Plan 2015). Currently, the City is deficient in meeting the service standard for neighborhood parks and community parks, but exceeds the standard for regional and total parkland categories (General Plan 2015).

The proposed project is located directly north of Magnolia Park, an existing neighborhood park situated on 5.9 acres across Cogburn Circle. The proposed project does not involve the construction or expansion of recreational facilities. Therefore, there would be no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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3.16 TRANSPORTATION AND TRAFFIC

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

3.16.1 Environmental Setting

The existing regional and local roadway network in Vacaville is a hierarchical system of highways and local streets developed to provide regional traffic movement and local access. The following provides a description of the functional classification of the facilities within the project area.

Traffic impacts are evaluated by determining the number of new trips that the proposed project would be expected to generate, distributing these trips to the surrounding street system based on existing or anticipated travel patterns specific to the project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments.

Roadway System

The City contains a hierarchy of roadways that serve different functions, ranging from the highway system to arterial, collector, and local streets. A subset of these roads are designated as regionally significant routes and are subject to regional policy considerations, as described in the sections below that summarize the Solano County Comprehensive Transportation Plan and Congestion Management Program.

Highways

Vacaville is served by two freeways, Interstate 80 and Interstate 505, which are part of the interstate highway network. Interstate 80 primarily has four travel lanes in each direction in the Vacaville area. It extends southwest through Fairfield and Vallejo, crosses the Carquinez and Oakland Bay Bridges, terminating at Highway 101 in San Francisco. It also extends northeast through Dixon and Davis, over the Sacramento River to Sacramento and beyond. Interstate 505 links Interstate 80 with Interstate 5, a major north-south freeway serving the west coast of the United States. Interstate 505 has two travel lanes in each direction.

These freeways and their associated interchanges define the regional context, which affects the local access and circulation within Vacaville.

Local Street and Roadway System

The local street and roadway system is composed of a hierarchy of streets with varying functions. The classifications within this hierarchy are explained in detail in the Roadway Classifications and Standards section below. Arterial roads range from six-lane arterials, such as portions of Elmira Road, to four lane arterials, such as Peabody Road and Nut Tree Road. Two-lane roads can also be designated as arterial roads. Collectors, which have two travel lanes, include Orchard Avenue, Marshall Road, and Vanden Road. Local streets are primarily found in residential neighborhoods, carry little through traffic, and generally have the lowest traffic volumes. Collector routes funnel traffic from local roadways to the arterial roadway network.

Project Intersection LOS

The levels of service (LOS) for the intersections that were identified as having the potential of being affected by the proposed project are shown below:

<u>Alamo Drive at Nut Tree Road: Signalized Intersection</u>

Peak Hour- AM: LOS C; Average Delay: 28.5
Peak Hour – PM: LOS C; Average Delay: 32.4

Alamo Drive at Vanden Road: Signalized Intersection

Peak Hour- AM: LOS C; Average Delay: 21.2
Peak Hour – PM: LOS C; Average Delay: 28.4

Alamo Drive at Leisure Town Road: Signalized Intersection

Peak Hour- AM: LOS C; Average Delay: 26.9
Peak Hour – PM: LOS C; Average Delay: 29.2

Given the nature of the use and the location of the project site, the impacts associated with the proposed project were evaluated based on the City's General Plan EIR. The Levels of Service presented above were calculated based on traffic volumes collected in Spring of 2016 for the Roberts Ranch Specific Plan EIR.

3.16.2 Methodology

Stantec prepared a Traffic Memorandum for the proposed project (Appendix H). Traffic impacts associated with the proposed project, if any, would be primarily related to trips made by the project residents. This traffic assessment focuses on traffic impacts associated with the project-related traffic in the surrounding street system with the implementation of the proposed project. Additional discussion is provided in the Traffic Assumptions Memorandum included in Appendix H.

In addition, the potential impacts of the proposed project on the transit network, bicycle network and pedestrian facilities in the vicinity of the project site were qualitatively assessed.

Trip Generation

The Institute of Transportation Engineers (ITE) has compiled the results of trip generation research from over 4,250 individual land use studies throughout the United States and Canada. The 9th edition of the *Trip Generation* contains trip generation rates for over 140 different land use codes. Trip generation rates for the proposed project are based on data published in this manual. ITE Land Use Code 942 (Automobile Care Center) was used for the trip generation calculation.

The City of Vacaville has its own model for trip generation. The Vacaville Citywide MINUTP Model results (obtained from the Southtown Project EIR) were compared to the ITE trip generation results for the proposed land use. Because the ITE trip rates were more conservative, they were used for the analysis.

3.16.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact TRANS-1 Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Impact Analysis

Traffic Generation

The proposed project's trip generation during the weekday a.m. and p.m. peak hours are presented in Table 3.16-1. As shown, a total of 183 weekday daily trips would accompany these uses. Of that total, 20 trips (5 inbound and 15 outbound) would be generated during the a.m. peak hour and 19 (12 inbound and 7 outbound) trips would be generated during the p.m. peak hour.

Also shown is the approved land use from the Southtown Project EIR. The approved land use resulted in an estimated 55 p.m. peak hour person-trips. The proposed change in land use is expected to generate 36 fewer trips than the approved land use during the p.m. peak hour. It would likely also generate fewer trips for the a.m. and daily periods as well.

Shown below the proposed project proposed and approved usage is the approved commercial usage for the full Southtown Project development. The Southtown Project development had planned for 3 acres of commercial use, which would result in 32 residential units 1,200 daily trips, 36 a.m. peak hour trips, and 98 p.m. peak hour trips. Removal of this commercial use is estimated to reduce the number of trips generated in the Southtown Area.

Table 3.16-1: Trip Generation Summary

Land Use (ITE Code)	Size		Daily		a.m. Peak Hour				p.m. Peak Hour			
			Rate/ Equ	Total	Rate/ Equ	In	Out	Total	Rate/ Equ	In	Out	Total
Proposed Project: Single-Family Detached Housing (210)	15	units	Equ A	183	Equ B	5	15	20	Equ C	12	7	19
Proposed Project: Approved Neighborhood Commercial*	1.33	acres	400	532	3% of Daily	10	6	16	32.9*	14	30	44
DIFFERENCE			**-**	**349**	**-**	**-5**	**+9**	**+4**	**-**	**-2**	**-23**	**-25**
Anticipated Conversion from Policy Change: Residential Conversion of Additional 2.0 acre parcel	17	units	Equ A	206	Equ B	6	16	22	Equ C	18	8	21
Anticipated Conversion from Policy Change: Total Approved Neighborhood Commercial	3	acres	400	1200	3% of Daily	22	14	36	32.9*	31	67	98

Notes:
Equ A: Ln (T) = 0.92 Ln (X) + 2.72
Equ B: T = 0.70 (X) + 9.74
Equ C: Ln (T) = 0.90 Ln (X) + 0.51
Source: For Single Family Detached Housing: ITE Trip Generation, 9th Edition; Stantec August 2015

Source for approved neighborhood commercial: SANDAG Traffic Generation Rates (specialty retail, strip commercial), April 2002

*Trip generation rate from the 2003 Southtown Project EIR

Source: Stantec 2016

The proposed project trips were distributed to the transportation network and study intersections proportionately based on current travel patterns. The existing ADT volume on Vanden Road is approximately 4,700 vehicles (calculated based on intersection counts), and the existing peak hour traffic volume is approximately 400 to 600 vehicles per hour. According to the Vanden Meadows Specific Plan and Development Project, Vanden Road north of Leisure Town Road is currently operating at LOS C or better, which is an acceptable LOS according to the General

Plan. Similarly, Alamo Drive is also operating at LOS C or better. Therefore, due to the current traffic volumes and the low proposed project inbound and outbound trips on Alamo Drive and Vanden Road during both the a.m. and p.m. peak hours, the proposed project inbound and outbound trips are not expected to cause any significant impact. Additionally, numbers are anticipated to decrease further when Vanden Road is permanently closed Cogburn Circle and the park. This would encourage through traffic to use Nut Tree Road to Foxboro Parkway or Leisure Town Road to Vanden Road; as was intended in the traffic circulation design of the General Plan for the major arterial roadways.

Additionally, the project site is served by both local and regional public transit. As described in more detail later, the City Coach buses would provide local transit service to the project area, with one bus route, Route 8, which currently operates along Vanden Road, Alamo Drive, and Nut Tree Road, 0.6 miles north of the project site or 0.5 miles west of the project site. The City Coach bus service provides residents a connection to Soltrans and Yolobus regional providers, and multiple Park and Ride locations within the City. Due to the relatively small size of the proposed project, the project generated transit person trips would be accommodated by the existing transit system.

Furthermore, there are limited bike facilities in the immediate project vicinity. There is a striped shoulder on Vanden Road adjacent to the project site which is not identified as a bike lane but could be used as such. This facility connects to the bike lane on Redstone Parkway, which provides east-west access to Leisure Town Road. The proposed land use is not expected to negatively impact bicycle facilities and the relatively small size of the proposed project is not expected to generate excessive bicycle trips.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact TRANS-2 Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact Analysis

Level of Service (LOS)

The Solano Transportation Authority (STA) serves as the Congestion Management Agency (CMA) for Solano County. As the CMA, the STA must, under State law, prepare a Congestion Management Program (CMP) and update it every two years. The CMP is meant to outline the STA's strategies for managing the performance of the regional transportation within the County. A CMP must contain several components: traffic LOS standards for State highways and principal arterials; multi-modal performance measures to evaluate current and future systems; a seven-year capital program of projects to maintain or improve the performance of the system or mitigate the regional impacts of land use projects; a program to analyze the impacts of land use decisions; and a travel demand element that promotes transportation alternatives to the single-occupant vehicle.

According to the General Plan, the City's goal is to maintain a "mid-range D" LOS at signalized intersections, but the City may allow temporary exceedance of this standard if future programmed improvements would improve performance (General Plan 2015). As discussed in the previous section, the study intersections currently operate at LOS C with and without the proposed project, which is acceptable.

Vanden Road between Leisure Town Road and Peabody Road is part of the CMP System and currently operates at LOS C (Solano CMP), which meets the General Plan's LOS threshold. Similarly, according to the Vanden Meadows Specific Plan and Development Project, Vanden Road north of Leisure Town Road is currently operating at LOS C or better and Alamo Drive is also operating at LOS C or better. Given the current volume of existing traffic on the roadways surrounding the project site, additional traffic generated during construction and operation of the proposed project would not cause an exceedance of LOS C on City roadways. As such, the proposed project would not conflict with the provisions of a CMP; therefore, impacts would be less than significant.

Vehicle Miles Traveled (VMT)

The project will result in an increase in VMT when compared to the planned commercial land use. This impact is also a cumulative impact for the Southtown Project Area and Vanden Meadows development projects.

The current Solano CMP states a goal of reducing Vehicle Miles Traveled (VMT) by 10 percent. The previously approved commercial land use would have provided service facilities such as retail services designed to meet the daily needs of local residents, allowing for short (potentially non-automobile) trips. Currently, for a single-family home, the average trip length is estimated to be 7.48 miles (Metropolitan Transportation Commission 2008). For an estimated 12 trips a

weekday for five weekdays a week, the VMT for a single household would be calculated as 450 (see Appendix H for details).

The planned commercial land use had potential to reduce the VMT of the surrounding area by providing the residences with close-by services. The project site is located about 2.1 miles from the commercial area located at the Peabody Drive and Alamo Drive intersection which provides these services. Accounting for subsections of the Southtown Project development, on average Southtown Area residents will need to travel 2.22 miles for services at Peabody Drive/Alamo Drive location. The previously approved land use would have allowed for a reduction in VMT for the Southtown Area residents providing these services at an average distance of 0.48 miles. On average the previously approved land use would have provided a reduction in trip length of about 1.74 miles for trips associated with the assumed commercial use. Assuming three trips a weekday/household associated with the previously approved land use, VMT may have been reduced by 5.2 miles a week per household, or 1.2 percent of the current estimated VMT. Additionally, based on the air emissions modeling and traffic analysis previously completed for the Southtown Project EIR, the proposed project is anticipated to result in a 5.3 percent increase in VMT. As presented in Section 3.3, Air Quality Impact-2, the analysis reflects a conservative estimate related to the proposed project's VMT evaluation.

Although there are fewer trips generated for the proposed residential land use than the approved commercial land use, there would be no reduction in VMT as would have been possible with the commercial land use. However, the estimated increase in VMT is not a significant amount. For this reason, the project is not expected to have a significant impact.

As was previously noted, with the proposed residential use, Southtown Area residents living next to the commercial site would be subject to an average 2.2 mile trip to the nearest commercial service rather than an average 0.48 mile trip, which would be across the street or within walking distance to the project site. However, as 1.2 miles is less than the average trip length of 7.48 miles, this distance is presumed to be insignificant.

It is important to note that the VMT reduction would only apply to the future scenario in which commercial space were built rather than residential space. Residents do not currently experience trip length reduction as the commercial space has not been built and residents will not experience a change from current trip length in the future as a result of this land use change. The land use change simply limits the ability of the City to reduce future trip length for Southtown Area residents.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact TRANS-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

Impact Analysis

The Nut Tree Airport is located approximately 3.5 miles northwest of the project site and the Travis Airforce Base is located approximately 3.8 miles southeast of the project site. As such, the proposed project would not result in any changes to air traffic patterns and would not result in any associated safety risks. No impact would occur as the proposed project would not involve use of air transit, nor is it expected to cause any change in air traffic patterns.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact TRANS-4 Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Impact Analysis

The proposed project would be compatible with the surrounding residential developments in the project vicinity. Magnolia Park is located to the south of the project site, which attracts recreational use and pedestrian trips. Neighborhood residents are concerned about pedestrian safety with increased traffic and increased on-street parking from the development. In order to ensure safe pedestrian access, Mitigation Measure TRANS-1 would be incorporated. Mitigation Measure TRANS-1 would require that the Applicant submit a site design plan to the City for review and approval prior to the issuance of building permits, to ensure clear sight lines for all project driveways, crosswalks, bicycle crossings, trails, and retaining walls are established. Therefore, with implementation of Mitigation Measure TRANS-1, implementation of the proposed project would not create a transportation hazard as a result of design features.

Additionally, the proposed project is planned to incorporate sufficient parking to meet the estimated parking demand, which should result in limited resident reliance on on-street parking. Therefore, with implementation of Mitigation Measure TRANS-1 the proposed project would provide adequate vehicular and pedestrian safety and ensure that no hazardous transportation

design features would be introduced by the proposed project. Therefore, impacts would be less than significant with mitigation.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM TRANS-1: Prior to the issuance of building permits, the Applicant shall prepare a detailed site design plan to the City for review and approval that demonstrates that all project driveways, crosswalks, and bicycle crossings would provide clear sight lines and pedestrian safety features. The approved plan shall be incorporated in the proposed project.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact TRANS-5 Result in inadequate emergency access?

Impact Analysis

The VFD Fire Station 75 is located immediately south of the project site. Construction of the proposed project could potentially affect streets or otherwise affect emergency access routes as the driveways are adjacent to the fire station. In order to assure that the construction and operation do not have a significant impact, Mitigation Measure TRANS-2 would be incorporated. Mitigation Measure TRANS-2 would require that the contractor submit a construction plan for approval which would show that construction would not interfere with traffic flow or emergency vehicle access or exit from the fire station. The proposed project would be designed to incorporate all required Solano County Fire and Police Department standards to ensure that implementation of the proposed project would not result in hazardous design features or inadequate emergency access to the project site or areas surrounding the project site. Furthermore, the proposed project would not generate significant traffic volumes during construction or operation. Therefore, with implementation of Mitigation Measure TRANS-2, impacts would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM TRANS-2: To assure adequate emergency access to/from the fire station during construction, the contractor shall submit a construction plan showing that traffic flow would not be substantially impacted and that the fire station driveways shall not be obstructed during construction.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact TRANS-6 Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Impact Analysis

City Coach provides public transit service throughout the City. There is one bus route, Route 8, which currently operates along Vanden Road, Alamo Drive, and Nut Tree Road, 0.6 miles north of the project site or 0.5 miles west of the project site, and ultimately provides a connection to the Vacaville Transportation Center (with connection to regional service provided by Soltrans and Yolobus), Vacaville Transit Plaza, and three Park and Rides. Due to the relatively small size of the proposed project, the generated transit person trips would be accommodated by the existing transit system. Therefore, impacts related to alternative transportation would be less than significant.

Additionally, all dwelling units would have garages and other interior spaces suitable for storing bicycles. The internal streets within the proposed project and in the Southtown Project Area would be suitable for travel by bicycle. There is a striped shoulder on Vanden Road adjacent to the project site which is not identified as a bike lane but could be used as such. This facility connects to the bike lane on Redstone Parkway, which provides east-west access to Leisure Town Road. The proposed project would provide an internal pedestrian network that would connect to existing sidewalks along Cogburn Circle and Vega Way.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.17 TRIBAL CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined by Public Resources Code section 21047 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

3.17.1 Environmental Setting

The project site is within the ethnographic territory of the Southern Wintun or Patwin, who are members of the widespread Penutian language family, which was prevalent throughout California during the late prehistoric and historic era (e.g., A.D. 1800) (Johnson 1978). Patwin were organized into tribelets, which were usually composed of a principal village and a few satellite settlements. Tribelets were small, autonomous, and sometimes bounded by the limits of a small drainage. Patwin subsistence relied on hunting, fishing, and gathering a wide variety of plant resources that were located within their territory. Acorns were a major part of their diet, and were obtained from hill and mountain oaks communally owned by the tribelet (Johnson 1978:355). Patwin manufactured a variety of utilitarian and ceremonial/luxury items, including baskets, stone tools, mortars and pestles, shell beads, and clothing. Shell beads were manufactured for personal adornment and as a medium of exchange. River Patwin also built tule balsa boats to facilitate river travel and acquisition of fish resources (Johnson 1978). Patwin traded for various commodities and subsistence resources using clamshell disc beads as a medium of exchange (Hughes 1994, Kehoe 1981). The first documented European expedition within the vicinity of the proposed project was the Pedro Fages expedition of 1772, which reached the Carquinez Strait and as followed four years later by the Anza expedition which was searching for a land route to Point Reyes. The first crossing of the strait did not occur until 1810 when Gabriel Moraga led a raid against the Suisun tribe. This initial entry into the region culminated with the establishment of Mission San Francisco Solano, located in Sonoma, in 1823 (Hoover et al. 2002). Mission records show that between 1815 and 1822, a total of 280 Ululato (a Patwin village southeast of Vacaville) people were baptized at Mission San Francisco, and between 1824 and 1833 another 67 were baptized at Mission San Francisco Solano (Milliken 1995).

The project site and its surroundings were originally part of the Los Putos Rancho (established in 1843), which encompassed approximately 44,000 acres and sprawled across the rolling hills and plains of the Vaca Valley. The majority of the rancho land was primarily used for stock-raising, with cattle and sheep predominating. In 1850, Manuel Cabeza Vaca deeded nine square miles of land to William McDaniel, establishing the town of Vacaville. By 1869, Vacaville was connected to a number of agricultural markets and shipping points, with the development of the Vaca Valley Railroad extending from the mainline of the California Pacific Railroad in Elmira to Vacaville, and later Winters and Madison in Yolo County (Munro-Fraser 1879, Gregory 1912, Wichels 1964). By the early 1900s, the population of Vacaville and its immediately surrounding environs was approximately 1,200. The region continued to be dominated by agricultural production, with orchards predominating throughout the immediate area and in greater Solano and Yolo counties.

As California underwent sustained population growth during and following World War II, the Vacaville region's proximity to major transportation corridors and adjacency to growing defense and industrial sectors translated to a massive population increase. With a population of only 1,600 in 1940, by 1970 Vacaville housed nearly 22,000 residents. At present, Vacaville has a population of nearly 100,000 (US Federal Census 1940–2010). This population growth has translated to substantial modification of the agricultural landscape, with the formerly compact town sprawling in a ring surrounding its original dimensions. In large, light industrial and

commercial development has grown around the area's major transportation corridors, including Interstate 80 and Interstate 505 and the area surrounding the project site. In addition, the immediate environs have been developed with water-related infrastructure from the 1950s Solano Project. In this manner, Vacaville and its immediate surroundings continues to reflect an evolving landscape of both agricultural and increasingly metropolitan development.

Assembly Bill (AB) 52 Consultations

Per the City's requirement of consultation under AB 52, the Yocha Dehe Wintun Nation was contacted in a letter dated September 2, 2016. Per the statute, no correspondence had been received from the Tribe within the 30 day window. Subsequently, the Tribe requested additional information from the City. In response to the Tribe's request, the City provided the Tribe with all available appropriate documentation. At the time of this document, the Tribe has not further engaged in consultation for the proposed project[1].

3.17.2 Methodology

In order to identify tribal cultural resources within the project area, the following was conducted: records search results were reviewed from a records search conducted at the Northwest Information Center (NWIC) for the City of Vacaville's Southtown Project (State Clearinghouse Number 2003062071) (Cotton/Bridges/Associates 2004; McElroy 2003), a pedestrian survey was conducted within the project area in September 2016, background information and literature was consulted, and the City conducted AB 52 tribal outreach by sending a Tribal Consult letter on September 2, 2016.

The record search included a review of all cultural resources and reports within a 0.5 mile of the project area. The records search was conducted by reviewing the OHP records, base maps, historic maps, and literature for Solano County on file at the office. Other sources reviewed included the OHP Historic Properties Directory, California Inventory of Historical Resources, Caltrans Bridge Survey, ethnographic information, and soil survey maps.

The Tribal Cultural Resources methodology is further detailed in Section 3.5, Cultural Resources, Methodology.

3.17.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact TRIB-1 Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined by Public Resources Code Section 21047 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Impact Analysis

The archival records search performed as part of the cultural resources analysis resulted in the identification of no known tribal cultural resources within or near the study area. Furthermore, initial field review of the project area identified that the project site is previously disturbed and did not identify any signs of previously unidentified subsurface tribal cultural resources within or adjacent to the project area. Thus, the proposed project is not anticipated to have an impact on any known or potential tribal cultural resources. Per the City's requirement of consultation under AB 52, the Yocha Dehe Wintun Nation was contacted in a letter dated September 2, 2016. In response to the Tribe's request, the City provided the Tribe with all available appropriate documentation[1]. The proposed project will change the land use on the previously disturbed project site from commercial to residential. Thus, the proposed project is not anticipated to have an impact on any known or potential tribal cultural resources.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered unique tribal cultural resource. Therefore, Mitigation Measure CUL-1 is proposed requiring implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface unique tribal cultural resources. With the implementation of Mitigation Measure CUL-1, potential impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure CUL-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

3.18 UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the proposed project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that serves or may serve the proposed project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, State, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

3.18.1 Environmental Setting

Wastewater Collection/Treatment

The City owns and operates the wastewater collection system in Vacaville. The Easterly Waste Water Treatment Plant (WWTP), located east of the City, near Elmira, provides treatment of wastewater from residential, commercial, and industrial dischargers throughout the City. Effluent from the WWTP is discharged into Old Alamo Creek adjacent to the WWTP site. Current wastewater flows are within the design capacity of the WWTP.

The WWTP has a design flow capacity of 15 million gallons per day (mgd) sanitary base flow (SBF), considered dry weather flow, and 55 mgd peak hour wet weather flow (PHWWF). SBF is defined as the monthly flow in October when infiltration and inflow is minimal. PHWWF is defined as the maximum one-hour flow during the wet season.

The existing SBF at the WWTP is approximately 8.36 mgd, below its design flow capacity of 15 mgd (General Plan EIR 2013). The PHWWF is dependent on baseline sanitary flow conditions, as well as rainfall intensity and preceding rainfall conditions. The measured PHWWF at the WWTP has exceeded 40 mgd on two occasions in the past ten years: once in December 2005 (42.5 mgd) and once in October 2009 (41.3 mgd), thus the PHWWF has been below the design flow capacity for PHWWF of 55 mgd (General Plan EIR 2013).

Based on anticipated development in 2035 under the General Plan and standard flow factors, it is projected that the SBF in 2035 would be 16.2 mgd (City of Vacaville 2013). This flow would exceed the current treatment plant capacity by about eight percent (General Plan EIR 2013). Per State mandates, the City is in the process of constructing improvements to the WWTP to meet recently-implemented NPDES permit requirements. Construction of these improvements would not increase or decrease the existing design flow capacities.

The proposed project includes two proposed onsite eight inch sanitary sewer lines which would connect with the existing eight inch sewer line located in Cogburn Circle which then connects to the 24 inch sewer line in Vanden Road. Lot 1 would connect to the existing six inch sewer stub previously installed to the project site. With a project area of 1.76 acres, the total sewer effluent discharge units (EDUs) from the proposed project is 15 EDUs (1 EDU per unit). A Sewer Calculation Memorandum (Sewer Calculations Memo; Appendix D) was prepared on October 21, 2016 by Phillippi Engineering Inc., to evaluate the projected sewer flows from the Ashton Place Units 1-3, Potters Place, and Park Parish properties as originally intended (CN and RM) versus the proposed sewer flows which would result from the conversion of these parcels to Single Family Residential (RMD).. As noted in the Southtown Project EIR, sewer capacity issues exist north of the Southtown Project Area. The sewer capacity has been analyzed by the City of Vacaville and it has been determined that sewer improvements are required. To analyze the changes in the projected sewer flows the original Master Plan projections were compared with the Proposed Revisions which include the approved and existing uses. Sewershed ST1848 includes the area known as Ashton Place Unit 3 and total projected sewer flow, per the Master Plan, from ST 1848 was calculated at 30,020 gpd (Phillippi 2016a). With Approved and existing projects and the proposed Ashton Unit 3 revision, the total projected flow from Sewershed ST1848 is 27,420 gpd. Sewer flow in Sewershed ST1848 is reduced from the original Master Plan by 2,600 gpd (Phillippi

2016a). The Master Plan for Sewershed ST09, the area that includes Ashton Place Unit 1 and 2 and Potters Place is reduced by 960 gpd with existing projects, approved projects, and the proposed revision (Phillippi 2016a). Sewershed ST04 is the area that includes Park Parish and total projected sewer flow, per the Master Plan, from ST04 was calculated at 38,150 gpd, resulting in a reduction of 710 gpd in Sewershed ST04 (Phillippi 2016a). The proposed project would be served with sewer service by the City of Vacaville (Figure 3.18-1).

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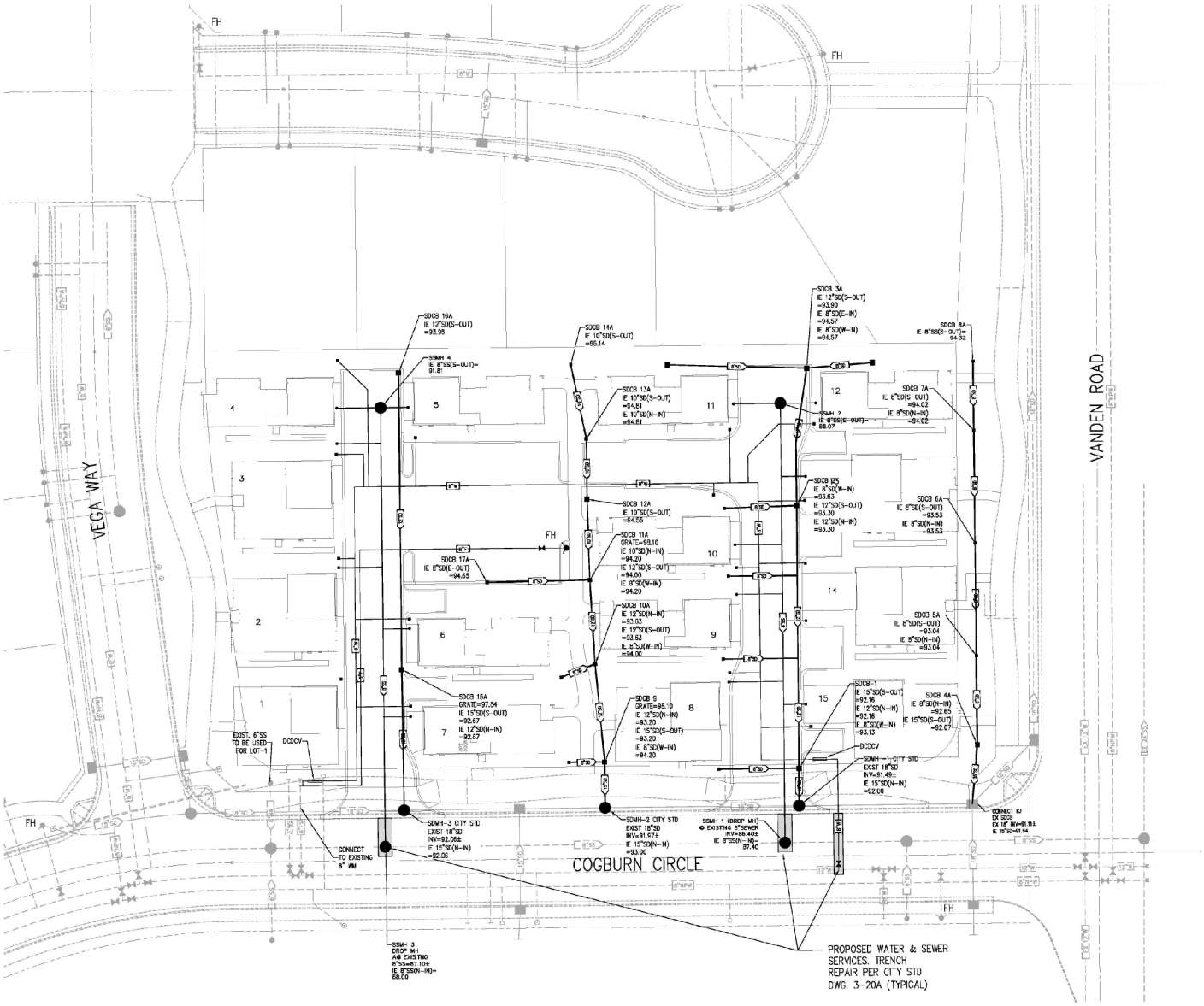

Note: Utility Plan data provided by Phillippi Engineering (PEI)

Not to Scale

Stantec

Ashton Place Unit 3 Project
Vacaville, California

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Figure 3.18-1. Utility Plan

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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Stormwater Management

Municipalities are required to proactively control and regulate pollution from their municipal storm sewer systems in order to mitigate the potential detrimental impacts of urban runoff.

The Clean Water Act prohibits the discharge of pollutants to navigable waters from a point source unless authorized by a NPDES permit. The SWRCB is responsible for issuing NPDES permits to cities and counties through the RWQCB. Permittees must develop and implement a Stormwater Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The City is considered a permittee under the statewide general permit.

In addition to the NPDES statewide general permit, the Vacaville Municipal Code contains regulations related to stormwater management in Title 14 of the Municipal Code. Furthermore, the State of California's Porter-Cologne Water Quality Control Act of 1969 and other State legislation require municipalities to protect water quality.

Surface water flows from the project site would be directed to proposed area drains. These area drains would be connected to two 12 inch and one 10 inch proposed onsite storm drain lines with laterals to area lines. The three onsite storm drain lines would then connect to the existing 18 inch public storm drain line located on the north side of Cogburn Circle. The stormwater would then be conveyed through existing public storm drain lines to the existing detention basin on the east side of Leisure Town Road.

A Storm Drain Runoff Comparison Commercial vs. Residential Memorandum (Storm Drain Memo; Appendix E) was prepared on October 20, 2016 by Phillippi Engineering Inc., to evaluate the projected stormwater runoff for the project site at 1.76 acres, developed both commercially and residentially, stormwater runoff for the project site at 1.33 acres, developed both commercially and residentially, and stormwater runoff for the adjacent CN 2.0 acre parcel, developed both commercially and residentially. According to the Storm Drain Memo, conversion of the project site from commercial development to residential development would result in 44 percent reduction in stormwater runoff in a 10 year storm event; the reduction is directly related to the coefficient of runoff, which is 44 percent higher for commercial developments over residential developments (Phillippi 2016b). The proposed project would be served with drainage service by the City of Vacaville (Figure 3.18-1).

Water Supply

The City provides potable water to users within the city limits via a network of water mains, transmission mains, reservoirs, groundwater wells, booster pump stations, and treatment plants. The City of Vacaville has three water supply sources. Two are surface water sources, the Solano Project and the State Water Project, that require treatment prior to distribution. The third source is from groundwater wells, which only require disinfection at the wellhead prior to distribution.

Vacaville's water supply sources include water from the Solano Project, which consists of Monticello Dam, Lake Berryessa, Lake Solano, and the Putah South Canal. The primary storage reservoir of the Solano Project is the Lake Berryessa reservoir, which has a large storage capacity

(1.6 million AF), but a relatively small watershed (576 square miles). This type of reservoir provides good drought protection if the reservoir is near full when the drought starts. Solano Project water is treated at the North Bay Regional Water Treatment Plant, a Joint Powers of Authority project between the cities of Vacaville and Fairfield, or at the City's Diatomaceous Earth Water Treatment Plant located at the City's Corporation Yard. In addition to its direct entitlement, Vacaville entered into an agreement with the Solano Irrigation District (SID) that augments the City's allocation of Solano Project water (General Plan 2015).

Pursuant to agreements with the SCWA and the Kern County Water Agency, surface water received from the State Water Project is delivered through the North Bay Aqueduct (NBA) to the City of Vacaville from the Sacramento Delta. Because the NBA is part of the entire State Water Project, any shortages occurring in the State Water Project impact the water availability from the NBA, making it a less reliable source than the Solano Project (General Plan 2015).

In calendar year 2014 there was a 95 percent reduction imposed on State Water Project contractors throughout California due to the extended drought of 2012 through 2014. This reduction in State Water Project supply was the most severe in the history of the State Water Project.

Part of the State Water Project is "settlement water". The California Water Code includes area-of-origin statutes, which state that an area shall not be deprived of the prior right to water reasonably required to adequately supply the beneficial needs of the area. In settlement of area-of-origin water right applications by the cities of Fairfield, Benicia, and Vacaville, the DWR provides "Settlement Water" to Vacaville. This is part of the State Water Project.

The third water supply source is groundwater from 11 City wells. The City draws groundwater from a deep aquifer located under the northeastern part of Solano County in the Vacaville/Dixon area. Vacaville's groundwater extraction in recent years has been maintained at about 5,000 - 6,000 acre feet per year (AF/YR), with the maximum safe yield determined to be over 8,000 AF/YR. Vacaville continues to explore well field expansion as a means of maintaining adequate water supply. Areas outside the City limits are generally agricultural and/or rural residential and rely on private groundwater wells and/or potable water service from the SID.

In accordance with State law, the City has adopted an Urban Water Management Plan (UWMP), which compares projected water use to available water supply sources over the next 20 years. The UWMP is updated every five years. The most recent UWMP is the July 2015 UWMP and an Urban Water Shortage Contingency Plan, an amendment to the UWMP, was adopted in January 1991 and revised August 2014.

Water supply and water demand for the Southtown Project Area was previously evaluated under the Southtown Project EIR in 2003. Since the 2003 evaluation of the Southtown Project Area, the City's UWMP was updated in July 2015. The 2015 UWMP evaluates the past, current, and projected water use, along with water supply projections through 2040. According to the 2015 UWMP, future water supply will be adequate to offset future water demands during normal, single-dry, and multi-dry years (UWMP 2015).

A proposed eight inch onsite water pipe system would branch from the existing 12 inch water main pipe located in Cogburn Circle to provide water to the project site. A Water Supply Calculations Memorandum (Water Supply Memo; Appendix F) was prepared on October 21, 2016 by Phillippi Engineering Inc., to compare the projected potable water requirements for the Ashton Place Units 1-3, Potters Place and Park Parish properties as originally intended (CN and Townhouses) versus the proposed potable water requirement which would result from the conversion to Single Family Residential (RM). According to the Water Supply Memo, there is a net reduction of 3 residential units (60 less townhouses, 64 additional RMD single family and 7 less single family) for the Southtown and Southtown Commons areas when comparing against the original Tentative Map Approvals. In addition, there is a net reduction of 3.33 acres of CN land, resulting in a total overall reduction of water demand of 6,378 gpd (Phillippi 2016c). The proposed project would be served with water service by the City of Vacaville (Figure 3.18-1).

Solid Waste

The City contracts with a private waste collection company to provide weekly solid waste, green waste, and recyclable material collection to Vacaville residents and commercial businesses. The California Department of Resources Recycling and Recovery (CalRecycle) has allocated the City with a disposal rate target of 6.5 pounds of waste per person per day (General Plan 2015). In 2010, the City of Vacaville's disposal rate was 4.9 pounds of waste per person per day, which was well below the CalRecycle target (General Plan 2015).

Recyclable material can also be taken to several drop-off recycling centers throughout the City, including a recycling center located at 855½ Davis Street. Recyclable material collected by the private waste collection company is sent to a material recovery facility. Solid waste collected from Vacaville is deposited at the Hay Road Landfill. In 2009, the landfill received 126,000 tons of solid waste, of which 48 percent was from Vacaville residents and businesses. The total capacity of the landfill is 37 million cubic yards. As of 2012, it is projected that the landfill will reach capacity in 2069 (General Plan 2015). Division 8.08 (Solid Waste, Yard Waste, and Household Hazardous Waste) of the Vacaville Municipal Code regulates the collection and disposal of solid waste, yard waste, and household hazardous materials (City of Vacaville Municipal Code 2016).

All Vacaville residents must pay to have their solid and yard waste collected. In addition, the Land Use and Development Code (Division 14.09 of the Municipal Code) requires that residential, commercial, business, industrial, and public districts provide areas for the collection of recyclable material and solid waste.

3.18.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, the General Plan EIR, the 2015 UWMP, the Urban Water Shortage Contingency Plan, the ECAS, Southtown Project EIR, and Section 2.0, Project Description, of this ISMND. The following impact discussions consider the impacts of the proposed project related to utilities and service systems in the City.

3.18.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact UTIL-1 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Impact Analysis

The proposed project would involve the development of 15 single-family detached residential units. Based on anticipated development in 2035 under the General Plan and standard flow factors, it is projected that the SBF in 2035 would be 16.2 mgd (General Plan EIR 2013). This flow would exceed the current treatment plant capacity by about eight percent (General Plan EIR 2013).

Wastewater generated by the proposed project would be treated by the WWTP, which operates according to regulations by the Central Valley RWQCB and the Clean Water Act of 1972. The WWTP currently operates below its designed flow capacity of 15 mgd for SBF and 55 mgd during PHWWF. The most recent calculation was completed in June 2011 and determined that the theoretical SBF in 2010 was 8.36 mgd (General Plan EIR 2013). To analyze the changes in the projected sewer flows the original Master Plan projections were compared with the Proposed Revisions which include the approved and existing uses. Sewershed ST1848 includes the area known as Ashton Place Unit 3 and total projected sewer flow, per the Master Plan, from ST 1848 was calculated at 30,020 gpd (Phillippi 2016a). With Approved and existing projects and the proposed Ashton Unit 3 revision, the total projected flow from Sewershed ST1848 is 27,420 gpd. Sewer flow in Sewershed ST1848 is reduced from the original Master Plan by 2,600 gpd (Phillippi 2016a). The Master Plan for Sewershed ST09, the area that includes Ashton Place Unit 1 and 2 and Potters Place is reduced by 960 gpd with existing projects, approved projects, and the proposed revision (Phillippi 2016a). Sewershed ST04 is the area that includes Park Parish and total projected sewer flow, per the Master Plan, from ST04 was calculated at 38,150 gpd, resulting in a reduction of 710 gpd in Sewershed ST04 (Phillippi 2016a). In summary, comparing the projected sewer flows from the Ashton Place Units 1-3, Potters Place and Park Parish properties as originally intended versus the proposed sewer flows which would result from the conversion to Single Family Residential, sewer flow in Sewershed ST1848 has been reduced by 2,600 gpd from the original Master Plan; Sewer flow in Sewershed ST09 has been reduced by 960 gpd from the original Master Plan; and, sewer flow in Sewershed ST04 has been reduced by 710 gpd from the original Master Plan. . As such, the proposed project would not substantially increase current operating conditions; therefore, associated impacts related to wastewater treatment requirements would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-2 Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

Impact Analysis

As discussed in Section 2.0, Project Description, of this ISMND, the proposed project would construct an eight inch onsite water pipe system from the existing 12 inch water main pipe located in Cogburn Circle to provide water to the project site. In addition, the proposed project would construct two onsite eight inch sanitary sewer lines, which would connect to the existing eight inch sanitary sewer system along Cogburn Circle, where it would then be directed to the City's existing 24 inch sanitary sewer system in Vanden Road. Lot 1 would connect to the adjacent existing six inch sewer stub previously installed to the project site.

Wastewater Treatment Facilities

The WWTP has an average designed flow capacity of 15 mgd for SBF and 55 mgd during PHWWF. According to the General Plan EIR, the most recent calculation was completed in June 2011 and determined that the theoretical SBF in 2010 was 8.36 mgd, therefore the WWTP has approximately 6.6 mgd in unused capacity. As part of the Southtown Project development the project site is zoned CN, and was originally intended to be occupied by commercial uses. The Applicant is requesting to rezone the project site from CN to RM, and develop 15 two-story single-family residences. In order to assess the difference in projected sewer flows for the originally intended commercial use of the project site versus the proposed residential use, a Sewer Calculations Memo was prepared on October 21, 2016 (Appendix D).

The Sewer Calculations Memo utilized the Average Dry Weather Sewer Flow Rates from the City of Vacaville Standard Specifications with Revisions through 2012 (Table DS 6-1). According to the City's Standard Specifications, the Average Dry Weather Sanitary Flow Criteria indicates that the flow for service commercial and retail sales equals 1,900 gpd/acre. (Appendix D) (Phillippi 2016a). Sewershed ST1848 includes the proposed project. This area, previously designated as neighborhood commercial is being converted to 15 RMD housing units. For this shed area, the original Master Plan envisioned 114 residential units, 1.4 acres commercial and 7.0 acres of park. The proposed revisions along with the approved and existing uses would yield 108 residential units, 5.9 acres of park, and 1.0 acres of Public Use (Fire Station), for a total projected sewer flow of 30,020 gpd. With approved and existing projects and the proposed Ashton Place Unit 3 revision, total projected flow from Sewershed ST1848 is 27,420 gpd (Phillippi 2016a). There is a reduction of 2,600 gpd in Sewershed ST1848, therefore, impact to Sewershed ST1848 is less than significant.

The Master Plan for Sewershed ST09, which includes Ashton Place Unit 1 and 2 and Potters Place, envisioned 138 residential units in the original Master Plan. With existing projects, approved projects and the proposed revision, the total number of residential units is reduced to 134. The

sewer flow in Sewershed ST09 is reduced by 4 residential units times 240 gpd/du or 960 gpd, therefore impacts to Sewershed ST09 are less than significant.

Sewershed ST04 is the area that includes Park Parish. The Master Plan total projected sewer flow from Sewershed ST04 was calculated at 38,150 gpd (Phillippi 2016a). With approved and existing projects and the proposed Park Parish revision, total projected sewer flow from Sewershed ST04 is calculated at 37,440 gpd. In summary, there is a reduction of 710 pdg in Sewershed ST04; therefore, impacts are less than significant.

The proposed project would consist of 10 three-bedroom homes and 5 four-bedroom homes. Based on the City's specifications, it is assumed the average dry weather sanitary sewer flow rate for a three bedroom home is 200 gpd/du and the Average Dry Weather Sewer Flow rate for a four bedroom home is 240 gpd/du. The total projected Average Dry Weather Sewer Flow rate for the proposed project would equal:

(10 dwelling units X 200 gpd/du) + (5 dwelling units X 240 gpd/du) = 3,200 gpd

The proposed project would represent 0.05 percent of the 6.6 mgd in unused capacity at the WWTP. Thus, the proposed project's wastewater flows would represent only a nominal increase in the total daily amount of wastewater treated at the WWTP, and would be within the facility's permitted capacity. Therefore, impacts associated with the construction, or expansion of existing wastewater treatment facilities would be less than significant.

Water Treatment Facilities

The 2015 UWMP calculates the City's past, current, and projected water use and water supply through 2040. According to the UWMP, future water supply will be adequate to offset future water demands during normal, single-dry, and multi-dry years through 2040 (UWMP 2015). The City presently has a contracted water supply of 34,273 AF/YR (UWMP 2015). The City estimates future water use demand based on housing projections, using a water use factor of 183 gallons per capita per day. The potential water consumption for the proposed project, assuming 2.71 residents per dwelling unit, would be approximately 7,438.95 gpd or 8.33 AF/YR. Water consumption for the proposed project would represent approximately 0.024 percent of the City's potable water supply. The incremental water consumption associated with the proposed project would not represent a significant decrease in available water supply. In comparing the projected potable water requirements of the Ashton Place Units 1-3, Potters Place and Park Parish properties as originally intended (CN and Townhouses) versus the proposed potable water requirement which would result from the conversion to Single Family Residential (RMD), there is a net reduction of 3 residential units (60 less townhouses, 64 additional RMD single family and 7 less single family) for the Southtown and Southtown Commons areas when comparing against the original Tentative Map Approvals. In addition, there is a net reduction of 3.33 acres of CN land, resulting in a total overall reduction of water demand of 6,378 gpd (Phillippi 2016c). As such, the proposed project would not require the construction of new water treatment facilities or expansion of existing facilities; therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-3 Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

Impact Analysis

Surface water runoff from the project site would be directed to proposed area drains. These area drains would be connected to two12 inch and one 10 inch and one eight inch proposed onsite storm drain lines. The four onsite storm drain lines would then connect to the existing 18 inch public storm drain line located on the north side of Cogburn Circle. The stormwater would then be conveyed through existing public storm drain lines to the existing detention basin on the east side of Leisure Town Road.

It is assumed the top two feet of the project site would be graded 100 percent, and surface water flow would be directed to the onsite storm drains which connect to the onsite storm drain lines, and then discharged to the City maintained storm drain system located within Cogburn Circle (Figure 3.18-2). In addition, the project site would consist of 0.40 acre of landscaped areas. Where possible some runoff would be directed to landscaped areas for filtration and infiltration. As part of the Southtown Project EIR, stormwater drainage capacity was assessed. The project site is zoned for CN and originally intended for commercial use. The Applicant is requesting a zone change from CN to RM. Compared to residential uses, commercial uses typically generate greater surface water runoff due to the increase in impermeable surface area. The proposed project would not exceed the surface water runoff volumes previously considered in the Southtown Project EIR (pers. comms. Thomas Phillippi 2016). According to the Storm Drain Memo, conversion of the project site from commercial development to residential development would result in 44 perfect reduction in stormwater runoff in a 10 year storm event; the reduction is directly related to the coefficient of runoff, which is 44 percent higher for commercial developments over residential developments (Phillippi 2016b).

The stormwater drainage facilities would be designed to meet all applicable requirements and performance standards as outlined in the City's Stormwater Management Plan. During the City's Design Review of the proposed project, the Applicant would submit Stormwater Drainage Plans for review prior to the issuance of building permits to ensure all storm drains are designed to meet the City's performance standards. In addition, the proposed project would comply with the requirements of the Regional Water Quality Control Board (RWQCB) Order R2-2009-0074 and Order R2-2011-0083. As such, the construction of new or expansion of existing offsite stormwater

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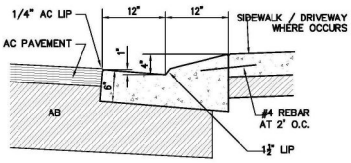
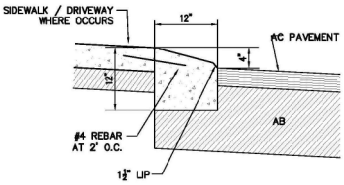
C:_GIS\ashton\mxd\Ashton_GradingPlan_8by11P_01.mxd mnugent 2016-09-14



1 LOW PROFILE CURB & GUTTER
NOT TO SCALE



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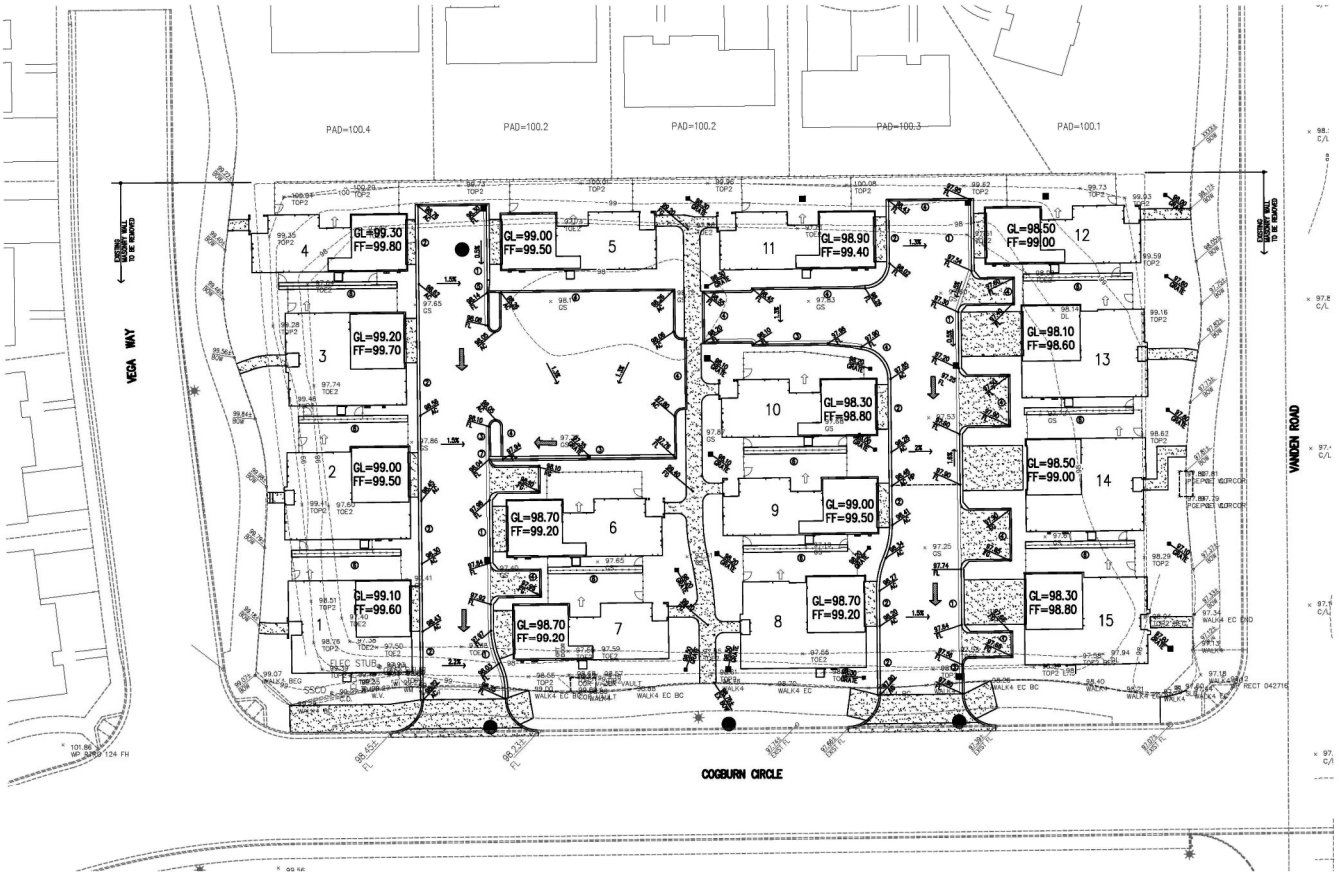
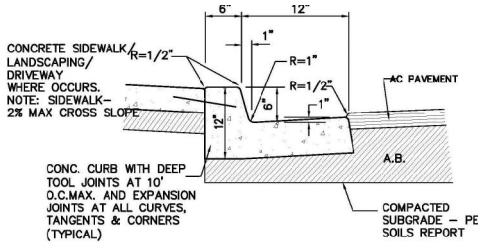
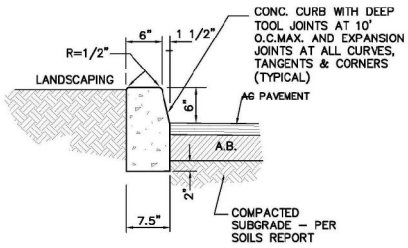


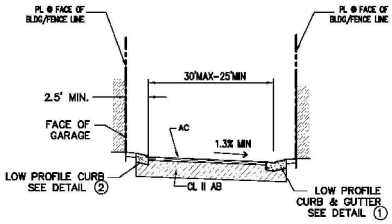


3 CURB & GUTTER
NOT TO SCALE

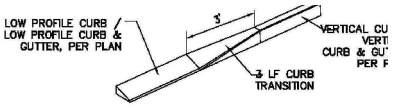


4 VERTICAL CURB
NOT TO SCALE

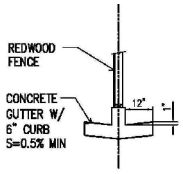
7 DRAIN–THRU GUTTER
NOT TO SCALE



PRIVATE ALLEY AND PRIVATE STREET
NOT TO SCALE 3.5" AC 13.0" AB TI=6 R=5



LOW PROFILE TO VERTICAL CURB TRANSITION
5 NOT TO SCALE



6 CURB AND GUTTER AT SIDE YARD FENCE
NOT TO SCALE

GL=GARAGE LIP
FF=FINISHED FLOOR

Note: Grading Plan data provided by Phillippi Engineering (PEI)

Not to Scale

Stantec

Ashton Place Unit 3 Project
Vacaville, California

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Figure 3.18-2. Grading Plan

Prepared: MNugent, 9/14/2016, Technical Review: ABC, 2014-01-16, Independent Review, ABC, 2014-01-16

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drainage facilities would not be required as part of the proposed project. Therefore, impacts associated with stormwater drainage facilities would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-4 Have sufficient water supplies available to serve the proposed project from existing entitlements and resources, or are new or expanded entitlements needed?

Impact Analysis

According to the 2015 UWMP, projected water supply consistently exceeds water demand through 2040 for average years, single-year droughts, and the first year of multiple year droughts. The City estimates future water use demand based on housing projections. The 2015 UWMP assumes a water use factor of 183 gallons per capita per day. The potential water consumption for the proposed project, assuming 2.71 residents per residential unit, would be approximately 7,438.95 gallons per day (gpd) or 8.33 AF/YR. The City presently has a contracted water supply of 34,273 AF/YR. Based on the contracted water supply, the proposed project water consumption would represent 0.025 percent of the City's potable water supply. Therefore, the incremental water consumption by the proposed project would be sufficient and not require new or expanded entitlements. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-5 Result in a determination by the wastewater treatment provider that serves or may serve the proposed project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Impact Analysis

The WWTP has a design flow of 15 mgd for SBF and 55 mgd for PHWWF. Currently, the WWTP's wastewater generation rate is 8.36 mgd, providing up to 6.64 mgd of unused capacity. As described in Impact UTIL-2, an eight inch sewer line would be constructed to the existing eight inch sanitary sewer line in Cogburn Circle. As discussed in Impact UTIL-2, based on the City's Standard Specifications an Average Dry Weather Flow of 200 gpd (three bedroom home) and 240 gpd (four bedroom home) per residential unit is assumed. The expected wastewater flow from the proposed project would be 3,200 gpd, which represents approximately 0.05 percent of the 6.64 mgd in unused capacity. Thus, the WWTP has adequate capacity to serve the proposed project. Additionally, the sewer capacity has been analyzed by the City of Vacaville and it has been determined that sewer improvements are required. These improvements have been referred to as DIF 54 and consist of several line improvements. According to the Sewer Calculations Memo, Sewer flow in Sewershed ST1848 has been reduced by 2,600 gpd from the original Master Plan, Sewer flow in Sewershed ST09 has been reduced by 960 gpd from the original Master Plan, and, Sewer flow in Sewershed ST04 has been reduced by 710 gpd from the original Master Plan. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-6 Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Impact Analysis

The City contracts with a private waste collection company to provide weekly solid waste, green waste, and recyclable material collection to City residents and commercial businesses (General Plan 2015). Solid waste from the project site would be collected and deposited at the Hay Road Landfill, located at 6426 Hay Road, Vacaville, California, approximately 8.4 miles east of the project site. The landfill is approximately 640 acres and the total capacity is 37 million cubic yards. As of 2010, the landfill had a remaining capacity of approximately 30.4 million cubic yards, and is approximately 18 percent full (Calrecycle 2016). Recyclable materials can also be taken to Recology Vacaville Solano recycling center located at 855½ Davis Street, approximately 3.8 miles northwest from the project site or arranged to be collected on a regular basis through Recology Vacaville Solano.

The proposed project would consist of developing 15 single-family detached residential units. According to the General Plan EIR, the City uses a standard multiplier of 4.9 pounds of solid waste per day per resident. Based off of the California Department of Finance January 1, 2015 estimated average household size of 2.71 persons, the proposed project would dispose of 200 pounds of solid waste per day, or approximately 0.10 tons per day, as shown in Table 3.18-1.

Table 3.18-1: Estimated Project Solid Waste Generation

Project Component	Quantity	Generation Rate (lbs/day)	Pounds per Day	Tons per Day	Tons per year
Residential Units	15	13.27	200	0.10	37.23
Source: General Plan 2015.					

Based on the Hay Road Landfill permitted intake of 2,400 tons per day, project generated waste would represent approximately 0.004 percent of daily capacity. The proposed project contribution to solid waste facilities would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-7 Comply with federal, State, and local statutes and regulations related to solid waste?

Impact Analysis

The proposed project would be served with curbside solid waste and recycling services, which are standard services for residential uses in the City. Solid waste disposal must follow the requirements of the contracted waste hauler and disposal facility, which follows federal, State, and local statutes and regulations related to the collection and disposal of solid waste.

In addition, California State Assembly Bill 939 (AB 939) mandates the reduction of solid waste disposal in landfills by 50 percent in 2000 and by 75 percent in 2020. Division 8.08 (solid waste, yard waste, and household hazardous waste) of the Vacaville Municipal Code implements the approved Source Reduction and Recycling Element required by AB 939, and regulates the collection and disposal of solid waste, yard waste, and household hazardous materials (General

Plan EIR 2013). The City's General Plan Policy PUB-P9.2 indicates that the City shall strive for a minimum 90 percent of City residents to participate in waste diversion programs (General Plan 2015). Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.19 MANDATORY FINDINGS OF SIGNIFICANCE

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental impacts of a project are considerable when viewed in connection with the impacts of past projects, the impacts of other current projects, and the effects of probable future Projects)?	☐	☒	☐	☐
c) Does the project have environmental impacts which will cause substantial adverse impacts on human beings, either directly or indirectly?	☐	☒	☐	☐

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Impact Analysis

As evaluated in this ISMND, the proposed project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory. Mitigation Measures BIO-1, CUL-1, and CUL-2 have been included herein to lessen the significance of potential impacts to special-status species and habitats, and inadvertent discovery of cultural resources to reduce potential impacts to cultural resources as less than significant.

b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental impacts of a project are considerable when viewed in connection with the effects of past projects, the impacts of other current projects, and the impacts of probable future projects)?

Impact Analysis

The Southtown Project EIR evaluated the cumulative effects associated with growth and development in the Southtown Area. Rezoning the project site from CN to RM would result in an increase in the criteria air emissions and an increase of VMT when compared to the Southtown Project EIR. While the proposed land use change would reduce the City's ability to reduce future emissions locally, it would not significantly alter the conclusions of the Southtown Project EIR for cumulative air quality and traffic impacts. Therefore, the proposed project would not result in any new cumulative impacts not previously identified in the Southtown Project EIR. Rezoning of project site and other parcels in the Southtown, Southtown Commons, and Vanden Meadows developments from commercial to residential may have a cumulative impact on the available parks. However, the proposed project includes payment of in-lieu payment for offsite recreation/open space and therefore, would not contribute to a cumulatively significant impact. Other projects would be subject to similar fee payment or include adequate open spaces as part of approval. All cumulative impacts resulting from the proposed project related to air quality, greenhouse gas, hydrology, land use, noise, and water quality, would be mitigated with the implementation of Mitigation Measures AIR-1, GHG-1, GHG-2, GHG-4, HYD-1, LU-1, NOI-1, TRANS-1, and TRANS-2.

c) Does the project have environmental impacts which will cause substantial adverse impacts on human beings, either directly or indirectly?

Impact Analysis

All impacts identified in this ISMND are either less than significant after mitigation or less than significant and do not require mitigation. Therefore, the proposed project would not result in environmental effects that cause substantial adverse effects on human beings either directly or indirectly. Impacts would be less than significant with mitigation.

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5.0 LIST OF PREPARERS

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APPENDIX A

Stantec

Memo

To:	Christina Corsello	From:	Elena Nuno, Senior Air Quality Scientist
	City of Vacaville Planning Department		Fresno (Shaw Ave) CA Office
File:	Ashton Place Unit 3 Project	Date:	October 17, 2016

Reference: Ashton Place Unit 3 Project – Air Quality and Greenhouse Gas Assumptions Memorandum

This memorandum provides the air quality and greenhouse gas modeling assumptions used in determining the air quality and greenhouse gas impacts from construction and operation of the Ashton Place Unit 3 Project.

AIR DISTRICT THRESHOLDS

The project site is located wholly within the Yolo Solano Air Quality Management District (YSAQMD) boundaries and is therefore under the jurisdiction of the YSAQMD. Accordingly, the YSAQMD's Thresholds of Significance would be the most appropriate to use. The Bay Area Air Quality Management District's (BAAQMD) boundaries are located to the south of the project area. In certain instances when large development projects have been located near the BAAQMD boundaries, the YSAQMD has recommended evaluating the projects using the BAAQMD Thresholds of Significance because they are more restrictive in terms of total emissions allowed than the YSAQMD Thresholds of Significance.

The YSAQMD Handbook for Assessing and Mitigating Air Quality Impacts (2007) does not have a screening threshold for construction emissions, but does have a screening threshold for operational emissions. The YSAQMD Handbook states that a single-family residential development would need to exceed 325 dwelling units in the year 2010 to have the potential to exceed emissions of reactive organic gases (ROG), oxides of nitrogen (NOx), and particulate matter 10 microns or smaller (PM10). Based on that preliminary screening criteria the project would not need to conduct a quantitative analysis, however, in order to provide a complete evaluation a quantitative analysis was provided in the Initial Study.

The BAAQMD has preliminary screening thresholds for determining if a project has the potential to have significant air quality impacts. The preliminary screening method provided in the BAAQMD's 2010 Guidelines for construction-related impacts associated with criteria air pollutants and precursors is used to indicate whether a project's construction-related air pollutants or precursors could potentially exceed the BAAQMD's thresholds of significance. The construction of the project would result in a less than significant impact to air quality if the following screening criteria are met:

1. The project is below the applicable screening level (see Table 1).

2. All Basic Construction Standard Conditions would be included in the project design and implemented during construction.

3. Construction-related activities would not include any of the following:

a. Demolition activities inconsistent with BAAQMD Regulation 11, Rule 2: Asbestos Demolition, Renovation and Manufacturing;

b. Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would occur simultaneously);

c. Simultaneous construction of more than one land use type (e.g., project would develop residential and commercial uses on the same site) (not applicable to high density infill development);

d. Extensive site preparation (i.e., greater than default assumptions used by the Urban Land Use Emissions Model [URBEMIS] for grading, cut/fill, or earth movement); or

e. Extensive material transport (e.g., greater than 10,000 cubic yards of soil import/export) requiring a considerable amount of haul truck activity.

Table 1: BAAQMD Criteria Air Pollutant and Precursors Screening for Construction Emissions

Land Use	Screening Size	Project Size
Single-Family Residential	114 DU	15 DU

Note:
DU = dwelling units
Source: BAAQMD 2010

The project is a single-family development with 15 dwelling units. The project would be less than the screening level shown in Table 1. All Basic Construction Standard Conditions would be incorporated into the project construction through Mitigation Measure AIR-1. The project does not involve demolition. The project will not involve simultaneous occurrences of more than two construction phases or more than one land use type. Extensive site preparation or material transport will not be a characteristic of this project as well. Since the project meets the BAAQMD screening criteria with incorporation of Mitigation Measure AIR-1, construction impacts are less than significant.

The BAAQMD's preliminary operational screening criteria from its 2010 CEQA Guidelines is provided in Table 2. As shown in Table 2, the project's proposed land use is less than the BAAQMD's screening size for operational criteria air pollutants and precursors (ROG, NOx, PM10, PM2.5, CO). Therefore, the project would have a less than significant impact with respect to criteria pollutants and ozone precursors.

Table 2: BAAQMD Operational Screening Level for Criteria Air Pollutants and Precursors

Land Use	Screening Size	Project Size
Single-Family Residential	325 DU	15 DU

Note:
DU = dwelling units
Source: BAAQMD 2010

The BAAQMD's preliminary operational screening level for greenhouse gases from its 2010 CEQA Guidelines is provided in Table 3. This screening size was established as the level that would have the potential to exceed the 1,100 $MTCO_2e$ operational threshold and thus require additional analysis. As shown in Table 3, the project would not exceed the screening level, accordingly it would not have the potential to exceed 1,100 $MTCO_2e$. Therefore, according to the BAAQMD CEQA Guidelines the project would result in a less than significant cumulative impact to global climate change.

Table 3: BAAQMD Operational Greenhouse Gas Screening Level

Land Use	Screening Size	Project Size
Single-Family Residential	56 DU	15 DU
Note: DU = dwelling units Source: BAAQMD 2010		

SOUTH TOWN EIR AND VANDEN MEADOWS EIR AIR QUALITY ANALYSES

The South Town EIR was prepared in 2003 when the current air quality model was the Urban Emissions Model (URBEMIS). The Vanden Meadows air quality analysis was prepared in February 2012, when many Air Districts in California were transitioning from URBEMIS to the California Emissions Estimator Model (CalEEMod).

The URBEMIS User Guide (URBEMIS 2007) states that the presence of local-serving retail can be expected to bring a two percent trip reduction benefit. This trip reduction would reduce the vehicle miles traveled (VMT) of the projects. However, neither the South Town EIR nor the Vanden Meadows air quality analyses utilized the local-serving retail mitigation measure within the URBEMIS model to reduce vehicle trips and hence VMT and emissions from the project. The results presented in their respective EIRs do not claim any VMT or emission reductions for the local-serving project design feature. As such, removing local-serving retail from the South Town area or near the Vanden Meadows area would not result in an increase in VMT or emissions beyond what was previously disclosed.

Since the adoption of the EIRs for South Town and Vanden Meadows, the City has adopted a new General Plan that includes a focus on reducing VMT by developing a mix of land uses, such that there would be local-serving retail to serve residences nearby and thus reduce VMT.

In order to provide a comparative estimate of the potential increase in VMT as a result of removing the local-serving commercial uses from the project site, a CalEEMod scenario was run for the total estimated dwelling units in the Southtown Project (1,597 dwelling units) with and without a diversity of uses included (note local-serving retail alone is not a mitigation measure within CalEEMod). Because the project is located within the South Town area, only the South Town residences were evaluated. The unmitigated results show the VMT without a diversity of uses and the mitigated results show VMT with a diversity of uses.

Table 4: Southtown Residential Vehicle Miles Traveled

Scenario	Annual VMT
Unmitigated (no diversity of uses)	40,844,228
Mitigated (with commercial diversity of uses)	38,802,016
Difference	2,042,212
Percent Increase in VMT	5.3 percent

The percent increase in VMT was developed utilizing the same emissions model for the both the Southtown Project EIR, and the proposed project, resulting in an approximately five percent increase from the CalEEMod scenarios. However, the actual VMT increase is estimated at two percent (see Section 3.16 Transportation and Traffic and Transportation and Traffic Memorandum for additional VMT discussion). The baseline (i.e. existing condition) does not include a commercial use; therefore, the potential for a five percent emission increase is already being experienced. The implementation of the proposed project with the land use change would reduce the City's ability to reduce future emissions in the cumulative context. However, the 5.3 percent increase in VMT would not alter the conclusions of the Southtown Project EIR, or result in a new impact exceeding an air quality standard because the original South Town Project did not utilize local-serving retail as a mechanism for achieving vehicle trip reductions and thus VMT and emission reductions. The emissions estimates presented in the South Town EIR would not be increased through the removal of the commercial use of the site.

CALEEMOD ASSUMPTIONS

PROPOSED PROJECT – 15 RESIDENTIAL HOMES

Construction

Construction is assumed to begin in April 2017 and be completed by March 2018.

The default construction equipment list is provided in Table 5.

Table 5: Construction Equipment Assumptions

Phase	Equipment	Unit Amount	Hours per Day	Horsepower	Load Factor
Site Preparation	Graders	1	8	174	0.41
	Rubber Tired Dozers	1	7	255	0.4
	Tractors/Loaders/Backhoes	1	8	97	0.37
Grading	Graders	1	6	174	0.41

	Rubber Tired Dozers	1	6	255	0.4
	Tractors/Loaders/Backhoes	1	7	97	0.37
Building Construction	Cranes	1	6	226	0.29
	Forklifts	1	6	89	0.2
	Generator Sets	1	8	84	0.74
	Tractors/Loaders/Backhoes	1	6	97	0.37
	Welders	3	8	46	0.45
Paving	Cement and Mortar Mixers	1	6	9	0.56
	Pavers	1	6	125	0.42
	Paving Equipment	1	8	130	0.36
	Rollers	1	7	80	0.38
	Tractors/Loaders/Backhoes	1	8	97	0.37
Architectural Coating	Air Compressors	1	6	78	0.48

Operations

Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project site. Because much of YSAQMD is located within a rural setting, CalEEMod assumes that 94 percent of the roads are paved.

Table 6: Project Trip Generation Rates

Land Use	Quantity	Units	Trip Generation Rate (trips/unit/day)		
			Weekday	Saturday[1]	Sunday[1]
Single-Family Housing	15	du	12.2	12.2	12.2

Notes:
1. The ITE Manual, 9th edition default trip generation rates for Weekdays were increased based on local conditions. The weekday rate was applied to the Saturday and Sunday rate to provide a conservative estimate because the weekend rates are lower.

Source: Stantec Traffic Impact Study Report, 2016

EXISTING LAND USE DESIGNATION

The project and the other 2-acre parcel could develop 43,516 square feet of commercial uses based on the minimum allowed Floor Area Ratio. The majority of emissions come from mobile sources traveling to and from the commercial site.

Table 7: Neighborhood Commercial Trip Generation Rates (Existing Land Use Designation)

Land Use	Quantity	Units	Trip Generation Rate (trips/ksf/day)		
			Weekday	Saturday[1]	Sunday[1]
Retail	43.516	ksf	44.32	42.04	20.43

Notes:
Ksf = 1,000 square feet

STANTEC CONSULTING SERVICES INC.

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Attachment: CalEEMod Outputs, BAAQMD Screening Guidelines

3. SCREENING CRITERIA

The screening criteria identified in this section are **not thresholds of significance**. The Air District developed screening criteria to provide lead agencies and project applicants with a conservative indication of whether the proposed project could result in potentially significant air quality impacts. If all of the screening criteria are met by a proposed project, then the lead agency or applicant would not need to perform a detailed air quality assessment of their project's air pollutant emissions. These screening levels are generally representative of new development on greenfield sites without any form of mitigation measures taken into consideration. In addition, the screening criteria in this section do not account for project design features, attributes, or local development requirements that could also result in lower emissions. For projects that are mixed-use, infill, and/or proximate to transit service and local services, emissions would be less than the greenfield type project that these screening criteria are based on.

If a project includes emissions from stationary source engines (e.g., back-up generators) and industrial sources subject to Air District Rules and Regulations, the screening criteria should not be used. The project's stationary source emissions should be analyzed separately from the land use-related indirect mobile- and area-source emissions. Stationary-source emissions are not included in the screening estimates given below and, for criteria pollutants, must be added to the indirect mobile- and area-source emissions generated by the land use development and compared to the appropriate Thresholds of Significance. Greenhouse gas emissions from permitted stationary sources should not be combined with operational emissions, but compared to a separate stationary source greenhouse gas threshold.

3.1. OPERATIONAL-RELATED IMPACTS

3.1.1. Criteria Air Pollutants and Precursors

The screening criteria developed for criteria pollutants and precursors were derived using the default assumptions used by the Urban Land Use Emissions Model (URBEMIS). If the project has sources of emissions not evaluated in the URBEMIS program the screening criteria should not be used. If the project meets the screening criteria in Table 3-1, the project would not result in the generation of operational-related criteria air pollutants and/or precursors that exceed the *Thresholds of Significance* shown in Table 2-2. Operation of the proposed project would therefore result in a less-than-significant cumulative impact to air quality from criteria air pollutant and precursor emissions.

3.1.2. Greenhouse Gases

The screening criteria developed for greenhouse gases were derived using the default emission assumptions in URBEMIS and using off-model GHG estimates for indirect emissions from electrical generation, solid waste and water conveyance. If the project has other significant sources of GHG emissions not accounted for in the methodology described above, then the screening criteria should not be used. Projects below the applicable screening criteria shown in Table 3-1 would not exceed the 1,100 MT of CO_2e/yr GHG threshold of significance for projects other than permitted stationary sources.

If a project, including stationary sources, is located in a community with an adopted qualified GHG Reduction Strategy, the project may be considered less than significant if it is consistent with the GHG Reduction Strategy. A project must demonstrate its consistency by identifying and implementing all applicable feasible measures and policies from the GHG Reduction Strategy into the project.

Table 3-1 Operational-Related Criteria Air Pollutant and Precursor Screening Level Sizes			
Land Use Type	Operational Criteria Pollutant Screening Size	Operational GHG Screening Size	Construction-Related Screening Size
Single-family	325 du (NOX)	56 du	114 du (ROG)
Apartment, low-rise	451 du (ROG)	78 du	240 du (ROG)
Apartment, mid-rise	494 du (ROG)	87 du	240 du (ROG)
Apartment, high-rise	510 du (ROG)	91 du	249 du (ROG)
Condo/townhouse, general	451 du (ROG)	78 du	240 du (ROG)
Condo/townhouse, high-rise	511 du (ROG)	92 du	252 du (ROG)
Mobile home park	450 du (ROG)	82 du	114 du (ROG)
Retirement community	487 du (ROG)	94 du	114 du (ROG)
Congregate care facility	657 du (ROG)	143 du	240 du (ROG)
Day-care center	53 ksf (NOX)	11 ksf	277 ksf (ROG)
Elementary school	271 ksf (NOX)	44 ksf	277 ksf (ROG)
Elementary school	2747 students (ROG)	-	3904 students (ROG)
Junior high school	285 ksf (NOX)	-	277 ksf (ROG)
Junior high school	2460 students (NOX)	46 ksf	3261 students (ROG)
High school	311 ksf (NOX)	49 ksf	277 ksf (ROG)
High school	2390 students (NOX)	-	3012 students (ROG)
Junior college (2 years)	152 ksf (NOX)	28 ksf	277 ksf (ROG)
Junior college (2 years)	2865 students (ROG)	-	3012 students (ROG)
University/college (4 years)	1760 students (NOX)	320 students	3012 students (ROG)
Library	78 ksf (NOX)	15 ksf	277 ksf (ROG)
Place of worship	439 ksf (NOX)	61 ksf	277 ksf (ROG)
City park	2613 acres (ROG)	600 acres	67 acres (PM10)
Racquet club	291 ksf (NOX)	46 ksf	277 ksf (ROG)
Racquetball/health	128 ksf (NOX)	24 ksf	277 ksf (ROG)
Quality restaurant	47 ksf (NOX)	9 ksf	277 ksf (ROG)
High turnover restaurant	33 ksf (NOX)	7 ksf	277 ksf (ROG)
Fast food rest. w/ drive thru	6 ksf (NOX)	1 ksf	277 ksf (ROG)
Fast food rest. w/o drive thru	8 ksf (NOX)	1 ksf	277 ksf (ROG)
Hotel	489 rooms (NOX)	83 rooms	554 rooms (ROG)
Motel	688 rooms (NOX)	106 rooms	554 rooms (ROG)
Free-standing discount store	76 ksf (NOX)	15 ksf	277 ksf (ROG)
Free-standing discount superstore	87 ksf (NOX)	17 ksf	277 ksf (ROG)
Discount club	102 ksf (NOX)	20 ksf	277 ksf (ROG)
Regional shopping center	99 ksf (NOX)	19 ksf	277 ksf (ROG)
Electronic Superstore	95 ksf (NOX)	18 ksf	277 ksf (ROG)
Home improvement superstore	142 ksf (NOX)	26 ksf	277 ksf (ROG)
Strip mall	99 ksf (NOX)	19 ksf	277 ksf (ROG)
Hardware/paint store	83 ksf (NOX)	16 ksf	277 ksf (ROG)
Supermarket	42 ksf (NOX)	8 ksf	277 ksf (ROG)
Convenience market (24 hour)	5 ksf (NOX)	1 ksf	277 ksf (ROG)
Convenience market with gas pumps	4 ksf (NOX)	1 ksf	277 ksf (ROG)
Bank (with drive-through)	17 ksf (NOX)	3 ksf	277 ksf (ROG)
General office building	346 ksf (NOX)	53 ksf	277 ksf (ROG)

Ashton Place

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	15.00	Dwelling Unit	1.76	20,223.00	43

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Road Dust -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	213.00
tblFireplaces	NumberNoFireplace	10.35	0.00
tblFireplaces	NumberWood	4.65	0.00
tblGrading	AcresOfGrading	1.50	1.76
tblLandUse	LandUseSquareFeet	27,000.00	20,223.00
tblLandUse	LotAcreage	4.87	1.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20
tblWater	IndoorWaterUseRate	977,310.38	2,098,740.38
tblWoodstoves	NumberCatalytic	0.38	15.00
tblWoodstoves	NumberNoncatalytic	0.38	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2017	0.2894	1.8895	1.4481	2.2200e-003	0.5354	0.1196	0.6550	0.0607	0.1152	0.1759	0.0000	186.5657	186.5657	0.0381	0.0000	187.3660
2018	0.1648	0.2727	0.2295	3.7000e-004	0.1287	0.0165	0.1451	0.0130	0.0158	0.0288	0.0000	30.9737	30.9737	6.4300e-003	0.0000	31.1088
Total	**0.4541**	**2.1621**	**1.6776**	**2.5900e-003**	**0.6641**	**0.1360**	**0.8001**	**0.0738**	**0.1310**	**0.2047**	**0.0000**	**217.5394**	**217.5394**	**0.0445**	**0.0000**	**218.4748**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.2894	1.8895	1.4481	2.2200e-003	0.0208	0.1196	0.1403	9.3900e-003	0.1152	0.1246	0.0000	186.5655	186.5655	0.0381	0.0000	187.3658
2018	0.1648	0.2727	0.2295	3.7000e-004	1.2200e-003	0.0165	0.0177	3.3000e-004	0.0158	0.0161	0.0000	30.9737	30.9737	6.4300e-003	0.0000	31.1087
Total	**0.4541**	**2.1621**	**1.6776**	**2.5900e-003**	**0.0220**	**0.1360**	**0.1580**	**9.7200e-003**	**0.1310**	**0.1407**	**0.0000**	**217.5392**	**217.5392**	**0.0445**	**0.0000**	**218.4745**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**96.69**	**0.00**	**80.25**	**86.83**	**0.00**	**31.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3550	0.0360	1.9212	6.9400e-003		0.3540	0.3540		0.3540	0.3540	46.3965	0.1819	46.5784	0.1825	0.0000	50.4109
Energy	2.8500e-003	0.0244	0.0104	1.6000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	59.1065	59.1065	1.9400e-003	8.1000e-004	59.3972

Mobile	0.1474	0.4603	1.7448	3.1900e-003	11.8932	6.0600e-003	11.8993	1.2159	5.5800e-003	1.2215	0.0000	250.2731	250.2731	9.9500e-003	0.0000	250.4821
Waste						0.0000	0.0000		0.0000	0.0000	3.4042	0.0000	3.4042	0.2012	0.0000	7.6289
Water						0.0000	0.0000		0.0000	0.0000	0.6658	3.9310	4.5968	0.0686	1.6500e-003	6.5487
Total	**0.5052**	**0.5207**	**3.6764**	**0.0103**	**11.8932**	**0.3621**	**12.2553**	**1.2159**	**0.3616**	**1.5775**	**50.4665**	**313.4925**	**363.9590**	**0.4641**	**2.4600e-003**	**374.4679**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3550	0.0360	1.9212	6.9400e-003		0.3540	0.3540		0.3540	0.3540	46.3965	0.1819	46.5784	0.1825	0.0000	50.4109
Energy	2.8500e-003	0.0244	0.0104	1.6000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	59.1065	59.1065	1.9400e-003	8.1000e-004	59.3972
Mobile	0.1474	0.4603	1.7448	3.1900e-003	11.8932	6.0600e-003	11.8993	1.2159	5.5800e-003	1.2215	0.0000	250.2731	250.2731	9.9500e-003	0.0000	250.4821
Waste						0.0000	0.0000		0.0000	0.0000	3.4042	0.0000	3.4042	0.2012	0.0000	7.6289
Water						0.0000	0.0000		0.0000	0.0000	0.6658	3.9310	4.5968	0.0686	1.6500e-003	6.5476
Total	**0.5052**	**0.5207**	**3.6764**	**0.0103**	**11.8932**	**0.3621**	**12.2553**	**1.2159**	**0.3616**	**1.5775**	**50.4665**	**313.4925**	**363.9590**	**0.4641**	**2.4600e-003**	**374.4668**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Site Preparation	Site Preparation	4/3/2017	4/4/2017	5	2	
2	Grading	Grading	4/5/2017	4/10/2017	5	4	
3	Building Construction	Building Construction	4/11/2017	2/1/2018	5	213	
4	Paving	Paving	2/2/2018	2/15/2018	5	10	
5	Architectural Coating	Architectural Coating	2/16/2018	3/1/2018	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.76

Acres of Paving: 0

Residential Indoor: 40,952; Residential Outdoor: 13,651; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	5.00	2.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3100e-003	0.0242	0.0159	2.0000e-005		1.3100e-003	1.3100e-003		1.2000e-003	1.2000e-003	0.0000	1.5895	1.5895	4.9000e-004	0.0000	1.5997
Total	**2.3100e-003**	**0.0242**	**0.0159**	**2.0000e-005**	**5.8000e-003**	**1.3100e-003**	**7.1100e-003**	**2.9500e-003**	**1.2000e-003**	**4.1500e-003**	**0.0000**	**1.5895**	**1.5895**	**4.9000e-004**	**0.0000**	**1.5997**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	5.0000e-005	4.7000e-004	5.5000e-004	0.0000	3.0300e-003	1.0000e-005	3.0400e-003	3.1000e-004	1.0000e-005	3.1000e-004	0.0000	0.1342	0.1342	0.0000	0.0000	0.1342
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	3.6000e-004	0.0000	6.5400e-003	0.0000	6.5400e-003	6.6000e-004	0.0000	6.6000e-004	0.0000	0.0570	0.0570	0.0000	0.0000	0.0571
Total	**8.0000e-005**	**5.1000e-004**	**9.1000e-004**	**0.0000**	**9.5700e-003**	**1.0000e-005**	**9.5800e-003**	**9.7000e-004**	**1.0000e-005**	**9.7000e-004**	**0.0000**	**0.1912**	**0.1912**	**0.0000**	**0.0000**	**0.1913**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3100e-003	0.0242	0.0159	2.0000e-005		1.3100e-003	1.3100e-003		1.2000e-003	1.2000e-003	0.0000	1.5895	1.5895	4.9000e-004	0.0000	1.5997
Total	**2.3100e-003**	**0.0242**	**0.0159**	**2.0000e-005**	**5.8000e-003**	**1.3100e-003**	**7.1100e-003**	**2.9500e-003**	**1.2000e-003**	**4.1500e-003**	**0.0000**	**1.5895**	**1.5895**	**4.9000e-004**	**0.0000**	**1.5997**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	4.7000e-004	5.5000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1342	0.1342	0.0000	0.0000	0.1342
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	4.0000e-005	3.6000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0570	0.0570	0.0000	0.0000	0.0571

Total	**8.0000e-005**	**5.1000e-004**	**9.1000e-004**	**0.0000**	**9.0000e-005**	**1.0000e-005**	**1.0000e-004**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**0.1912**	**0.1912**	**0.0000**	**0.0000**	**0.1913**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.9700e-003	0.0000	9.9700e-003	5.0700e-003	0.0000	5.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.7700e-003	0.0396	0.0264	3.0000e-005		2.1300e-003	2.1300e-003		1.9600e-003	1.9600e-003	0.0000	2.6112	2.6112	8.0000e-004	0.0000	2.6280
Total	**3.7700e-003**	**0.0396**	**0.0264**	**3.0000e-005**	**9.9700e-003**	**2.1300e-003**	**0.0121**	**5.0700e-003**	**1.9600e-003**	**7.0300e-003**	**0.0000**	**2.6112**	**2.6112**	**8.0000e-004**	**0.0000**	**2.6280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	4.7000e-004	5.5000e-004	0.0000	3.0300e-003	1.0000e-005	3.0400e-003	3.1000e-004	1.0000e-005	3.1000e-004	0.0000	0.1342	0.1342	0.0000	0.0000	0.1342
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	8.0000e-005	7.2000e-004	0.0000	0.0131	0.0000	0.0131	1.3300e-003	0.0000	1.3300e-003	0.0000	0.1140	0.1140	1.0000e-005	0.0000	0.1141
Total	**1.0000e-004**	**5.5000e-004**	**1.2700e-003**	**0.0000**	**0.0161**	**1.0000e-005**	**0.0161**	**1.6400e-003**	**1.0000e-005**	**1.6400e-003**	**0.0000**	**0.2482**	**0.2482**	**1.0000e-005**	**0.0000**	**0.2483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.9700e-003	0.0000	9.9700e-003	5.0700e-003	0.0000	5.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.7700e-003	0.0396	0.0264	3.0000e-005		2.1300e-003	2.1300e-003		1.9600e-003	1.9600e-003	0.0000	2.6112	2.6112	8.0000e-004	0.0000	2.6280
Total	**3.7700e-003**	**0.0396**	**0.0264**	**3.0000e-005**	**9.9700e-003**	**2.1300e-003**	**0.0121**	**5.0700e-003**	**1.9600e-003**	**7.0300e-003**	**0.0000**	**2.6112**	**2.6112**	**8.0000e-004**	**0.0000**	**2.6280**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-005	4.7000e-004	5.5000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1342	0.1342	0.0000	0.0000	0.1342
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	8.0000e-005	7.2000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1140	0.1140	1.0000e-005	0.0000	0.1141
Total	**1.0000e-004**	**5.5000e-004**	**1.2700e-003**	**0.0000**	**1.5000e-004**	**1.0000e-005**	**1.6000e-004**	**4.0000e-005**	**1.0000e-005**	**5.0000e-005**	**0.0000**	**0.2482**	**0.2482**	**1.0000e-005**	**0.0000**	**0.2483**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.2792	1.8058	1.3524	2.0700e-003		0.1158	0.1158		0.1117	0.1117	0.0000	174.3972	174.3972	0.0366	0.0000	175.1657
Total	**0.2792**	**1.8058**	**1.3524**	**2.0700e-003**		**0.1158**	**0.1158**		**0.1117**	**0.1117**	**0.0000**	**174.3972**	**174.3972**	**0.0366**	**0.0000**	**175.1657**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.2000e-004	4.9000e-004	0.0000	3.0300e-003	1.0000e-005	3.0400e-003	3.1000e-004	1.0000e-005	3.1000e-004	0.0000	0.1191	0.1191	0.0000	0.0000	0.1191
Vendor	2.3800e-003	0.0162	0.0296	5.0000e-005	0.1047	2.5000e-004	0.1049	0.0107	2.3000e-004	0.0109	0.0000	4.0433	4.0433	3.0000e-005	0.0000	4.0439
Worker	1.4800e-003	2.2200e-003	0.0212	5.0000e-005	0.3863	3.0000e-005	0.3863	0.0391	3.0000e-005	0.0392	0.0000	3.3660	3.3660	1.9000e-004	0.0000	3.3699
Total	**3.9000e-003**	**0.0188**	**0.0512**	**1.0000e-004**	**0.4940**	**2.9000e-004**	**0.4943**	**0.0501**	**2.7000e-004**	**0.0504**	**0.0000**	**7.5284**	**7.5284**	**2.2000e-004**	**0.0000**	**7.5330**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2792	1.8058	1.3524	2.0700e-003		0.1158	0.1158		0.1117	0.1117	0.0000	174.3970	174.3970	0.0366	0.0000	175.1655
Total	**0.2792**	**1.8058**	**1.3524**	**2.0700e-003**		**0.1158**	**0.1158**		**0.1117**	**0.1117**	**0.0000**	**174.3970**	**174.3970**	**0.0366**	**0.0000**	**175.1655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.2000e-004	4.9000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	1.0000e-005	0.0000	0.1191	0.1191	0.0000	0.0000	0.1191
Vendor	2.3800e-003	0.0162	0.0296	5.0000e-005	1.1800e-003	2.5000e-004	1.4300e-003	3.4000e-004	2.3000e-004	5.7000e-004	0.0000	4.0433	4.0433	3.0000e-005	0.0000	4.0439
Worker	1.4800e-003	2.2200e-003	0.0212	5.0000e-005	3.5600e-003	3.0000e-005	3.5900e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	3.3660	3.3660	1.9000e-004	0.0000	3.3699
Total	**3.9000e-003**	**0.0188**	**0.0512**	**1.0000e-004**	**4.7700e-003**	**2.9000e-004**	**5.0600e-003**	**1.3000e-003**	**2.7000e-004**	**1.5600e-003**	**0.0000**	**7.5284**	**7.5284**	**2.2000e-004**	**0.0000**	**7.5330**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0310	0.2078	0.1660	2.6000e-004		0.0126	0.0126		0.0122	0.0122	0.0000	22.0056	22.0056	4.4200e-003	0.0000	22.0983
Total	**0.0310**	**0.2078**	**0.1660**	**2.6000e-004**		**0.0126**	**0.0126**		**0.0122**	**0.0122**	**0.0000**	**22.0056**	**22.0056**	**4.4200e-003**	**0.0000**	**22.0983**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	5.0000e-005	6.0000e-005	0.0000	3.0200e-003	0.0000	3.0300e-003	3.1000e-004	0.0000	3.1000e-004	0.0000	0.0149	0.0149	0.0000	0.0000	0.0149
Vendor	2.7000e-004	1.8500e-003	3.4900e-003	1.0000e-005	0.0133	3.0000e-005	0.0133	1.3500e-003	3.0000e-005	1.3800e-003	0.0000	0.5044	0.5044	0.0000	0.0000	0.5045
Worker	1.7000e-004	2.6000e-004	2.4100e-003	1.0000e-005	0.0491	0.0000	0.0491	4.9700e-003	0.0000	4.9700e-003	0.0000	0.4114	0.4114	2.0000e-005	0.0000	0.4118
Total	**4.4000e-004**	**2.1600e-003**	**5.9600e-003**	**2.0000e-005**	**0.0654**	**3.0000e-005**	**0.0654**	**6.6300e-003**	**3.0000e-005**	**6.6600e-003**	**0.0000**	**0.9306**	**0.9306**	**2.0000e-005**	**0.0000**	**0.9312**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0310	0.2078	0.1660	2.6000e-004		0.0126	0.0126		0.0122	0.0122	0.0000	22.0055	22.0055	4.4200e-003	0.0000	22.0983
Total	**0.0310**	**0.2078**	**0.1660**	**2.6000e-004**		**0.0126**	**0.0126**		**0.0122**	**0.0122**	**0.0000**	**22.0055**	**22.0055**	**4.4200e-003**	**0.0000**	**22.0983**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	5.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0149	0.0149	0.0000	0.0000	0.0149
Vendor	2.7000e-004	1.8500e-003	3.4900e-003	1.0000e-005	1.5000e-004	3.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.5044	0.5044	0.0000	0.0000	0.5045
Worker	1.7000e-004	2.6000e-004	2.4100e-003	1.0000e-005	4.5000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.4114	0.4114	2.0000e-005	0.0000	0.4118

Total	**4.4000e-004**	**2.1600e-003**	**5.9600e-003**	**2.0000e-005**	**6.2000e-004**	**3.0000e-005**	**6.7000e-004**	**1.7000e-004**	**3.0000e-005**	**2.0000e-004**	**0.0000**	**0.9306**	**0.9306**	**2.0000e-005**	**0.0000**	**0.9312**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0300e-003	0.0515	0.0444	7.0000e-005		3.0100e-003	3.0100e-003		2.7800e-003	2.7800e-003	0.0000	6.0173	6.0173	1.8400e-003	0.0000	6.0558
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.0300e-003**	**0.0515**	**0.0444**	**7.0000e-005**		**3.0100e-003**	**3.0100e-003**		**2.7800e-003**	**2.7800e-003**	**0.0000**	**6.0173**	**6.0173**	**1.8400e-003**	**0.0000**	**6.0558**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.2000e-004	5.2000e-004	0.0000	3.0300e-003	1.0000e-005	3.0400e-003	3.1000e-004	1.0000e-005	3.1000e-004	0.0000	0.1319	0.1319	0.0000	0.0000	0.1319
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.8000e-004	2.6100e-003	1.0000e-005	0.0531	0.0000	0.0531	5.3800e-003	0.0000	5.3900e-003	0.0000	0.4456	0.4456	2.0000e-005	0.0000	0.4461
Total	**2.2000e-004**	**7.0000e-004**	**3.1300e-003**	**1.0000e-005**	**0.0562**	**1.0000e-005**	**0.0562**	**5.6900e-003**	**1.0000e-005**	**5.7000e-003**	**0.0000**	**0.5775**	**0.5775**	**2.0000e-005**	**0.0000**	**0.5780**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0300e-003	0.0515	0.0444	7.0000e-005		3.0100e-003	3.0100e-003		2.7800e-003	2.7800e-003	0.0000	6.0172	6.0172	1.8400e-003	0.0000	6.0558
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.0300e-003**	**0.0515**	**0.0444**	**7.0000e-005**		**3.0100e-003**	**3.0100e-003**		**2.7800e-003**	**2.7800e-003**	**0.0000**	**6.0172**	**6.0172**	**1.8400e-003**	**0.0000**	**6.0558**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.2000e-004	5.2000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1319	0.1319	0.0000	0.0000	0.1319
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.8000e-004	2.6100e-003	1.0000e-005	4.9000e-004	0.0000	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4456	0.4456	2.0000e-005	0.0000	0.4461
Total	**2.2000e-004**	**7.0000e-004**	**3.1300e-003**	**1.0000e-005**	**5.2000e-004**	**1.0000e-005**	**5.3000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.5775**	**0.5775**	**2.0000e-005**	**0.0000**	**0.5780**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Archit. Coating	0.1265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4900e-003	0.0100	9.2700e-003	1.0000e-005		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	1.2766	1.2766	1.2000e-004	0.0000	1.2792
Total	**0.1280**	**0.0100**	**9.2700e-003**	**1.0000e-005**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.2000e-004**	**0.0000**	**1.2792**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.2000e-004	5.2000e-004	0.0000	3.0300e-003	1.0000e-005	3.0400e-003	3.1000e-004	1.0000e-005	3.1000e-004	0.0000	0.1319	0.1319	0.0000	0.0000	0.1319
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	2.0000e-005	2.0000e-004	0.0000	4.0900e-003	0.0000	4.0900e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0343	0.0343	0.0000	0.0000	0.0343
Total	**5.0000e-005**	**4.4000e-004**	**7.2000e-004**	**0.0000**	**7.1200e-003**	**1.0000e-005**	**7.1300e-003**	**7.2000e-004**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**0.1661**	**0.1661**	**0.0000**	**0.0000**	**0.1662**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4900e-003	0.0100	9.2700e-003	1.0000e-005		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	1.2766	1.2766	1.2000e-004	0.0000	1.2792
Total	**0.1280**	**0.0100**	**9.2700e-003**	**1.0000e-005**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**1.2000e-004**	**0.0000**	**1.2792**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.2000e-004	5.2000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1319	0.1319	0.0000	0.0000	0.1319
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	2.0000e-005	2.0000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0343	0.0343	0.0000	0.0000	0.0343
Total	**5.0000e-005**	**4.4000e-004**	**7.2000e-004**	**0.0000**	**7.0000e-005**	**1.0000e-005**	**8.0000e-005**	**2.0000e-005**	**1.0000e-005**	**3.0000e-005**	**0.0000**	**0.1661**	**0.1661**	**0.0000**	**0.0000**	**0.1662**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1474	0.4603	1.7448	3.1900e-003	11.8932	6.0600e-003	11.8993	1.2159	5.5800e-003	1.2215	0.0000	250.2731	250.2731	9.9500e-003	0.0000	250.4821
Unmitigated	0.1474	0.4603	1.7448	3.1900e-003	11.8932	6.0600e-003	11.8993	1.2159	5.5800e-003	1.2215	0.0000	250.2731	250.2731	9.9500e-003	0.0000	250.4821

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT

Single Family Housing	183.00	183.00	183.00	524,211	524,211
Total	183.00	183.00	183.00	524,211	524,211

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	30.8640	30.8640	1.4000e-003	2.9000e-004	30.9828
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	30.8640	30.8640	1.4000e-003	2.9000e-004	30.9828
NaturalGas Mitigated	2.8500e-003	0.0244	0.0104	1.6000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	28.2425	28.2425	5.4000e-004	5.2000e-004	28.4144
NaturalGas Unmitigated	2.8500e-003	0.0244	0.0104	1.6000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	28.2425	28.2425	5.4000e-004	5.2000e-004	28.4144

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	529244	2.8500e-003	0.0244	0.0104	1.6000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	28.2425	28.2425	5.4000e-004	5.2000e-004	28.4144
Total		**2.8500e-003**	**0.0244**	**0.0104**	**1.6000e-004**		**1.9700e-003**	**1.9700e-003**		**1.9700e-003**	**1.9700e-003**	**0.0000**	**28.2425**	**28.2425**	**5.4000e-004**	**5.2000e-004**	**28.4144**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	529244	2.8500e-003	0.0244	0.0104	1.6000e-004		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	28.2425	28.2425	5.4000e-004	5.2000e-004	28.4144
Total		**2.8500e-003**	**0.0244**	**0.0104**	**1.6000e-004**		**1.9700e-003**	**1.9700e-003**		**1.9700e-003**	**1.9700e-003**	**0.0000**	**28.2425**	**28.2425**	**5.4000e-004**	**5.2000e-004**	**28.4144**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	106094	30.8640	1.4000e-003	2.9000e-004	30.9828

Total		**30.8640**	**1.4000e-003**	**2.9000e-004**	**30.9828**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	106094	30.8640	1.4000e-003	2.9000e-004	30.9828
Total		**30.8640**	**1.4000e-003**	**2.9000e-004**	**30.9828**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3550	0.0360	1.9212	6.9400e-003		0.3540	0.3540		0.3540	0.3540	46.3965	0.1819	46.5784	0.1825	0.0000	50.4109
Unmitigated	0.3550	0.0360	1.9212	6.9400e-003		0.3540	0.3540		0.3540	0.3540	46.3965	0.1819	46.5784	0.1825	0.0000	50.4109

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0790					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2599	0.0347	1.8087	6.9300e-003		0.3534	0.3534		0.3534	0.3534	46.3965	0.0000	46.3965	0.1823	0.0000	50.2252
Landscaping	3.5000e-003	1.3100e-003	0.1125	1.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	0.1819	0.1819	1.8000e-004	0.0000	0.1858
Total	**0.3550**	**0.0360**	**1.9212**	**6.9400e-003**		**0.3540**	**0.3540**		**0.3540**	**0.3540**	**46.3965**	**0.1819**	**46.5784**	**0.1825**	**0.0000**	**50.4109**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Consumer Products	0.0790					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2599	0.0347	1.8087	6.9300e-003		0.3534	0.3534		0.3534	0.3534	46.3965	0.0000	46.3965	0.1823	0.0000	50.2252
Landscaping	3.5000e-003	1.3100e-003	0.1125	1.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	0.1819	0.1819	1.8000e-004	0.0000	0.1858
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3550**	**0.0360**	**1.9212**	**6.9400e-003**		**0.3540**	**0.3540**		**0.3540**	**0.3540**	**46.3965**	**0.1819**	**46.5784**	**0.1825**	**0.0000**	**50.4109**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.5968	0.0686	1.6500e-003	6.5476
Unmitigated	4.5968	0.0686	1.6500e-003	6.5487

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.09874 / 0.61613	4.5968	0.0686	1.6500e-003	6.5487
Total		**4.5968**	**0.0686**	**1.6500e-003**	**6.5487**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.09874 / 0.61613	4.5968	0.0686	1.6500e-003	6.5476

Total		**4.5968**	**0.0686**	**1.6500e-003**	**6.5476**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.4042	0.2012	0.0000	7.6289
Unmitigated	3.4042	0.2012	0.0000	7.6289

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	16.77	3.4042	0.2012	0.0000	7.6289
Total		**3.4042**	**0.2012**	**0.0000**	**7.6289**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	16.77	3.4042	0.2012	0.0000	7.6289
Total		**3.4042**	**0.2012**	**0.0000**	**7.6289**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Ashton Place

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	15.00	Dwelling Unit	1.76	20,223.00	43

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Road Dust -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	213.00
tblFireplaces	NumberNoFireplace	10.35	0.00
tblFireplaces	NumberWood	4.65	0.00
tblGrading	AcresOfGrading	1.50	1.76
tblLandUse	LandUseSquareFeet	27,000.00	20,223.00
tblLandUse	LotAcreage	4.87	1.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20
tblWater	IndoorWaterUseRate	977,310.38	2,098,740.38
tblWoodstoves	NumberCatalytic	0.38	15.00
tblWoodstoves	NumberNoncatalytic	0.38	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2017	3.0016	24.7488	17.0408	0.0229	17.0573	1.3141	18.3714	4.0932	1.2090	5.3022	0.0000	2,120.9147	2,120.9147	0.5414	0.0000	2,132.2831
2018	25.6195	17.5018	14.4542	0.0229	13.2127	1.0561	13.8175	1.3364	1.0198	1.8937	0.0000	2,105.7526	2,105.7526	0.4106	0.0000	2,114.3746
Total	**28.6211**	**42.2506**	**31.4950**	**0.0458**	**30.2700**	**2.3702**	**32.1889**	**5.4296**	**2.2288**	**7.1959**	**0.0000**	**4,226.6673**	**4,226.6673**	**0.9519**	**0.0000**	**4,246.6578**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	3.0016	24.7488	17.0408	0.0229	5.8952	1.3141	7.2094	2.9795	1.2090	4.1885	0.0000	2,120.9147	2,120.9147	0.5414	0.0000	2,132.2831
2018	25.6195	17.5018	14.4542	0.0229	0.1079	1.0561	1.1099	0.0288	1.0198	1.0344	0.0000	2,105.7526	2,105.7526	0.4106	0.0000	2,114.3746
Total	**28.6211**	**42.2506**	**31.4950**	**0.0458**	**6.0031**	**2.3702**	**8.3193**	**3.0083**	**2.2288**	**5.2229**	**0.0000**	**4,226.6673**	**4,226.6673**	**0.9519**	**0.0000**	**4,246.6578**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**80.17**	**0.00**	**74.15**	**44.59**	**0.00**	**27.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Energy	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

Mobile	0.8797	2.6532	11.1398	0.0173	65.3809	0.0335	65.4144	6.6893	0.0308	6.7200		1,492.3082	1,492.3082	0.0604		1,493.5768
Total	**7.7748**	**3.6465**	**56.5620**	**0.1872**	**65.3809**	**8.6713**	**74.0522**	**6.6893**	**8.6686**	**15.3579**	**1,247.4000**	**1,665.1229**	**2,912.5229**	**4.9676**	**3.1300e-003**	**3,017.8124**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Energy	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Mobile	0.8797	2.6532	11.1398	0.0173	65.3809	0.0335	65.4144	6.6893	0.0308	6.7200		1,492.3082	1,492.3082	0.0604		1,493.5768
Total	**7.7748**	**3.6465**	**56.5620**	**0.1872**	**65.3809**	**8.6713**	**74.0522**	**6.6893**	**8.6686**	**15.3579**	**1,247.4000**	**1,665.1229**	**2,912.5229**	**4.9676**	**3.1300e-003**	**3,017.8124**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2017	4/4/2017	5	2	
2	Grading	Grading	4/5/2017	4/10/2017	5	4	
3	Building Construction	Building Construction	4/11/2017	2/1/2018	5	213	
4	Paving	Paving	2/2/2018	2/15/2018	5	10	
5	Architectural Coating	Architectural Coating	2/16/2018	3/1/2018	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.76

Acres of Paving: 0

Residential Indoor: 40,952; Residential Outdoor: 13,651; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Grading	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	5.00	2.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.3109	24.2288	15.9299	0.0171		1.3067	1.3067		1.2022	1.2022		1,752.1239	1,752.1239	0.5369		1,763.3977
Total	**2.3109**	**24.2288**	**15.9299**	**0.0171**	**5.7996**	**1.3067**	**7.1063**	**2.9537**	**1.2022**	**4.1559**		**1,752.1239**	**1,752.1239**	**0.5369**		**1,763.3977**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0526	0.4777	0.7361	1.4900e-003	3.5656	6.9300e-003	3.5726	0.3616	6.3700e-003	0.3680		147.7429	147.7429	1.0200e-003		147.7643
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	7.6920	4.8000e-004	7.6925	0.7779	4.4000e-004	0.7783		61.2578	61.2578	3.4900e-003		61.3310

Total	**0.0787**	**0.5200**	**1.1109**	**2.2600e-003**	**11.2577**	**7.4100e-003**	**11.2651**	**1.1395**	**6.8100e-003**	**1.1463**		**209.0007**	**209.0007**	**4.5100e-003**		**209.0953**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.3109	24.2288	15.9299	0.0171		1.3067	1.3067		1.2022	1.2022	0.0000	1,752.1239	1,752.1239	0.5369		1,763.3977
Total	**2.3109**	**24.2288**	**15.9299**	**0.0171**	**5.7996**	**1.3067**	**7.1063**	**2.9537**	**1.2022**	**4.1559**	**0.0000**	**1,752.1239**	**1,752.1239**	**0.5369**		**1,763.3977**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0526	0.4777	0.7361	1.4900e-003	0.0334	6.9300e-003	0.0403	9.1800e-003	6.3700e-003	0.0156		147.7429	147.7429	1.0200e-003		147.7643
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	0.0623	4.8000e-004	0.0628	0.0166	4.4000e-004	0.0170		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0787**	**0.5200**	**1.1109**	**2.2600e-003**	**0.0956**	**7.4100e-003**	**0.1031**	**0.0258**	**6.8100e-003**	**0.0326**		**209.0007**	**209.0007**	**4.5100e-003**		**209.0953**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9832	0.0000	4.9832	2.5331	0.0000	2.5331			0.0000			0.0000
Off-Road	1.8844	19.7889	13.1786	0.0141		1.0661	1.0661		0.9808	0.9808		1,439.1894	1,439.1894	0.4410		1,448.4496
Total	**1.8844**	**19.7889**	**13.1786**	**0.0141**	**4.9832**	**1.0661**	**6.0493**	**2.5331**	**0.9808**	**3.5139**		**1,439.1894**	**1,439.1894**	**0.4410**		**1,448.4496**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0263	0.2388	0.3680	7.5000e-004	1.7828	3.4600e-003	1.7863	0.1808	3.1900e-003	0.1840		73.8715	73.8715	5.1000e-004		73.8821
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	7.6920	4.8000e-004	7.6925	0.7779	4.4000e-004	0.7783		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0525**	**0.2812**	**0.7429**	**1.5200e-003**	**9.4749**	**3.9400e-003**	**9.4788**	**0.9587**	**3.6300e-003**	**0.9623**		**135.1292**	**135.1292**	**4.0000e-003**		**135.2132**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					4.9832	0.0000	4.9832	2.5331	0.0000	2.5331			0.0000			0.0000
Off-Road	1.8844	19.7889	13.1786	0.0141		1.0661	1.0661		0.9808	0.9808	0.0000	1,439.1894	1,439.1894	0.4410		1,448.4496
Total	**1.8844**	**19.7889**	**13.1786**	**0.0141**	**4.9832**	**1.0661**	**6.0493**	**2.5331**	**0.9808**	**3.5139**	**0.0000**	**1,439.1894**	**1,439.1894**	**0.4410**		**1,448.4496**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0263	0.2388	0.3680	7.5000e-004	0.0167	3.4600e-003	0.0201	4.5900e-003	3.1900e-003	7.7800e-003		73.8715	73.8715	5.1000e-004		73.8821
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	0.0623	4.8000e-004	0.0628	0.0166	4.4000e-004	0.0170		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0525**	**0.2812**	**0.7429**	**1.5200e-003**	**0.0790**	**3.9400e-003**	**0.0829**	**0.0212**	**3.6300e-003**	**0.0248**		**135.1292**	**135.1292**	**4.0000e-003**		**135.2132**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9546	19.1088	14.3110	0.0220		1.2257	1.2257		1.1823	1.1823		2,034.2860	2,034.2860	0.4268		2,043.2497
Total	**2.9546**	**19.1088**	**14.3110**	**0.0220**		**1.2257**	**1.2257**		**1.1823**	**1.1823**		**2,034.2860**	**2,034.2860**	**0.4268**		**2,043.2497**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.9000e-004	4.4900e-003	6.9100e-003	1.0000e-005	0.0377	7.0000e-005	0.0378	3.8200e-003	6.0000e-005	3.8800e-003		1.3873	1.3873	1.0000e-005		1.3875
Vendor	0.0302	0.1744	0.4284	4.8000e-004	1.3021	2.7000e-003	1.3048	0.1323	2.4800e-003	0.1348		46.9553	46.9553	3.7000e-004		46.9630
Worker	0.0164	0.0265	0.2343	4.8000e-004	4.8075	3.0000e-004	4.8078	0.4862	2.7000e-004	0.4865		38.2861	38.2861	2.1800e-003		38.3319
Total	**0.0470**	**0.2053**	**0.6696**	**9.7000e-004**	**6.1473**	**3.0700e-003**	**6.1504**	**0.6223**	**2.8100e-003**	**0.6251**		**86.6287**	**86.6287**	**2.5600e-003**		**86.6824**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9546	19.1088	14.3110	0.0220		1.2257	1.2257		1.1823	1.1823	0.0000	2,034.2860	2,034.2860	0.4268		2,043.2497
Total	**2.9546**	**19.1088**	**14.3110**	**0.0220**		**1.2257**	**1.2257**		**1.1823**	**1.1823**	**0.0000**	**2,034.2860**	**2,034.2860**	**0.4268**		**2,043.2497**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	4.9000e-004	4.4900e-003	6.9100e-003	1.0000e-005	3.4000e-004	7.0000e-005	4.1000e-004	9.0000e-005	6.0000e-005	1.5000e-004		1.3873	1.3873	1.0000e-005		1.3875
Vendor	0.0302	0.1744	0.4284	4.8000e-004	0.0128	2.7000e-003	0.0155	3.6800e-003	2.4800e-003	6.1600e-003		46.9553	46.9553	3.7000e-004		46.9630
Worker	0.0164	0.0265	0.2343	4.8000e-004	0.0389	3.0000e-004	0.0392	0.0104	2.7000e-004	0.0106		38.2861	38.2861	2.1800e-003		38.3319
Total	**0.0470**	**0.2053**	**0.6696**	**9.7000e-004**	**0.0521**	**3.0700e-003**	**0.0551**	**0.0141**	**2.8100e-003**	**0.0170**		**86.6287**	**86.6287**	**2.5600e-003**		**86.6824**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5826	17.3173	13.8357	0.0220		1.0532	1.0532		1.0172	1.0172		2,021.4136	2,021.4136	0.4059		2,029.9373
Total	**2.5826**	**17.3173**	**13.8357**	**0.0220**		**1.0532**	**1.0532**		**1.0172**	**1.0172**		**2,021.4136**	**2,021.4136**	**0.4059**		**2,029.9373**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5000e-004	4.0000e-003	6.5800e-003	1.0000e-005	0.2965	6.0000e-005	0.2966	0.0299	6.0000e-005	0.0300		1.3629	1.3629	1.0000e-005		1.3631
Vendor	0.0264	0.1566	0.4027	4.8000e-004	1.3021	2.4800e-003	1.3046	0.1323	2.2800e-003	0.1346		46.1307	46.1307	3.6000e-004		46.1382
Worker	0.0145	0.0240	0.2093	4.8000e-004	4.8075	2.9000e-004	4.8078	0.4862	2.7000e-004	0.4865		36.8454	36.8454	2.0200e-003		36.8878

Total	**0.0413**	**0.1846**	**0.6185**	**9.7000e-004**	**6.4061**	**2.8300e-003**	**6.4090**	**0.6484**	**2.6100e-003**	**0.6510**		**84.3390**	**84.3390**	**2.3900e-003**		**84.3891**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5826	17.3173	13.8357	0.0220		1.0532	1.0532		1.0172	1.0172	0.0000	2,021.4136	2,021.4136	0.4059		2,029.9373
Total	**2.5826**	**17.3173**	**13.8357**	**0.0220**		**1.0532**	**1.0532**		**1.0172**	**1.0172**	**0.0000**	**2,021.4136**	**2,021.4136**	**0.4059**		**2,029.9373**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5000e-004	4.0000e-003	6.5800e-003	1.0000e-005	2.1500e-003	6.0000e-005	2.2100e-003	5.4000e-004	6.0000e-005	6.0000e-004		1.3629	1.3629	1.0000e-005		1.3631
Vendor	0.0264	0.1566	0.4027	4.8000e-004	0.0128	2.4800e-003	0.0153	3.6800e-003	2.2800e-003	5.9700e-003		46.1307	46.1307	3.6000e-004		46.1382
Worker	0.0145	0.0240	0.2093	4.8000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0106		36.8454	36.8454	2.0200e-003		36.8878
Total	**0.0413**	**0.1846**	**0.6185**	**9.7000e-004**	**0.0539**	**2.8300e-003**	**0.0567**	**0.0146**	**2.6100e-003**	**0.0172**		**84.3390**	**84.3390**	**2.3900e-003**		**84.3891**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	10.3081	8.8698	0.0133		0.6027	0.6027		0.5553	0.5553		1,326.5758	1,326.5758	0.4051		1,335.0833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0052**	**10.3081**	**8.8698**	**0.0133**		**0.6027**	**0.6027**		**0.5553**	**0.5553**		**1,326.5758**	**1,326.5758**	**0.4051**		**1,335.0833**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	0.7131	1.3500e-003	0.7145	0.0723	1.2500e-003	0.0736		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0376	0.0624	0.5440	1.2500e-003	12.4996	7.6000e-004	12.5003	1.2641	7.0000e-004	1.2648		95.7980	95.7980	5.2500e-003		95.9083
Total	**0.0471**	**0.1476**	**0.6842**	**1.5500e-003**	**13.2127**	**2.1100e-003**	**13.2148**	**1.3364**	**1.9500e-003**	**1.3383**		**124.8283**	**124.8283**	**5.4500e-003**		**124.9429**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	1.0052	10.3081	8.8698	0.0133		0.6027	0.6027		0.5553	0.5553	0.0000	1,326.5758	1,326.5758	0.4051		1,335.0833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0052**	**10.3081**	**8.8698**	**0.0133**		**0.6027**	**0.6027**		**0.5553**	**0.5553**	**0.0000**	**1,326.5758**	**1,326.5758**	**0.4051**		**1,335.0833**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	6.6700e-003	1.3500e-003	8.0200e-003	1.8400e-003	1.2500e-003	3.0800e-003		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0376	0.0624	0.5440	1.2500e-003	0.1012	7.6000e-004	0.1020	0.0270	7.0000e-004	0.0277		95.7980	95.7980	5.2500e-003		95.9083
Total	**0.0471**	**0.1476**	**0.6842**	**1.5500e-003**	**0.1079**	**2.1100e-003**	**0.1100**	**0.0288**	**1.9500e-003**	**0.0307**		**124.8283**	**124.8283**	**5.4500e-003**		**124.9429**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	25.3085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**25.6071**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	0.7131	1.3500e-003	0.7145	0.0723	1.2500e-003	0.0736		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	2.8900e-003	4.8000e-003	0.0419	1.0000e-004	0.9615	6.0000e-005	0.9616	0.0972	5.0000e-005	0.0973		7.3691	7.3691	4.0000e-004		7.3776
Total	**0.0124**	**0.0901**	**0.1820**	**4.0000e-004**	**1.6746**	**1.4100e-003**	**1.6760**	**0.1696**	**1.3000e-003**	**0.1709**		**36.3994**	**36.3994**	**6.0000e-004**		**36.4121**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	25.3085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**25.6071**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	6.6700e-003	1.3500e-003	8.0200e-003	1.8400e-003	1.2500e-003	3.0800e-003		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	2.8900e-003	4.8000e-003	0.0419	1.0000e-004	7.7900e-003	6.0000e-005	7.8400e-003	2.0700e-003	5.0000e-005	2.1300e-003		7.3691	7.3691	4.0000e-004		7.3776
Total	**0.0124**	**0.0901**	**0.1820**	**4.0000e-004**	**0.0145**	**1.4100e-003**	**0.0159**	**3.9100e-003**	**1.3000e-003**	**5.2100e-003**		**36.3994**	**36.3994**	**6.0000e-004**		**36.4121**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8797	2.6532	11.1398	0.0173	65.3809	0.0335	65.4144	6.6893	0.0308	6.7200		1,492.3082	1,492.3082	0.0604		1,493.5768
Unmitigated	0.8797	2.6532	11.1398	0.0173	65.3809	0.0335	65.4144	6.6893	0.0308	6.7200		1,492.3082	1,492.3082	0.0604		1,493.5768

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	183.00	183.00	183.00	524,211	524,211
Total	183.00	183.00	183.00	524,211	524,211

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
NaturalGas Unmitigated	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	1449.98	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

Total		**0.0156**	**0.1336**	**0.0569**	**8.5000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**		**170.5864**	**170.5864**	**3.2700e-003**	**3.1300e-003**	**171.6246**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	1.44998	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Total		**0.0156**	**0.1336**	**0.0569**	**8.5000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**		**170.5864**	**170.5864**	**3.2700e-003**	**3.1300e-003**	**171.6246**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Unmitigated	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.3384	0.8451	44.1154	0.1690		8.6202	8.6202		8.6202	8.6202	1,247.4000	0.0000	1,247.4000	4.9017	0.0000	1,350.3359
Landscaping	0.0389	0.0146	1.2500	7.0000e-005		6.7900e-003	6.7900e-003		6.7900e-003	6.7900e-003		2.2283	2.2283	2.2400e-003		2.2753
Total	**6.8794**	**0.8597**	**45.3654**	**0.1691**		**8.6270**	**8.6270**		**8.6270**	**8.6270**	**1,247.4000**	**2.2283**	**1,249.6283**	**4.9040**	**0.0000**	**1,352.6111**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.4328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.3384	0.8451	44.1154	0.1690		8.6202	8.6202		8.6202	8.6202	1,247.4000	0.0000	1,247.4000	4.9017	0.0000	1,350.3359
Landscaping	0.0389	0.0146	1.2500	7.0000e-005		6.7900e-003	6.7900e-003		6.7900e-003	6.7900e-003		2.2283	2.2283	2.2400e-003		2.2753
Architectural Coating	0.0693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**6.8794**	**0.8597**	**45.3654**	**0.1691**		**8.6270**	**8.6270**		**8.6270**	**8.6270**	**1,247.4000**	**2.2283**	**1,249.6283**	**4.9040**	**0.0000**	**1,352.6111**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Ashton Place

Yolo/Solano AQMD Air District, Winter Defaults changed to have 100% Paved Roads

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	15.00	Dwelling Unit	1.76	20,223.00	43

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Road Dust - assumed 100

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	213.00
tblFireplaces	NumberNoFireplace	10.35	0.00
tblFireplaces	NumberWood	4.65	0.00
tblGrading	AcresOfGrading	1.50	1.76
tblLandUse	LandUseSquareFeet	27,000.00	20,223.00
tblLandUse	LotAcreage	4.87	1.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20
tblWater	IndoorWaterUseRate	977,310.38	2,098,740.38
tblWoodstoves	NumberCatalytic	0.38	15.00
tblWoodstoves	NumberNoncatalytic	0.38	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Year	lb/day										lb/day					
2017	3.0016	24.7488	17.0408	0.0229	17.0573	1.3141	18.3714	4.0932	1.2090	5.3022	0.0000	2,120.9147	2,120.9147	0.5414	0.0000	2,132.2831
2018	25.6195	17.5018	14.4542	0.0229	13.2127	1.0561	13.8175	1.3364	1.0198	1.8937	0.0000	2,105.7526	2,105.7526	0.4106	0.0000	2,114.3746
Total	**28.6211**	**42.2506**	**31.4950**	**0.0458**	**30.2700**	**2.3702**	**32.1889**	**5.4296**	**2.2288**	**7.1959**	**0.0000**	**4,226.6673**	**4,226.6673**	**0.9519**	**0.0000**	**4,246.6578**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	3.0016	24.7488	17.0408	0.0229	5.8952	1.3141	7.2094	2.9795	1.2090	4.1885	0.0000	2,120.9147	2,120.9147	0.5414	0.0000	2,132.2831
2018	25.6195	17.5018	14.4542	0.0229	0.1079	1.0561	1.1099	0.0288	1.0198	1.0344	0.0000	2,105.7526	2,105.7526	0.4106	0.0000	2,114.3746
Total	**28.6211**	**42.2506**	**31.4950**	**0.0458**	**6.0031**	**2.3702**	**8.3193**	**3.0083**	**2.2288**	**5.2229**	**0.0000**	**4,226.6673**	**4,226.6673**	**0.9519**	**0.0000**	**4,246.6578**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**80.17**	**0.00**	**74.15**	**44.59**	**0.00**	**27.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111

Energy	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Mobile	0.8797	2.6532	11.1398	0.0173	1.1179	0.0335	1.1513	0.2993	0.0308	0.3300		1,492.3082	1,492.3082	0.0604		1,493.5768
Total	**7.7748**	**3.6465**	**56.5620**	**0.1872**	**1.1179**	**8.6713**	**9.7892**	**0.2993**	**8.6686**	**8.9679**	**1,247.4000**	**1,665.1229**	**2,912.5229**	**4.9676**	**3.1300e-003**	**3,017.8124**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Energy	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Mobile	0.8797	2.6532	11.1398	0.0173	1.1179	0.0335	1.1513	0.2993	0.0308	0.3300		1,492.3082	1,492.3082	0.0604		1,493.5768
Total	**7.7748**	**3.6465**	**56.5620**	**0.1872**	**1.1179**	**8.6713**	**9.7892**	**0.2993**	**8.6686**	**8.9679**	**1,247.4000**	**1,665.1229**	**2,912.5229**	**4.9676**	**3.1300e-003**	**3,017.8124**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2017	4/4/2017	5	2	
2	Grading	Grading	4/5/2017	4/10/2017	5	4	
3	Building Construction	Building Construction	4/11/2017	2/1/2018	5	213	
4	Paving	Paving	2/2/2018	2/15/2018	5	10	

5	Architectural Coating	Architectural Coating	2/16/2018	3/1/2018	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.76

Acres of Paving: 0

Residential Indoor: 40,952; Residential Outdoor: 13,651; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class

Site Preparation	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	5.00	2.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.3109	24.2288	15.9299	0.0171		1.3067	1.3067		1.2022	1.2022		1,752.1239	1,752.1239	0.5369		1,763.3977
Total	**2.3109**	**24.2288**	**15.9299**	**0.0171**	**5.7996**	**1.3067**	**7.1063**	**2.9537**	**1.2022**	**4.1559**		**1,752.1239**	**1,752.1239**	**0.5369**		**1,763.3977**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0526	0.4777	0.7361	1.4900e-003	3.5656	6.9300e-003	3.5726	0.3616	6.3700e-003	0.3680		147.7429	147.7429	1.0200e-003		147.7643
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0262	0.0424	0.3749	7.7000e-004	7.6920	4.8000e-004	7.6925	0.7779	4.4000e-004	0.7783		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0787**	**0.5200**	**1.1109**	**2.2600e-003**	**11.2577**	**7.4100e-003**	**11.2651**	**1.1395**	**6.8100e-003**	**1.1463**		**209.0007**	**209.0007**	**4.5100e-003**		**209.0953**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.3109	24.2288	15.9299	0.0171		1.3067	1.3067		1.2022	1.2022	0.0000	1,752.1239	1,752.1239	0.5369		1,763.3977
Total	**2.3109**	**24.2288**	**15.9299**	**0.0171**	**5.7996**	**1.3067**	**7.1063**	**2.9537**	**1.2022**	**4.1559**	**0.0000**	**1,752.1239**	**1,752.1239**	**0.5369**		**1,763.3977**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0526	0.4777	0.7361	1.4900e-003	0.0334	6.9300e-003	0.0403	9.1800e-003	6.3700e-003	0.0156		147.7429	147.7429	1.0200e-003		147.7643
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	0.0623	4.8000e-004	0.0628	0.0166	4.4000e-004	0.0170		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0787**	**0.5200**	**1.1109**	**2.2600e-003**	**0.0956**	**7.4100e-003**	**0.1031**	**0.0258**	**6.8100e-003**	**0.0326**		**209.0007**	**209.0007**	**4.5100e-003**		**209.0953**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9832	0.0000	4.9832	2.5331	0.0000	2.5331			0.0000			0.0000
Off-Road	1.8844	19.7889	13.1786	0.0141		1.0661	1.0661		0.9808	0.9808		1,439.1894	1,439.1894	0.4410		1,448.4496
Total	**1.8844**	**19.7889**	**13.1786**	**0.0141**	**4.9832**	**1.0661**	**6.0493**	**2.5331**	**0.9808**	**3.5139**		**1,439.1894**	**1,439.1894**	**0.4410**		**1,448.4496**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0263	0.2388	0.3680	7.5000e-004	1.7828	3.4600e-003	1.7863	0.1808	3.1900e-003	0.1840		73.8715	73.8715	5.1000e-004		73.8821
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	7.6920	4.8000e-004	7.6925	0.7779	4.4000e-004	0.7783		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0525**	**0.2812**	**0.7429**	**1.5200e-003**	**9.4749**	**3.9400e-003**	**9.4788**	**0.9587**	**3.6300e-003**	**0.9623**		**135.1292**	**135.1292**	**4.0000e-003**		**135.2132**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					4.9832	0.0000	4.9832	2.5331	0.0000	2.5331			0.0000			0.0000
Off-Road	1.8844	19.7889	13.1786	0.0141		1.0661	1.0661		0.9808	0.9808	0.0000	1,439.1894	1,439.1894	0.4410		1,448.4496
Total	**1.8844**	**19.7889**	**13.1786**	**0.0141**	**4.9832**	**1.0661**	**6.0493**	**2.5331**	**0.9808**	**3.5139**	**0.0000**	**1,439.1894**	**1,439.1894**	**0.4410**		**1,448.4496**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0263	0.2388	0.3680	7.5000e-004	0.0167	3.4600e-003	0.0201	4.5900e-003	3.1900e-003	7.7800e-003		73.8715	73.8715	5.1000e-004		73.8821
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0262	0.0424	0.3749	7.7000e-004	0.0623	4.8000e-004	0.0628	0.0166	4.4000e-004	0.0170		61.2578	61.2578	3.4900e-003		61.3310
Total	**0.0525**	**0.2812**	**0.7429**	**1.5200e-003**	**0.0790**	**3.9400e-003**	**0.0829**	**0.0212**	**3.6300e-003**	**0.0248**		**135.1292**	**135.1292**	**4.0000e-003**		**135.2132**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9546	19.1088	14.3110	0.0220		1.2257	1.2257		1.1823	1.1823		2,034.2860	2,034.2860	0.4268		2,043.2497
Total	**2.9546**	**19.1088**	**14.3110**	**0.0220**		**1.2257**	**1.2257**		**1.1823**	**1.1823**		**2,034.2860**	**2,034.2860**	**0.4268**		**2,043.2497**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.9000e-004	4.4900e-003	6.9100e-003	1.0000e-005	0.0377	7.0000e-005	0.0378	3.8200e-003	6.0000e-005	3.8800e-003		1.3873	1.3873	1.0000e-005		1.3875
Vendor	0.0302	0.1744	0.4284	4.8000e-004	1.3021	2.7000e-003	1.3048	0.1323	2.4800e-003	0.1348		46.9553	46.9553	3.7000e-004		46.9630
Worker	0.0164	0.0265	0.2343	4.8000e-004	4.8075	3.0000e-004	4.8078	0.4862	2.7000e-004	0.4865		38.2861	38.2861	2.1800e-003		38.3319
Total	**0.0470**	**0.2053**	**0.6696**	**9.7000e-004**	**6.1473**	**3.0700e-003**	**6.1504**	**0.6223**	**2.8100e-003**	**0.6251**		**86.6287**	**86.6287**	**2.5600e-003**		**86.6824**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9546	19.1088	14.3110	0.0220		1.2257	1.2257		1.1823	1.1823	0.0000	2,034.2860	2,034.2860	0.4268		2,043.2497
Total	**2.9546**	**19.1088**	**14.3110**	**0.0220**		**1.2257**	**1.2257**		**1.1823**	**1.1823**	**0.0000**	**2,034.2860**	**2,034.2860**	**0.4268**		**2,043.2497**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	4.9000e-004	4.4900e-003	6.9100e-003	1.0000e-005	3.4000e-004	7.0000e-005	4.1000e-004	9.0000e-005	6.0000e-005	1.5000e-004		1.3873	1.3873	1.0000e-005		1.3875
Vendor	0.0302	0.1744	0.4284	4.8000e-004	0.0128	2.7000e-003	0.0155	3.6800e-003	2.4800e-003	6.1600e-003		46.9553	46.9553	3.7000e-004		46.9630
Worker	0.0164	0.0265	0.2343	4.8000e-004	0.0389	3.0000e-004	0.0392	0.0104	2.7000e-004	0.0106		38.2861	38.2861	2.1800e-003		38.3319
Total	**0.0470**	**0.2053**	**0.6696**	**9.7000e-004**	**0.0521**	**3.0700e-003**	**0.0551**	**0.0141**	**2.8100e-003**	**0.0170**		**86.6287**	**86.6287**	**2.5600e-003**		**86.6824**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5826	17.3173	13.8357	0.0220		1.0532	1.0532		1.0172	1.0172		2,021.4136	2,021.4136	0.4059		2,029.9373
Total	**2.5826**	**17.3173**	**13.8357**	**0.0220**		**1.0532**	**1.0532**		**1.0172**	**1.0172**		**2,021.4136**	**2,021.4136**	**0.4059**		**2,029.9373**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5000e-004	4.0000e-003	6.5800e-003	1.0000e-005	0.2965	6.0000e-005	0.2966	0.0299	6.0000e-005	0.0300		1.3629	1.3629	1.0000e-005		1.3631
Vendor	0.0264	0.1566	0.4027	4.8000e-004	1.3021	2.4800e-003	1.3046	0.1323	2.2800e-003	0.1346		46.1307	46.1307	3.6000e-004		46.1382
Worker	0.0145	0.0240	0.2093	4.8000e-004	4.8075	2.9000e-004	4.8078	0.4862	2.7000e-004	0.4865		36.8454	36.8454	2.0200e-003		36.8878

Total	**0.0413**	**0.1846**	**0.6185**	**9.7000e-004**	**6.4061**	**2.8300e-003**	**6.4090**	**0.6484**	**2.6100e-003**	**0.6510**		**84.3390**	**84.3390**	**2.3900e-003**		**84.3891**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5826	17.3173	13.8357	0.0220		1.0532	1.0532		1.0172	1.0172	0.0000	2,021.4136	2,021.4136	0.4059		2,029.9373
Total	**2.5826**	**17.3173**	**13.8357**	**0.0220**		**1.0532**	**1.0532**		**1.0172**	**1.0172**	**0.0000**	**2,021.4136**	**2,021.4136**	**0.4059**		**2,029.9373**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5000e-004	4.0000e-003	6.5800e-003	1.0000e-005	2.1500e-003	6.0000e-005	2.2100e-003	5.4000e-004	6.0000e-005	6.0000e-004		1.3629	1.3629	1.0000e-005		1.3631
Vendor	0.0264	0.1566	0.4027	4.8000e-004	0.0128	2.4800e-003	0.0153	3.6800e-003	2.2800e-003	5.9700e-003		46.1307	46.1307	3.6000e-004		46.1382
Worker	0.0145	0.0240	0.2093	4.8000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0106		36.8454	36.8454	2.0200e-003		36.8878
Total	**0.0413**	**0.1846**	**0.6185**	**9.7000e-004**	**0.0539**	**2.8300e-003**	**0.0567**	**0.0146**	**2.6100e-003**	**0.0172**		**84.3390**	**84.3390**	**2.3900e-003**		**84.3891**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	10.3081	8.8698	0.0133		0.6027	0.6027		0.5553	0.5553		1,326.5758	1,326.5758	0.4051		1,335.0833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0052**	**10.3081**	**8.8698**	**0.0133**		**0.6027**	**0.6027**		**0.5553**	**0.5553**		**1,326.5758**	**1,326.5758**	**0.4051**		**1,335.0833**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	0.7131	1.3500e-003	0.7145	0.0723	1.2500e-003	0.0736		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0376	0.0624	0.5440	1.2500e-003	12.4996	7.6000e-004	12.5003	1.2641	7.0000e-004	1.2648		95.7980	95.7980	5.2500e-003		95.9083
Total	**0.0471**	**0.1476**	**0.6842**	**1.5500e-003**	**13.2127**	**2.1100e-003**	**13.2148**	**1.3364**	**1.9500e-003**	**1.3383**		**124.8283**	**124.8283**	**5.4500e-003**		**124.9429**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	1.0052	10.3081	8.8698	0.0133		0.6027	0.6027		0.5553	0.5553	0.0000	1,326.5758	1,326.5758	0.4051		1,335.0833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0052**	**10.3081**	**8.8698**	**0.0133**		**0.6027**	**0.6027**		**0.5553**	**0.5553**	**0.0000**	**1,326.5758**	**1,326.5758**	**0.4051**		**1,335.0833**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	6.6700e-003	1.3500e-003	8.0200e-003	1.8400e-003	1.2500e-003	3.0800e-003		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0376	0.0624	0.5440	1.2500e-003	0.1012	7.6000e-004	0.1020	0.0270	7.0000e-004	0.0277		95.7980	95.7980	5.2500e-003		95.9083
Total	**0.0471**	**0.1476**	**0.6842**	**1.5500e-003**	**0.1079**	**2.1100e-003**	**0.1100**	**0.0288**	**1.9500e-003**	**0.0307**		**124.8283**	**124.8283**	**5.4500e-003**		**124.9429**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	25.3085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**25.6071**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	0.7131	1.3500e-003	0.7145	0.0723	1.2500e-003	0.0736		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	2.8900e-003	4.8000e-003	0.0419	1.0000e-004	0.9615	6.0000e-005	0.9616	0.0972	5.0000e-005	0.0973		7.3691	7.3691	4.0000e-004		7.3776
Total	**0.0124**	**0.0901**	**0.1820**	**4.0000e-004**	**1.6746**	**1.4100e-003**	**1.6760**	**0.1696**	**1.3000e-003**	**0.1709**		**36.3994**	**36.3994**	**6.0000e-004**		**36.4121**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	25.3085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**25.6071**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	9.4900e-003	0.0853	0.1402	3.0000e-004	6.6700e-003	1.3500e-003	8.0200e-003	1.8400e-003	1.2500e-003	3.0800e-003		29.0303	29.0303	2.0000e-004		29.0345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	2.8900e-003	4.8000e-003	0.0419	1.0000e-004	7.7900e-003	6.0000e-005	7.8400e-003	2.0700e-003	5.0000e-005	2.1300e-003		7.3691	7.3691	4.0000e-004		7.3776
Total	**0.0124**	**0.0901**	**0.1820**	**4.0000e-004**	**0.0145**	**1.4100e-003**	**0.0159**	**3.9100e-003**	**1.3000e-003**	**5.2100e-003**		**36.3994**	**36.3994**	**6.0000e-004**		**36.4121**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8797	2.6532	11.1398	0.0173	1.1179	0.0335	1.1513	0.2993	0.0308	0.3300		1,492.3082	1,492.3082	0.0604		1,493.5768
Unmitigated	0.8797	2.6532	11.1398	0.0173	1.1179	0.0335	1.1513	0.2993	0.0308	0.3300		1,492.3082	1,492.3082	0.0604		1,493.5768

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	183.00	183.00	183.00	524,211	524,211
Total	183.00	183.00	183.00	524,211	524,211

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
NaturalGas Unmitigated	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	1449.98	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

Total		**0.0156**	**0.1336**	**0.0569**	**8.5000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**		**170.5864**	**170.5864**	**3.2700e-003**	**3.1300e-003**	**171.6246**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	1.44998	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Total		**0.0156**	**0.1336**	**0.0569**	**8.5000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**		**170.5864**	**170.5864**	**3.2700e-003**	**3.1300e-003**	**171.6246**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Unmitigated	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.3384	0.8451	44.1154	0.1690		8.6202	8.6202		8.6202	8.6202	1,247.4000	0.0000	1,247.4000	4.9017	0.0000	1,350.3359
Landscaping	0.0389	0.0146	1.2500	7.0000e-005		6.7900e-003	6.7900e-003		6.7900e-003	6.7900e-003		2.2283	2.2283	2.2400e-003		2.2753
Total	**6.8794**	**0.8597**	**45.3654**	**0.1691**		**8.6270**	**8.6270**		**8.6270**	**8.6270**	**1,247.4000**	**2.2283**	**1,249.6283**	**4.9040**	**0.0000**	**1,352.6111**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.4328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.3384	0.8451	44.1154	0.1690		8.6202	8.6202		8.6202	8.6202	1,247.4000	0.0000	1,247.4000	4.9017	0.0000	1,350.3359
Landscaping	0.0389	0.0146	1.2500	7.0000e-005		6.7900e-003	6.7900e-003		6.7900e-003	6.7900e-003		2.2283	2.2283	2.2400e-003		2.2753
Architectural Coating	0.0693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**6.8794**	**0.8597**	**45.3654**	**0.1691**		**8.6270**	**8.6270**		**8.6270**	**8.6270**	**1,247.4000**	**2.2283**	**1,249.6283**	**4.9040**	**0.0000**	**1,352.6111**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Ashton Place

Yolo/Solano AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	15.00	Dwelling Unit	1.76	20,223.00	43

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Road Dust -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	200.00	213.00
tblFireplaces	NumberNoFireplace	10.35	0.00
tblFireplaces	NumberWood	4.65	0.00
tblGrading	AcresOfGrading	1.50	1.76
tblLandUse	LandUseSquareFeet	27,000.00	20,223.00
tblLandUse	LotAcreage	4.87	1.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20
tblWater	IndoorWaterUseRate	977,310.38	2,098,740.38
tblWoodstoves	NumberCatalytic	0.38	15.00
tblWoodstoves	NumberNoncatalytic	0.38	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2017	2.9957	24.7048	16.7743	0.0230	17.0573	1.3141	18.3714	4.0932	1.2090	5.3022	0.0000	2,126.0775	2,126.0775	0.5413	0.0000	2,137.4455
2018	25.6180	17.4866	14.2869	0.0230	13.2127	1.0560	13.8175	1.3364	1.0198	1.8936	0.0000	2,110.7349	2,110.7349	0.4106	0.0000	2,119.3569
Total	**28.6137**	**42.1914**	**31.0612**	**0.0460**	**30.2700**	**2.3702**	**32.1888**	**5.4296**	**2.2288**	**7.1959**	**0.0000**	**4,236.8124**	**4,236.8124**	**0.9519**	**0.0000**	**4,256.8024**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	2.9957	24.7048	16.7743	0.0230	5.8952	1.3141	7.2093	2.9795	1.2090	4.1885	0.0000	2,126.0775	2,126.0775	0.5413	0.0000	2,137.4455
2018	25.6180	17.4866	14.2869	0.0230	0.1079	1.0560	1.1099	0.0288	1.0198	1.0344	0.0000	2,110.7349	2,110.7349	0.4106	0.0000	2,119.3569
Total	**28.6137**	**42.1914**	**31.0612**	**0.0460**	**6.0031**	**2.3702**	**8.3192**	**3.0083**	**2.2288**	**5.2228**	**0.0000**	**4,236.8124**	**4,236.8124**	**0.9519**	**0.0000**	**4,256.8024**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**80.17**	**0.00**	**74.15**	**44.59**	**0.00**	**27.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Energy	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

Mobile	0.8567	2.3587	9.4787	0.0187	65.3809	0.0333	65.4142	6.6893	0.0306	6.7199		1,611.9966	1,611.9966	0.0603		1,613.2633
Total	**7.7517**	**3.3521**	**54.9009**	**0.1887**	**65.3809**	**8.6711**	**74.0520**	**6.6893**	**8.6684**	**15.3577**	**1,247.4000**	**1,784.8113**	**3,032.2113**	**4.9675**	**3.1300e-003**	**3,137.4990**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Energy	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Mobile	0.8567	2.3587	9.4787	0.0187	65.3809	0.0333	65.4142	6.6893	0.0306	6.7199		1,611.9966	1,611.9966	0.0603		1,613.2633
Total	**7.7517**	**3.3521**	**54.9009**	**0.1887**	**65.3809**	**8.6711**	**74.0520**	**6.6893**	**8.6684**	**15.3577**	**1,247.4000**	**1,784.8113**	**3,032.2113**	**4.9675**	**3.1300e-003**	**3,137.4990**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2017	4/4/2017	5	2	
2	Grading	Grading	4/5/2017	4/10/2017	5	4	
3	Building Construction	Building Construction	4/11/2017	2/1/2018	5	213	
4	Paving	Paving	2/2/2018	2/15/2018	5	10	
5	Architectural Coating	Architectural Coating	2/16/2018	3/1/2018	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.76

Acres of Paving: 0

Residential Indoor: 40,952; Residential Outdoor: 13,651; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Grading	3	8.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	5.00	2.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	4.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.3109	24.2288	15.9299	0.0171		1.3067	1.3067		1.2022	1.2022		1,752.1239	1,752.1239	0.5369		1,763.3977
Total	**2.3109**	**24.2288**	**15.9299**	**0.0171**	**5.7996**	**1.3067**	**7.1063**	**2.9537**	**1.2022**	**4.1559**		**1,752.1239**	**1,752.1239**	**0.5369**		**1,763.3977**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0414	0.4425	0.4397	1.4900e-003	3.5656	6.9100e-003	3.5726	0.3616	6.3500e-003	0.3680		148.0905	148.0905	1.0000e-003		148.1115
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0291	0.0335	0.4047	8.7000e-004	7.6920	4.8000e-004	7.6925	0.7779	4.4000e-004	0.7783		68.9383	68.9383	3.4900e-003		69.0116

Total	**0.0705**	**0.4760**	**0.8444**	**2.3600e-003**	**11.2577**	**7.3900e-003**	**11.2651**	**1.1395**	**6.7900e-003**	**1.1463**		**217.0289**	**217.0289**	**4.4900e-003**		**217.1231**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	2.3109	24.2288	15.9299	0.0171		1.3067	1.3067		1.2022	1.2022	0.0000	1,752.1239	1,752.1239	0.5369		1,763.3977
Total	**2.3109**	**24.2288**	**15.9299**	**0.0171**	**5.7996**	**1.3067**	**7.1063**	**2.9537**	**1.2022**	**4.1559**	**0.0000**	**1,752.1239**	**1,752.1239**	**0.5369**		**1,763.3977**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0414	0.4425	0.4397	1.4900e-003	0.0334	6.9100e-003	0.0403	9.1800e-003	6.3500e-003	0.0155		148.0905	148.0905	1.0000e-003		148.1115
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0291	0.0335	0.4047	8.7000e-004	0.0623	4.8000e-004	0.0628	0.0166	4.4000e-004	0.0170		68.9383	68.9383	3.4900e-003		69.0116
Total	**0.0705**	**0.4760**	**0.8444**	**2.3600e-003**	**0.0956**	**7.3900e-003**	**0.1030**	**0.0258**	**6.7900e-003**	**0.0326**		**217.0289**	**217.0289**	**4.4900e-003**		**217.1231**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9832	0.0000	4.9832	2.5331	0.0000	2.5331			0.0000			0.0000
Off-Road	1.8844	19.7889	13.1786	0.0141		1.0661	1.0661		0.9808	0.9808		1,439.1894	1,439.1894	0.4410		1,448.4496
Total	**1.8844**	**19.7889**	**13.1786**	**0.0141**	**4.9832**	**1.0661**	**6.0493**	**2.5331**	**0.9808**	**3.5139**		**1,439.1894**	**1,439.1894**	**0.4410**		**1,448.4496**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0207	0.2213	0.2199	7.5000e-004	1.7828	3.4500e-003	1.7863	0.1808	3.1800e-003	0.1840		74.0453	74.0453	5.0000e-004		74.0558
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0291	0.0335	0.4047	8.7000e-004	7.6920	4.8000e-004	7.6925	0.7779	4.4000e-004	0.7783		68.9383	68.9383	3.4900e-003		69.0116
Total	**0.0498**	**0.2547**	**0.6245**	**1.6200e-003**	**9.4749**	**3.9300e-003**	**9.4788**	**0.9587**	**3.6200e-003**	**0.9623**		**142.9836**	**142.9836**	**3.9900e-003**		**143.0674**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					4.9832	0.0000	4.9832	2.5331	0.0000	2.5331			0.0000			0.0000
Off-Road	1.8844	19.7889	13.1786	0.0141		1.0661	1.0661		0.9808	0.9808	0.0000	1,439.1894	1,439.1894	0.4410		1,448.4496
Total	**1.8844**	**19.7889**	**13.1786**	**0.0141**	**4.9832**	**1.0661**	**6.0493**	**2.5331**	**0.9808**	**3.5139**	**0.0000**	**1,439.1894**	**1,439.1894**	**0.4410**		**1,448.4496**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0207	0.2213	0.2199	7.5000e-004	0.0167	3.4500e-003	0.0201	4.5900e-003	3.1800e-003	7.7700e-003		74.0453	74.0453	5.0000e-004		74.0558
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0291	0.0335	0.4047	8.7000e-004	0.0623	4.8000e-004	0.0628	0.0166	4.4000e-004	0.0170		68.9383	68.9383	3.4900e-003		69.0116
Total	**0.0498**	**0.2547**	**0.6245**	**1.6200e-003**	**0.0790**	**3.9300e-003**	**0.0829**	**0.0212**	**3.6200e-003**	**0.0248**		**142.9836**	**142.9836**	**3.9900e-003**		**143.0674**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9546	19.1088	14.3110	0.0220		1.2257	1.2257		1.1823	1.1823		2,034.2860	2,034.2860	0.4268		2,043.2497
Total	**2.9546**	**19.1088**	**14.3110**	**0.0220**		**1.2257**	**1.2257**		**1.1823**	**1.1823**		**2,034.2860**	**2,034.2860**	**0.4268**		**2,043.2497**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9000e-004	4.1600e-003	4.1300e-003	1.0000e-005	0.0377	6.0000e-005	0.0378	3.8200e-003	6.0000e-005	3.8800e-003		1.3905	1.3905	1.0000e-005		1.3907
Vendor	0.0226	0.1632	0.2405	4.8000e-004	1.3021	2.6600e-003	1.3047	0.1323	2.4500e-003	0.1348		47.3144	47.3144	3.6000e-004		47.3219
Worker	0.0182	0.0209	0.2529	5.4000e-004	4.8075	3.0000e-004	4.8078	0.4862	2.7000e-004	0.4865		43.0865	43.0865	2.1800e-003		43.1322
Total	**0.0412**	**0.1883**	**0.4976**	**1.0300e-003**	**6.1473**	**3.0200e-003**	**6.1504**	**0.6223**	**2.7800e-003**	**0.6251**		**91.7914**	**91.7914**	**2.5500e-003**		**91.8449**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9546	19.1088	14.3110	0.0220		1.2257	1.2257		1.1823	1.1823	0.0000	2,034.2860	2,034.2860	0.4268		2,043.2497
Total	**2.9546**	**19.1088**	**14.3110**	**0.0220**		**1.2257**	**1.2257**		**1.1823**	**1.1823**	**0.0000**	**2,034.2860**	**2,034.2860**	**0.4268**		**2,043.2497**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	3.9000e-004	4.1600e-003	4.1300e-003	1.0000e-005	3.4000e-004	6.0000e-005	4.1000e-004	9.0000e-005	6.0000e-005	1.5000e-004		1.3905	1.3905	1.0000e-005		1.3907
Vendor	0.0226	0.1632	0.2405	4.8000e-004	0.0128	2.6600e-003	0.0155	3.6800e-003	2.4500e-003	6.1300e-003		47.3144	47.3144	3.6000e-004		47.3219
Worker	0.0182	0.0209	0.2529	5.4000e-004	0.0389	3.0000e-004	0.0392	0.0104	2.7000e-004	0.0106		43.0865	43.0865	2.1800e-003		43.1322
Total	**0.0412**	**0.1883**	**0.4976**	**1.0300e-003**	**0.0521**	**3.0200e-003**	**0.0551**	**0.0141**	**2.7800e-003**	**0.0169**		**91.7914**	**91.7914**	**2.5500e-003**		**91.8449**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5826	17.3173	13.8357	0.0220		1.0532	1.0532		1.0172	1.0172		2,021.4136	2,021.4136	0.4059		2,029.9373
Total	**2.5826**	**17.3173**	**13.8357**	**0.0220**		**1.0532**	**1.0532**		**1.0172**	**1.0172**		**2,021.4136**	**2,021.4136**	**0.4059**		**2,029.9373**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.6000e-004	3.7100e-003	3.8400e-003	1.0000e-005	0.2965	6.0000e-005	0.2966	0.0299	6.0000e-005	0.0300		1.3661	1.3661	1.0000e-005		1.3663
Vendor	0.0200	0.1467	0.2194	4.8000e-004	1.3021	2.4500e-003	1.3045	0.1323	2.2500e-003	0.1346		46.4846	46.4846	3.5000e-004		46.4919
Worker	0.0163	0.0190	0.2280	5.4000e-004	4.8075	2.9000e-004	4.8078	0.4862	2.7000e-004	0.4865		41.4706	41.4706	2.0200e-003		41.5130

Total	**0.0366**	**0.1694**	**0.4512**	**1.0300e-003**	**6.4061**	**2.8000e-003**	**6.4089**	**0.6484**	**2.5800e-003**	**0.6510**		**89.3213**	**89.3213**	**2.3800e-003**		**89.3712**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5826	17.3173	13.8357	0.0220		1.0532	1.0532		1.0172	1.0172	0.0000	2,021.4136	2,021.4136	0.4059		2,029.9373
Total	**2.5826**	**17.3173**	**13.8357**	**0.0220**		**1.0532**	**1.0532**		**1.0172**	**1.0172**	**0.0000**	**2,021.4136**	**2,021.4136**	**0.4059**		**2,029.9373**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.6000e-004	3.7100e-003	3.8400e-003	1.0000e-005	2.1500e-003	6.0000e-005	2.2100e-003	5.4000e-004	6.0000e-005	6.0000e-004		1.3661	1.3661	1.0000e-005		1.3663
Vendor	0.0200	0.1467	0.2194	4.8000e-004	0.0128	2.4500e-003	0.0152	3.6800e-003	2.2500e-003	5.9400e-003		46.4846	46.4846	3.5000e-004		46.4919
Worker	0.0163	0.0190	0.2280	5.4000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0106		41.4706	41.4706	2.0200e-003		41.5130
Total	**0.0366**	**0.1694**	**0.4512**	**1.0300e-003**	**0.0539**	**2.8000e-003**	**0.0567**	**0.0146**	**2.5800e-003**	**0.0172**		**89.3213**	**89.3213**	**2.3800e-003**		**89.3712**

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	10.3081	8.8698	0.0133		0.6027	0.6027		0.5553	0.5553		1,326.5758	1,326.5758	0.4051		1,335.0833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0052**	**10.3081**	**8.8698**	**0.0133**		**0.6027**	**0.6027**		**0.5553**	**0.5553**		**1,326.5758**	**1,326.5758**	**0.4051**		**1,335.0833**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6000e-003	0.0790	0.0818	3.0000e-004	0.7131	1.3500e-003	0.7145	0.0723	1.2400e-003	0.0736		29.0987	29.0987	2.0000e-004		29.1029
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0423	0.0493	0.5929	1.4100e-003	12.4996	7.6000e-004	12.5003	1.2641	7.0000e-004	1.2648		107.8235	107.8235	5.2500e-003		107.9338
Total	**0.0499**	**0.1283**	**0.6746**	**1.7100e-003**	**13.2127**	**2.1100e-003**	**13.2148**	**1.3364**	**1.9400e-003**	**1.3383**		**136.9222**	**136.9222**	**5.4500e-003**		**137.0367**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	1.0052	10.3081	8.8698	0.0133		0.6027	0.6027		0.5553	0.5553	0.0000	1,326.5758	1,326.5758	0.4051		1,335.0833
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0052**	**10.3081**	**8.8698**	**0.0133**		**0.6027**	**0.6027**		**0.5553**	**0.5553**	**0.0000**	**1,326.5758**	**1,326.5758**	**0.4051**		**1,335.0833**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6000e-003	0.0790	0.0818	3.0000e-004	6.6700e-003	1.3500e-003	8.0200e-003	1.8400e-003	1.2400e-003	3.0800e-003		29.0987	29.0987	2.0000e-004		29.1029
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0423	0.0493	0.5929	1.4100e-003	0.1012	7.6000e-004	0.1020	0.0270	7.0000e-004	0.0277		107.8235	107.8235	5.2500e-003		107.9338
Total	**0.0499**	**0.1283**	**0.6746**	**1.7100e-003**	**0.1079**	**2.1100e-003**	**0.1100**	**0.0288**	**1.9400e-003**	**0.0307**		**136.9222**	**136.9222**	**5.4500e-003**		**137.0367**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	25.3085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**25.6071**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6000e-003	0.0790	0.0818	3.0000e-004	0.7131	1.3500e-003	0.7145	0.0723	1.2400e-003	0.0736		29.0987	29.0987	2.0000e-004		29.1029
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.2600e-003	3.7900e-003	0.0456	1.1000e-004	0.9615	6.0000e-005	0.9616	0.0972	5.0000e-005	0.0973		8.2941	8.2941	4.0000e-004		8.3026
Total	**0.0109**	**0.0828**	**0.1274**	**4.1000e-004**	**1.6746**	**1.4100e-003**	**1.6760**	**0.1696**	**1.2900e-003**	**0.1709**		**37.3928**	**37.3928**	**6.0000e-004**		**37.4055**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	25.3085					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**25.6071**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	7.6000e-003	0.0790	0.0818	3.0000e-004	6.6700e-003	1.3500e-003	8.0200e-003	1.8400e-003	1.2400e-003	3.0800e-003		29.0987	29.0987	2.0000e-004		29.1029
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.2600e-003	3.7900e-003	0.0456	1.1000e-004	7.7900e-003	6.0000e-005	7.8400e-003	2.0700e-003	5.0000e-005	2.1300e-003		8.2941	8.2941	4.0000e-004		8.3026
Total	**0.0109**	**0.0828**	**0.1274**	**4.1000e-004**	**0.0145**	**1.4100e-003**	**0.0159**	**3.9100e-003**	**1.2900e-003**	**5.2100e-003**		**37.3928**	**37.3928**	**6.0000e-004**		**37.4055**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8567	2.3587	9.4787	0.0187	65.3809	0.0333	65.4142	6.6893	0.0306	6.7199		1,611.9966	1,611.9966	0.0603		1,613.2633
Unmitigated	0.8567	2.3587	9.4787	0.0187	65.3809	0.0333	65.4142	6.6893	0.0306	6.7199		1,611.9966	1,611.9966	0.0603		1,613.2633

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	183.00	183.00	183.00	524,211	524,211
Total	183.00	183.00	183.00	524,211	524,211

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
NaturalGas Unmitigated	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	1449.98	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246

Total		**0.0156**	**0.1336**	**0.0569**	**8.5000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**		**170.5864**	**170.5864**	**3.2700e-003**	**3.1300e-003**	**171.6246**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	1.44998	0.0156	0.1336	0.0569	8.5000e-004		0.0108	0.0108		0.0108	0.0108		170.5864	170.5864	3.2700e-003	3.1300e-003	171.6246
Total		**0.0156**	**0.1336**	**0.0569**	**8.5000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**		**170.5864**	**170.5864**	**3.2700e-003**	**3.1300e-003**	**171.6246**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111
Unmitigated	6.8794	0.8597	45.3654	0.1691		8.6270	8.6270		8.6270	8.6270	1,247.4000	2.2283	1,249.6283	4.9039	0.0000	1,352.6111

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.4328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.3384	0.8451	44.1154	0.1690		8.6202	8.6202		8.6202	8.6202	1,247.4000	0.0000	1,247.4000	4.9017	0.0000	1,350.3359
Landscaping	0.0389	0.0146	1.2500	7.0000e-005		6.7900e-003	6.7900e-003		6.7900e-003	6.7900e-003		2.2283	2.2283	2.2400e-003		2.2753
Architectural Coating	0.0693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**6.8794**	**0.8597**	**45.3654**	**0.1691**		**8.6270**	**8.6270**		**8.6270**	**8.6270**	**1,247.4000**	**2.2283**	**1,249.6283**	**4.9040**	**0.0000**	**1,352.6111**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.4328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.3384	0.8451	44.1154	0.1690		8.6202	8.6202		8.6202	8.6202	1,247.4000	0.0000	1,247.4000	4.9017	0.0000	1,350.3359
Landscaping	0.0389	0.0146	1.2500	7.0000e-005		6.7900e-003	6.7900e-003		6.7900e-003	6.7900e-003		2.2283	2.2283	2.2400e-003		2.2753
Architectural Coating	0.0693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**6.8794**	**0.8597**	**45.3654**	**0.1691**		**8.6270**	**8.6270**		**8.6270**	**8.6270**	**1,247.4000**	**2.2283**	**1,249.6283**	**4.9040**	**0.0000**	**1,352.6111**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

South Town Project

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	1,270.00	Dwelling Unit	412.34	2,286,000.00	3632
Apartments Low Rise	252.00	Dwelling Unit	15.75	252,000.00	721
Condo/Townhouse	75.00	Dwelling Unit	4.69	75,000.00	215

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	5.00
tblProjectCharacteristics	OperationalYear	2014	2017

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	60.9436	0.8970	77.6284	0.0449		9.4221	9.4221		9.4220	9.4220	932.2614	161.0285	1,093.2899	1.4069	0.0587	1,141.0372
Energy	0.2641	2.2572	0.9605	0.0144		0.1825	0.1825		0.1825	0.1825	0.0000	5,591.2463	5,591.2463	0.1847	0.0758	5,618.6164
Mobile	11.4819	35.8659	135.9438	0.2487	926.6652	0.4725	927.1377	94.7405	0.4345	95.1750	0.0000	19,500.1744	19,500.1744	0.7755	0.0000	19,516.4608
Waste						0.0000	0.0000		0.0000	0.0000	318.0665	0.0000	318.0665	18.7972	0.0000	712.8076
Water						0.0000	0.0000		0.0000	0.0000	33.0106	230.5795	263.5901	3.4009	0.0822	360.4960
Total	**72.6897**	**39.0201**	**214.5327**	**0.3080**	**926.6652**	**10.0770**	**936.7423**	**94.7405**	**10.0390**	**104.7795**	**1,283.3385**	**25,483.0287**	**26,766.3673**	**24.5653**	**0.2167**	**27,349.4180**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	60.9436	0.8970	77.6284	0.0449		9.4221	9.4221		9.4220	9.4220	932.2614	161.0285	1,093.2899	1.4069	0.0587	1,141.0372
Energy	0.2641	2.2572	0.9605	0.0144		0.1825	0.1825		0.1825	0.1825	0.0000	5,591.2463	5,591.2463	0.1847	0.0758	5,618.6164
Mobile	11.2717	34.3633	131.8530	0.2367	880.3320	0.4501	880.7821	90.0035	0.4140	90.4175	0.0000	18,555.1700	18,555.1700	0.7407	0.0000	18,570.7246
Waste						0.0000	0.0000		0.0000	0.0000	318.0665	0.0000	318.0665	18.7972	0.0000	712.8076
Water						0.0000	0.0000		0.0000	0.0000	33.0106	230.5795	263.5901	3.4003	0.0821	360.4433
Total	**72.4795**	**37.5175**	**210.4419**	**0.2959**	**880.3320**	**10.0547**	**890.3867**	**90.0035**	**10.0184**	**100.0219**	**1,283.3385**	**24,538.0243**	**25,821.3628**	**24.5298**	**0.2166**	**26,403.6291**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.29**	**3.85**	**1.91**	**3.90**	**5.00**	**0.22**	**4.95**	**5.00**	**0.20**	**4.54**	**0.00**	**3.71**	**3.53**	**0.14**	**0.06**	**3.46**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	11.2717	34.3633	131.8530	0.2367	880.3320	0.4501	880.7821	90.0035	0.4140	90.4175	0.0000	18,555.1700	18,555.1700	0.7407	0.0000	18,570.7246
Unmitigated	11.4819	35.8659	135.9438	0.2487	926.6652	0.4725	927.1377	94.7405	0.4345	95.1750	0.0000	19,500.1744	19,500.1744	0.7755	0.0000	19,516.4608

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,660.68	1,804.32	1529.64	4,762,245	4,524,133
Condo/Townhouse	494.25	537.00	455.25	1,417,335	1,346,468
Single Family Housing	12,153.90	12,801.60	11137.90	34,664,648	32,931,416
Total	14,308.83	15,142.92	13,122.79	40,844,228	38,802,016

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3
Condo/Townhouse	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3
Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

Ashton Place - Operational Only with Other 2 acre Parcel

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	26.00	Dwelling Unit	3.76	46,800.00	74

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other 2-acre parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Road Dust -

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	8.44	3.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5937	9.3100e-003	0.7710	6.1000e-004		0.0848	0.0848		0.0848	0.0848	8.8067	0.3154	9.1220	0.0191	4.2000e-004	9.6543
Energy	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	102.4512	102.4512	3.3600e-003	1.4000e-003	102.9551
Mobile	0.2554	0.7979	3.0243	5.5300e-003	20.6149	0.0105	20.6254	2.1076	9.6700e-003	2.1173	0.0000	433.8067	433.8067	0.0173	0.0000	434.1690
Waste						0.0000	0.0000		0.0000	0.0000	5.8583	0.0000	5.8583	0.3462	0.0000	13.1289
Water						0.0000	0.0000		0.0000	0.0000	0.5374	3.7540	4.2914	0.0554	1.3400e-003	5.8691
Total	**0.8541**	**0.8495**	**3.8132**	**6.4100e-003**	**20.6149**	**0.0987**	**20.7136**	**2.1076**	**0.0979**	**2.2055**	**15.2024**	**540.3273**	**555.5297**	**0.4413**	**3.1600e-003**	**565.7764**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5937	9.3100e-003	0.7710	6.1000e-004		0.0848	0.0848		0.0848	0.0848	8.8067	0.3154	9.1220	0.0191	4.2000e-004	9.6543

Energy	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	102.4512	102.4512	3.3600e-003	1.4000e-003	102.9551
Mobile	0.2554	0.7979	3.0243	5.5300e-003	20.6149	0.0105	20.6254	2.1076	9.6700e-003	2.1173	0.0000	433.8067	433.8067	0.0173	0.0000	434.1690
Waste						0.0000	0.0000		0.0000	0.0000	5.8583	0.0000	5.8583	0.3462	0.0000	13.1289
Water						0.0000	0.0000		0.0000	0.0000	0.5374	3.7540	4.2914	0.0554	1.3400e-003	5.8682
Total	**0.8541**	**0.8495**	**3.8132**	**6.4100e-003**	**20.6149**	**0.0987**	**20.7136**	**2.1076**	**0.0979**	**2.2055**	**15.2024**	**540.3273**	**555.5297**	**0.4413**	**3.1600e-003**	**565.7755**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2554	0.7979	3.0243	5.5300e-003	20.6149	0.0105	20.6254	2.1076	9.6700e-003	2.1173	0.0000	433.8067	433.8067	0.0173	0.0000	434.1690
Unmitigated	0.2554	0.7979	3.0243	5.5300e-003	20.6149	0.0105	20.6254	2.1076	9.6700e-003	2.1173	0.0000	433.8067	433.8067	0.0173	0.0000	434.1690

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	317.20	317.20	317.20	908,633	908,633
Total	317.20	317.20	317.20	908,633	908,633

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.4976	53.4976	2.4200e-003	5.0000e-004	53.7035
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.4976	53.4976	2.4200e-003	5.0000e-004	53.7035
NaturalGas Mitigated	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9537	48.9537	9.4000e-004	9.0000e-004	49.2516
NaturalGas Unmitigated	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9537	48.9537	9.4000e-004	9.0000e-004	49.2516

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	917357	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9537	48.9537	9.4000e-004	9.0000e-004	49.2516
Total		**4.9500e-003**	**0.0423**	**0.0180**	**2.7000e-004**		**3.4200e-003**	**3.4200e-003**		**3.4200e-003**	**3.4200e-003**	**0.0000**	**48.9537**	**48.9537**	**9.4000e-004**	**9.0000e-004**	**49.2516**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	917357	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9537	48.9537	9.4000e-004	9.0000e-004	49.2516
Total		**4.9500e-003**	**0.0423**	**0.0180**	**2.7000e-004**		**3.4200e-003**	**3.4200e-003**		**3.4200e-003**	**3.4200e-003**	**0.0000**	**48.9537**	**48.9537**	**9.4000e-004**	**9.0000e-004**	**49.2516**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	183896	53.4976	2.4200e-003	5.0000e-004	53.7035
Total		**53.4976**	**2.4200e-003**	**5.0000e-004**	**53.7035**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	183896	53.4976	2.4200e-003	5.0000e-004	53.7035
Total		**53.4976**	**2.4200e-003**	**5.0000e-004**	**53.7035**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5937	9.3100e-003	0.7710	6.1000e-004		0.0848	0.0848		0.0848	0.0848	8.8067	0.3154	9.1220	0.0191	4.2000e-004	9.6543
Unmitigated	0.5937	9.3100e-003	0.7710	6.1000e-004		0.0848	0.0848		0.0848	0.0848	8.8067	0.3154	9.1220	0.0191	4.2000e-004	9.6543

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0293					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1828					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3756	7.0400e-003	0.5760	6.0000e-004		0.0837	0.0837		0.0837	0.0837	8.8067	0.0000	8.8067	0.0188	4.2000e-004	9.3323
Landscaping	6.0700e-003	2.2700e-003	0.1950	1.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	0.3154	0.3154	3.2000e-004	0.0000	0.3220
Total	**0.5937**	**9.3100e-003**	**0.7710**	**6.1000e-004**		**0.0848**	**0.0848**		**0.0848**	**0.0848**	**8.8067**	**0.3154**	**9.1220**	**0.0191**	**4.2000e-004**	**9.6543**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0293					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1828					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3756	7.0400e-003	0.5760	6.0000e-004		0.0837	0.0837		0.0837	0.0837	8.8067	0.0000	8.8067	0.0188	4.2000e-004	9.3323
Landscaping	6.0700e-003	2.2700e-003	0.1950	1.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	0.3154	0.3154	3.2000e-004	0.0000	0.3220
Total	**0.5937**	**9.3100e-003**	**0.7710**	**6.1000e-004**		**0.0848**	**0.0848**		**0.0848**	**0.0848**	**8.8067**	**0.3154**	**9.1220**	**0.0191**	**4.2000e-004**	**9.6543**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.2914	0.0554	1.3400e-003	5.8682
Unmitigated	4.2914	0.0554	1.3400e-003	5.8691

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.694 / 1.06796	4.2914	0.0554	1.3400e-003	5.8691
Total		**4.2914**	**0.0554**	**1.3400e-003**	**5.8691**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.694 / 1.06796	4.2914	0.0554	1.3400e-003	5.8682

Total		**4.2914**	**0.0554**	**1.3400e-003**	**5.8682**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	5.8583	0.3462	0.0000	13.1289
Mitigated	5.8583	0.3462	0.0000	13.1289

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	28.86	5.8583	0.3462	0.0000	13.1289
Total		**5.8583**	**0.3462**	**0.0000**	**13.1289**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	28.86	5.8583	0.3462	0.0000	13.1289
Total		**5.8583**	**0.3462**	**0.0000**	**13.1289**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Ashton Place - Operational Only with Other 2 acre Parcel

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	32.00	Dwelling Unit	3.76	57,600.00	92

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other 2-acre parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Road Dust -

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	10.39	3.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6373	9.8300e-003	0.8160	6.1000e-004		0.0850	0.0850		0.0850	0.0850	8.8067	0.3881	9.1948	0.0192	4.2000e-004	9.7286
Energy	6.0900e-003	0.0520	0.0221	3.3000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	126.0938	126.0938	4.1300e-003	1.7200e-003	126.7140
Mobile	0.3144	0.9820	3.7222	6.8100e-003	25.3722	0.0129	25.3851	2.5940	0.0119	2.6059	0.0000	533.9160	533.9160	0.0212	0.0000	534.3619
Waste						0.0000	0.0000		0.0000	0.0000	5.8583	0.0000	5.8583	0.3462	0.0000	13.1289
Water						0.0000	0.0000		0.0000	0.0000	0.5374	3.7540	4.2914	0.0554	1.3400e-003	5.8691
Total	**0.9578**	**1.0439**	**4.5603**	**7.7500e-003**	**25.3722**	**0.1022**	**25.4743**	**2.5940**	**0.1011**	**2.6951**	**15.2024**	**664.1519**	**679.3543**	**0.4461**	**3.4800e-003**	**689.8024**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6373	9.8300e-003	0.8160	6.1000e-004		0.0850	0.0850		0.0850	0.0850	8.8067	0.3881	9.1948	0.0192	4.2000e-004	9.7286

Energy	6.0900e-003	0.0520	0.0221	3.3000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	126.0938	126.0938	4.1300e-003	1.7200e-003	126.7140
Mobile	0.3144	0.9820	3.7222	6.8100e-003	25.3722	0.0129	25.3851	2.5940	0.0119	2.6059	0.0000	533.9160	533.9160	0.0212	0.0000	534.3619
Waste						0.0000	0.0000		0.0000	0.0000	5.8583	0.0000	5.8583	0.3462	0.0000	13.1289
Water						0.0000	0.0000		0.0000	0.0000	0.5374	3.7540	4.2914	0.0554	1.3400e-003	5.8682
Total	**0.9578**	**1.0439**	**4.5603**	**7.7500e-003**	**25.3722**	**0.1022**	**25.4743**	**2.5940**	**0.1011**	**2.6951**	**15.2024**	**664.1519**	**679.3543**	**0.4461**	**3.4800e-003**	**689.8016**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3144	0.9820	3.7222	6.8100e-003	25.3722	0.0129	25.3851	2.5940	0.0119	2.6059	0.0000	533.9160	533.9160	0.0212	0.0000	534.3619
Unmitigated	0.3144	0.9820	3.7222	6.8100e-003	25.3722	0.0129	25.3851	2.5940	0.0119	2.6059	0.0000	533.9160	533.9160	0.0212	0.0000	534.3619

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	390.40	390.40	390.40	1,118,317	1,118,317
Total	390.40	390.40	390.40	1,118,317	1,118,317

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	65.8432	65.8432	2.9800e-003	6.2000e-004	66.0967
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	65.8432	65.8432	2.9800e-003	6.2000e-004	66.0967
NaturalGas Mitigated	6.0900e-003	0.0520	0.0221	3.3000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	60.2507	60.2507	1.1500e-003	1.1000e-003	60.6173
NaturalGas Unmitigated	6.0900e-003	0.0520	0.0221	3.3000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	60.2507	60.2507	1.1500e-003	1.1000e-003	60.6173

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.12905e+006	6.0900e-003	0.0520	0.0221	3.3000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	60.2507	60.2507	1.1500e-003	1.1000e-003	60.6173

Total		**6.0900e-003**	**0.0520**	**0.0221**	**3.3000e-004**		**4.2100e-003**	**4.2100e-003**		**4.2100e-003**	**4.2100e-003**	**0.0000**	**60.2507**	**60.2507**	**1.1500e-003**	**1.1000e-003**	**60.6173**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.12905e+006	6.0900e-003	0.0520	0.0221	3.3000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	60.2507	60.2507	1.1500e-003	1.1000e-003	60.6173
Total		**6.0900e-003**	**0.0520**	**0.0221**	**3.3000e-004**		**4.2100e-003**	**4.2100e-003**		**4.2100e-003**	**4.2100e-003**	**0.0000**	**60.2507**	**60.2507**	**1.1500e-003**	**1.1000e-003**	**60.6173**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	226334	65.8432	2.9800e-003	6.2000e-004	66.0967
Total		**65.8432**	**2.9800e-003**	**6.2000e-004**	**66.0967**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	226334	65.8432	2.9800e-003	6.2000e-004	66.0967
Total		**65.8432**	**2.9800e-003**	**6.2000e-004**	**66.0967**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6373	9.8300e-003	0.8160	6.1000e-004		0.0850	0.0850		0.0850	0.0850	8.8067	0.3881	9.1948	0.0192	4.2000e-004	9.7286
Unmitigated	0.6373	9.8300e-003	0.8160	6.1000e-004		0.0850	0.0850		0.0850	0.0850	8.8067	0.3881	9.1948	0.0192	4.2000e-004	9.7286

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	0.0293					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2250					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3756	7.0400e-003	0.5760	6.0000e-004		0.0837	0.0837		0.0837	0.0837	8.8067	0.0000	8.8067	0.0188	4.2000e-004	9.3323
Landscaping	7.4700e-003	2.8000e-003	0.2400	1.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003	0.0000	0.3881	0.3881	3.9000e-004	0.0000	0.3963
Total	**0.6373**	**9.8400e-003**	**0.8160**	**6.1000e-004**		**0.0850**	**0.0850**		**0.0850**	**0.0850**	**8.8067**	**0.3881**	**9.1948**	**0.0192**	**4.2000e-004**	**9.7286**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0293					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2250					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3756	7.0400e-003	0.5760	6.0000e-004		0.0837	0.0837		0.0837	0.0837	8.8067	0.0000	8.8067	0.0188	4.2000e-004	9.3323
Landscaping	7.4700e-003	2.8000e-003	0.2400	1.0000e-005		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003	0.0000	0.3881	0.3881	3.9000e-004	0.0000	0.3963
Total	**0.6373**	**9.8400e-003**	**0.8160**	**6.1000e-004**		**0.0850**	**0.0850**		**0.0850**	**0.0850**	**8.8067**	**0.3881**	**9.1948**	**0.0192**	**4.2000e-004**	**9.7286**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			

Mitigated	4.2914	0.0554	1.3400e-003	5.8682
Unmitigated	4.2914	0.0554	1.3400e-003	5.8691

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.694 / 1.06796	4.2914	0.0554	1.3400e-003	5.8691
Total		**4.2914**	**0.0554**	**1.3400e-003**	**5.8691**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.694 / 1.06796	4.2914	0.0554	1.3400e-003	5.8682
Total		**4.2914**	**0.0554**	**1.3400e-003**	**5.8682**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	5.8583	0.3462	0.0000	13.1289
Mitigated	5.8583	0.3462	0.0000	13.1289

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	28.86	5.8583	0.3462	0.0000	13.1289
Total		**5.8583**	**0.3462**	**0.0000**	**13.1289**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Single Family Housing	28.86	5.8583	0.3462	0.0000	13.1289
Total		**5.8583**	**0.3462**	**0.0000**	**13.1289**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Ashton Place - Operational Only with Other 2 acre Parcel

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	32.00	Dwelling Unit	3.76	57,600.00	92

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other 2-acre parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Road Dust -

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	10.39	3.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594
Energy	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Mobile	1.8767	5.6601	23.7648	0.0369	139.4793	0.0714	139.5508	14.2704	0.0657	14.3361		3,183.5908	3,183.5908	0.1289		3,186.2971
Total	**12.5466**	**6.1479**	**40.6017**	**0.0535**	**139.4793**	**2.1507**	**141.6301**	**14.2704**	**2.1450**	**16.4154**	**236.7731**	**3,552.2622**	**3,789.0354**	**0.6460**	**0.0180**	**3,808.1889**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594
Energy	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Mobile	1.8767	5.6601	23.7648	0.0369	139.4793	0.0714	139.5508	14.2704	0.0657	14.3361		3,183.5908	3,183.5908	0.1289		3,186.2971
Total	**12.5466**	**6.1479**	**40.6017**	**0.0535**	**139.4793**	**2.1507**	**141.6301**	**14.2704**	**2.1450**	**16.4154**	**236.7731**	**3,552.2622**	**3,789.0354**	**0.6460**	**0.0180**	**3,808.1889**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8767	5.6601	23.7648	0.0369	139.4793	0.0714	139.5508	14.2704	0.0657	14.3361		3,183.5908	3,183.5908	0.1289		3,186.2971
Unmitigated	1.8767	5.6601	23.7648	0.0369	139.4793	0.0714	139.5508	14.2704	0.0657	14.3361		3,183.5908	3,183.5908	0.1289		3,186.2971

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	390.40	390.40	390.40	1,118,317	1,118,317
Total	390.40	390.40	390.40	1,118,317	1,118,317

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
NaturalGas Unmitigated	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3093.3	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Total		**0.0334**	**0.2851**	**0.1213**	**1.8200e-003**		**0.0231**	**0.0231**		**0.0231**	**0.0231**		**363.9177**	**363.9177**	**6.9800e-003**	**6.6700e-003**	**366.1325**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.0933	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Total		**0.0334**	**0.2851**	**0.1213**	**1.8200e-003**		**0.0231**	**0.0231**		**0.0231**	**0.0231**		**363.9177**	**363.9177**	**6.9800e-003**	**6.6700e-003**	**366.1325**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594
Unmitigated	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1605					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	1.2326					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.1604	0.1716	14.0489	0.0147		2.0418	2.0418		2.0418	2.0418	236.7731	0.0000	236.7731	0.5054	0.0114	250.9055
Landscaping	0.0830	0.0311	2.6666	1.4000e-004		0.0145	0.0145		0.0145	0.0145		4.7537	4.7537	4.7700e-003		4.8539
Total	**10.6365**	**0.2027**	**16.7155**	**0.0148**		**2.0563**	**2.0563**		**2.0563**	**2.0563**	**236.7731**	**4.7537**	**241.5268**	**0.5102**	**0.0114**	**255.7594**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1605					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.2326					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.1604	0.1716	14.0489	0.0147		2.0418	2.0418		2.0418	2.0418	236.7731	0.0000	236.7731	0.5054	0.0114	250.9055
Landscaping	0.0830	0.0311	2.6666	1.4000e-004		0.0145	0.0145		0.0145	0.0145		4.7537	4.7537	4.7700e-003		4.8539
Total	**10.6365**	**0.2027**	**16.7155**	**0.0148**		**2.0563**	**2.0563**		**2.0563**	**2.0563**	**236.7731**	**4.7537**	**241.5268**	**0.5102**	**0.0114**	**255.7594**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Ashton Place - Operational Only with Other 2 acre Parcel - Paved Roads

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	32.00	Dwelling Unit	3.76	57,600.00	92

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other 2-acre parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Road Dust - paved

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	10.39	3.76
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblVehicleTrips	ST_TR	10.08	12.20
tblVehicleTrips	SU_TR	8.77	12.20
tblVehicleTrips	WD_TR	9.57	12.20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594
Energy	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Mobile	1.8767	5.6601	23.7648	0.0369	2.3848	0.0714	2.4562	0.6384	0.0657	0.7041		3,183.5908	3,183.5908	0.1289		3,186.2971
Total	**12.5466**	**6.1479**	**40.6017**	**0.0535**	**2.3848**	**2.1507**	**4.5355**	**0.6384**	**2.1450**	**2.7834**	**236.7731**	**3,552.2622**	**3,789.0354**	**0.6460**	**0.0180**	**3,808.1889**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594
Energy	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Mobile	1.8767	5.6601	23.7648	0.0369	2.3848	0.0714	2.4562	0.6384	0.0657	0.7041		3,183.5908	3,183.5908	0.1289		3,186.2971
Total	**12.5466**	**6.1479**	**40.6017**	**0.0535**	**2.3848**	**2.1507**	**4.5355**	**0.6384**	**2.1450**	**2.7834**	**236.7731**	**3,552.2622**	**3,789.0354**	**0.6460**	**0.0180**	**3,808.1889**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8767	5.6601	23.7648	0.0369	2.3848	0.0714	2.4562	0.6384	0.0657	0.7041		3,183.5908	3,183.5908	0.1289		3,186.2971
Unmitigated	1.8767	5.6601	23.7648	0.0369	2.3848	0.0714	2.4562	0.6384	0.0657	0.7041		3,183.5908	3,183.5908	0.1289		3,186.2971

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	390.40	390.40	390.40	1,118,317	1,118,317
Total	390.40	390.40	390.40	1,118,317	1,118,317

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	42.60	21.00	36.40	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471296	0.067201	0.153113	0.152945	0.056868	0.006821	0.022711	0.054898	0.001011	0.001367	0.008332	0.000508	0.002928

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
NaturalGas Unmitigated	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3093.3	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Total		**0.0334**	**0.2851**	**0.1213**	**1.8200e-003**		**0.0231**	**0.0231**		**0.0231**	**0.0231**		**363.9177**	**363.9177**	**6.9800e-003**	**6.6700e-003**	**366.1325**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.0933	0.0334	0.2851	0.1213	1.8200e-003		0.0231	0.0231		0.0231	0.0231		363.9177	363.9177	6.9800e-003	6.6700e-003	366.1325
Total		**0.0334**	**0.2851**	**0.1213**	**1.8200e-003**		**0.0231**	**0.0231**		**0.0231**	**0.0231**		**363.9177**	**363.9177**	**6.9800e-003**	**6.6700e-003**	**366.1325**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594
Unmitigated	10.6365	0.2027	16.7156	0.0148		2.0563	2.0563		2.0563	2.0563	236.7731	4.7537	241.5268	0.5102	0.0114	255.7594

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1605					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.2326					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Hearth	9.1604	0.1716	14.0489	0.0147		2.0418	2.0418		2.0418	2.0418	236.7731	0.0000	236.7731	0.5054	0.0114	250.9055
Landscaping	0.0830	0.0311	2.6666	1.4000e-004		0.0145	0.0145		0.0145	0.0145		4.7537	4.7537	4.7700e-003		4.8539
Total	**10.6365**	**0.2027**	**16.7155**	**0.0148**		**2.0563**	**2.0563**		**2.0563**	**2.0563**	**236.7731**	**4.7537**	**241.5268**	**0.5102**	**0.0114**	**255.7594**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1605					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.2326					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.1604	0.1716	14.0489	0.0147		2.0418	2.0418		2.0418	2.0418	236.7731	0.0000	236.7731	0.5054	0.0114	250.9055
Landscaping	0.0830	0.0311	2.6666	1.4000e-004		0.0145	0.0145		0.0145	0.0145		4.7537	4.7537	4.7700e-003		4.8539
Total	**10.6365**	**0.2027**	**16.7155**	**0.0148**		**2.0563**	**2.0563**		**2.0563**	**2.0563**	**236.7731**	**4.7537**	**241.5268**	**0.5102**	**0.0114**	**255.7594**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Commercial Use for Ashton and Other Parcel

Yolo/Solano AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Strip Mall	43.52	1000sqft	3.76	43,516.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Table Name	Column Name	Default Value	New Value

tblLandUse	LotAcreage	1.00	3.76
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripNumber	0.00	4.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1821	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.8000e-004	7.8000e-004	0.0000	0.0000	8.2000e-004
Energy	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	153.7695	153.7695	6.8000e-003	1.4900e-003	154.3744
Mobile	1.0839	2.5074	11.2850	0.0170	61.7021	0.0317	61.7337	6.3083	0.0292	6.3375	0.0000	1,296.9758	1,296.9758	0.0523	0.0000	1,298.0740
Waste						0.0000	0.0000		0.0000	0.0000	3.7046	0.0000	3.7046	0.2189	0.0000	8.3022
Water						0.0000	0.0000		0.0000	0.0000	0.4084	2.8299	3.2383	0.0421	1.0200e-003	4.4372
Total	**1.2666**	**2.5127**	**11.2899**	**0.0171**	**61.7021**	**0.0321**	**61.7341**	**6.3083**	**0.0296**	**6.3379**	**4.1130**	**1,453.5760**	**1,457.6890**	**0.3201**	**2.5100e-003**	**1,465.1887**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1821	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.8000e-004	7.8000e-004	0.0000	0.0000	8.2000e-004
Energy	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	153.7695	153.7695	6.8000e-003	1.4900e-003	154.3744
Mobile	1.0839	2.5074	11.2850	0.0170	61.7021	0.0317	61.7337	6.3083	0.0292	6.3375	0.0000	1,296.9758	1,296.9758	0.0523	0.0000	1,298.0740
Waste						0.0000	0.0000		0.0000	0.0000	3.7046	0.0000	3.7046	0.2189	0.0000	8.3022
Water						0.0000	0.0000		0.0000	0.0000	0.4084	2.8299	3.2383	0.0421	1.0200e-003	4.4366
Total	**1.2666**	**2.5127**	**11.2899**	**0.0171**	**61.7021**	**0.0321**	**61.7341**	**6.3083**	**0.0296**	**6.3379**	**4.1130**	**1,453.5760**	**1,457.6890**	**0.3201**	**2.5100e-003**	**1,465.1880**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0839	2.5074	11.2850	0.0170	61.7021	0.0317	61.7337	6.3083	0.0292	6.3375	0.0000	1,296.9758	1,296.9758	0.0523	0.0000	1,298.0740
Unmitigated	1.0839	2.5074	11.2850	0.0170	61.7021	0.0317	61.7337	6.3083	0.0292	6.3375	0.0000	1,296.9758	1,296.9758	0.0523	0.0000	1,298.0740

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Strip Mall	1,928.63	1,829.41	889.03	2,719,608	2,719,608
Total	1,928.63	1,829.41	889.03	2,719,608	2,719,608

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471242	0.066902	0.153160	0.152374	0.056721	0.006800	0.022935	0.055707	0.001002	0.001366	0.008369	0.000503	0.002919

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	147.9873	147.9873	6.6900e-003	1.3800e-003	148.5570
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	147.9873	147.9873	6.6900e-003	1.3800e-003	148.5570
NaturalGas Mitigated	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7822	5.7822	1.1000e-004	1.1000e-004	5.8174
NaturalGas Unmitigated	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7822	5.7822	1.1000e-004	1.1000e-004	5.8174

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Strip Mall	108355	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7822	5.7822	1.1000e-004	1.1000e-004	5.8174
Total		**5.8000e-004**	**5.3100e-003**	**4.4600e-003**	**3.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**5.7822**	**5.7822**	**1.1000e-004**	**1.1000e-004**	**5.8174**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Strip Mall	108355	5.8000e-004	5.3100e-003	4.4600e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.7822	5.7822	1.1000e-004	1.1000e-004	5.8174
Total		**5.8000e-004**	**5.3100e-003**	**4.4600e-003**	**3.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**5.7822**	**5.7822**	**1.1000e-004**	**1.1000e-004**	**5.8174**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Strip Mall	508702	147.9873	6.6900e-003	1.3800e-003	148.5570
Total		**147.9873**	**6.6900e-003**	**1.3800e-003**	**148.5570**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
Strip Mall	508702	147.9873	6.6900e-003	1.3800e-003	148.5570
Total		**147.9873**	**6.6900e-003**	**1.3800e-003**	**148.5570**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1821	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.8000e-004	7.8000e-004	0.0000	0.0000	8.2000e-004
Unmitigated	0.1821	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.8000e-004	7.8000e-004	0.0000	0.0000	8.2000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1700					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Landscaping	4.0000e-005	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.8000e-004	7.8000e-004	0.0000	0.0000	8.2000e-004
Total	**0.1821**	**0.0000**	**4.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.8000e-004**	**7.8000e-004**	**0.0000**	**0.0000**	**8.2000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1700					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.8000e-004	7.8000e-004	0.0000	0.0000	8.2000e-004
Total	**0.1821**	**0.0000**	**4.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.8000e-004**	**7.8000e-004**	**0.0000**	**0.0000**	**8.2000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.2383	0.0421	1.0200e-003	4.4366
Unmitigated	3.2383	0.0421	1.0200e-003	4.4372

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Strip Mall	1.28738 / 0.78904	3.2383	0.0421	1.0200e-003	4.4372
Total		**3.2383**	**0.0421**	**1.0200e-003**	**4.4372**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Strip Mall	1.28738 / 0.78904	3.2383	0.0421	1.0200e-003	4.4366
Total		**3.2383**	**0.0421**	**1.0200e-003**	**4.4366**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.7046	0.2189	0.0000	8.3022
Unmitigated	3.7046	0.2189	0.0000	8.3022

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Strip Mall	18.25	3.7046	0.2189	0.0000	8.3022
Total		**3.7046**	**0.2189**	**0.0000**	**8.3022**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Strip Mall	18.25	3.7046	0.2189	0.0000	8.3022
Total		**3.7046**	**0.2189**	**0.0000**	**8.3022**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Commercial Use for Ashton and Other Parcel

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Strip Mall	43.52	1000sqft	3.76	43,516.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Table Name	Column Name	Default Value	New Value

tblLandUse	LotAcreage	1.00	3.76
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripNumber	0.00	4.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Energy	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Mobile	7.1212	15.7668	83.2768	0.1008	370.4458	0.1915	370.6372	37.9013	0.1762	38.0775		8,443.4721	8,443.4721	0.3469		8,450.7566
Total	**8.1222**	**15.7959**	**83.3057**	**0.1010**	**370.4458**	**0.1937**	**370.6395**	**37.9013**	**0.1784**	**38.0797**		**8,478.4067**	**8,478.4067**	**0.3476**	**6.4000e-004**	**8,485.9042**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Energy	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Mobile	7.1212	15.7668	83.2768	0.1008	370.4458	0.1915	370.6372	37.9013	0.1762	38.0775		8,443.4721	8,443.4721	0.3469		8,450.7566
Total	**8.1222**	**15.7959**	**83.3057**	**0.1010**	**370.4458**	**0.1937**	**370.6395**	**37.9013**	**0.1784**	**38.0797**		**8,478.4067**	**8,478.4067**	**0.3476**	**6.4000e-004**	**8,485.9042**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.1212	15.7668	83.2768	0.1008	370.4458	0.1915	370.6372	37.9013	0.1762	38.0775		8,443.4721	8,443.4721	0.3469		8,450.7566
Unmitigated	7.1212	15.7668	83.2768	0.1008	370.4458	0.1915	370.6372	37.9013	0.1762	38.0775		8,443.4721	8,443.4721	0.3469		8,450.7566

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Strip Mall	1,928.63	1,829.41	889.03	2,719,608	2,719,608
Total	1,928.63	1,829.41	889.03	2,719,608	2,719,608

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471242	0.066902	0.153160	0.152374	0.056721	0.006800	0.022935	0.055707	0.001002	0.001366	0.008369	0.000503	0.002919

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
NaturalGas Unmitigated	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Strip Mall	296.863	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Total		**3.2000e-003**	**0.0291**	**0.0245**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.9250**	**34.9250**	**6.7000e-004**	**6.4000e-004**	**35.1376**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Strip Mall	0.296863	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Total		**3.2000e-003**	**0.0291**	**0.0245**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.9250**	**34.9250**	**6.7000e-004**	**6.4000e-004**	**35.1376**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Unmitigated	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0662					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Consumer Products	0.9312					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.3000e-004	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Total	**0.9979**	**4.0000e-005**	**4.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5200e-003**	**9.5200e-003**	**3.0000e-005**		**0.0101**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0662					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9312					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.3000e-004	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Total	**0.9979**	**4.0000e-005**	**4.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5200e-003**	**9.5200e-003**	**3.0000e-005**		**0.0101**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Commercial Use for Ashton and Other Parcel Paved

Yolo/Solano AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Strip Mall	43.52	1000sqft	3.76	43,516.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	55
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site plan plus other parcel

Construction Phase - based on applicant provided schedule

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Assumed mobilization/demobilization of equipment required an average of 1 truck per 2 pieces of equipment

Grading - site acreage

Vehicle Trips - Based on Traffic Study

Woodstoves - assumed EPA certified wood burning devices

Water And Wastewater - based on UWMP

Road Dust - paved

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	1.00	3.76
tblProjectCharacteristics	OperationalYear	2014	2018
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	HaulingTripNumber	0.00	4.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Energy	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Mobile	7.1212	15.7668	83.2768	0.1008	6.3347	0.1915	6.5261	1.6959	0.1762	1.8721		8,443.4721	8,443.4721	0.3469		8,450.7566
Total	**8.1222**	**15.7959**	**83.3057**	**0.1010**	**6.3347**	**0.1937**	**6.5284**	**1.6959**	**0.1784**	**1.8743**		**8,478.4067**	**8,478.4067**	**0.3476**	**6.4000e-004**	**8,485.9042**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Energy	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Mobile	7.1212	15.7668	83.2768	0.1008	6.3347	0.1915	6.5261	1.6959	0.1762	1.8721		8,443.4721	8,443.4721	0.3469		8,450.7566
Total	**8.1222**	**15.7959**	**83.3057**	**0.1010**	**6.3347**	**0.1937**	**6.5284**	**1.6959**	**0.1784**	**1.8743**		**8,478.4067**	**8,478.4067**	**0.3476**	**6.4000e-004**	**8,485.9042**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.1212	15.7668	83.2768	0.1008	6.3347	0.1915	6.5261	1.6959	0.1762	1.8721		8,443.4721	8,443.4721	0.3469		8,450.7566
Unmitigated	7.1212	15.7668	83.2768	0.1008	6.3347	0.1915	6.5261	1.6959	0.1762	1.8721		8,443.4721	8,443.4721	0.3469		8,450.7566

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Strip Mall	1,928.63	1,829.41	889.03	2,719,608	2,719,608
Total	1,928.63	1,829.41	889.03	2,719,608	2,719,608

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471242	0.066902	0.153160	0.152374	0.056721	0.006800	0.022935	0.055707	0.001002	0.001366	0.008369	0.000503	0.002919

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
NaturalGas Unmitigated	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Strip Mall	296.863	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Total		**3.2000e-003**	**0.0291**	**0.0245**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.9250**	**34.9250**	**6.7000e-004**	**6.4000e-004**	**35.1376**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Strip Mall	0.296863	3.2000e-003	0.0291	0.0245	1.7000e-004		2.2100e-003	2.2100e-003		2.2100e-003	2.2100e-003		34.9250	34.9250	6.7000e-004	6.4000e-004	35.1376
Total		**3.2000e-003**	**0.0291**	**0.0245**	**1.7000e-004**		**2.2100e-003**	**2.2100e-003**		**2.2100e-003**	**2.2100e-003**		**34.9250**	**34.9250**	**6.7000e-004**	**6.4000e-004**	**35.1376**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Unmitigated	0.9979	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.0662					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9312					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.3000e-004	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Total	**0.9979**	**4.0000e-005**	**4.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5200e-003**	**9.5200e-003**	**3.0000e-005**		**0.0101**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0662					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9312					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.3000e-004	4.0000e-005	4.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5200e-003	9.5200e-003	3.0000e-005		0.0101
Total	**0.9979**	**4.0000e-005**	**4.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5200e-003**	**9.5200e-003**	**3.0000e-005**		**0.0101**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

APPENDIX B

Project Name: Ashton Place IS-MND		
Work Site Coordinates: 38°19'38 N/ 121°56'88 W	**Date/Time:** Friday, September 2, 2016	**Weather conditions:** Sunny, ~80°
Surveyor/Company: Sara Reece/Stantec		

Land Cover Information

Land Cover or Habitat	**Observed in Work Area (Y/N)**	**Observed in broader Work Assessment Area (Y/N)**	**Photos**
Ruderal annual grassland	Y	Y	Refer to photographs attached to this memo
Developed	N	Y	

Observations/verification of resources within assessment area

Senior Biologist Sara Reece conducted a reconnaissance survey of the approximately 1-acre site located off Vanden Road and Cogburn Circle in Vacaville, Solano County, California (Figure 1).

The site is located in a residential area and is bordered by residences to the north and west; a park and fire station to the south; and agricultural fields to the east. The site itself is highly disturbed and appears to have been used as a staging area in the recent past (a modular office, Port-a-Potty, and storage containers were still on site). Vegetation within the site is limited to annual grasses (the site had recently been mowed and overlain with straw, so grasses were not identifiable) and invasive and weedy species including yellow starthistle (*Centaurea solstitialis*), purple starthistle (*Centaurea calcitrapa*), prickly lettuce (*Lactuca serriola*), and bindweed (*Convulvulus arvensis*). Stunted saplings which appeared to be *Populus* were also scattered throughout the site. The south border of the site feaures a sidewalk and has been landscaped with crepe myrtle, day lilies, and other ornamental plants.

In terms of wildlife, a number of killdeer (*Charadrius vociferus*) calls were heard, but no individuals were seen within the boundaries of the site. A number of rodent burrows had been dug into soils mounded along the masonry walls surrounding the west, north, and east borders of the site. No other wildlife were seen or heard at the site.

Photo 1. View of site looking south to fire station along Congdon Circle. Stunted *Populus* saplings are visible.

Photo 2. View of site looking west toward residences.

Photo 3. View of site looking southeast.

Photo 4. Example of rodent burrows found throughout soils mounded on borders of the site.

Fig 1. Ashton Place IS-MND
Legend
Survey Area
Vega Way
Wimbledon Dr
202 Cogburn Cir
Vanden Rd
N
200 ft
Google earth
© 2016 Google

APPENDIX C

Stantec

Memo

To:	Christina Corsello	From:	Ashley Hallock, Senior Archaeologist
	City of Vacaville Community Development Department Planning Division 650 Merchant Street Vacaville, CA 95688		Stantec 1201 J Street, Studio100 Sacramento, CA 95814
File:	Cultural Survey Technical Memorandum for Ashton Place Unit 3, Vacaville, Solano County, California	Date:	September 16, 2016

Reference: Cultural Survey Technical Memorandum for Ashton Place Unit 3, Vacaville, Solano County, California

D. R. Horton Northern California Division proposes to develop a 1.76-acre parcel (Assessor's Parcel Number 0136-874-010) and construct 15 two-story detached homes for the project. Additionally, D.R. Horton proposes to request to change the General Plan Designation of the property from Neighborhood Commercial (NC) to Residential Medium Density (RMD) and also to rezone the property to RMD, a request for exception to General Plan Policy 2.3-1 13 whereby new lots in Southtown are to meet or exceed the standards for adjacent homes.

The project is located within the city of Vacaville, Solano County, California and its legal location is Township 6 North, Range 1 West, Section 35 of the Elmira, California United States Geological Survey (USGS) topographic map. The project area consists of an approximately 1.76 acre vacant lot across the street (Cogburn Circle) from the Vacaville Fire Department 75, and is surrounded on the north, east, and western sides by suburban housing.

Stantec, Inc. (Stantec) prepared an Initial Study/Mitigated Negative Declaration (ISMND) for the project. As part of that effort, a Stantec archaeologist conducted pedestrian survey of the 1.76-acre project area. This technical memorandum contains a summary of the pedestrian survey. For a complete account of the cultural resources investigations for this project, please consult the ISMND prepared for Ashton Place Unit 3, Vacaville, California (Stantec 2016). Stantec Senior Archaeologist, Ashley Hallock, MA, RPA, arrived onsite to conduct a field inspection and pedestrian survey of the project area at 8:00 AM on September 2nd, 2016. The entire 1.76-acre parcel (project area) was surveyed walking no greater than 5-meter transects.

The surface ground cover consisted of what looked to be the remnants of construction staging, perhaps for the nearby new Fire Department. Piles of bark dust and dirt were observed throughout the eastern portion of the project area. Additionally, much of the area had been trampled and a small trailer, such as those found at construction sites, was situated on the south-western corner of the project area. It was not in use. Vegetation consisted of dried grass, invasive weeds, and the possible remnants of Cottonwood trees, Yellow Star Thistle, Lactuca, and morning-glory. Several horizontal piles of soil had been dumped in the eastern portion of the project area.

Reference: Cultural Survey Technical Memorandum for Ashton Place Unit 3, Vacaville, Solano County, California

The ground surface visibility in general was poor (less than 90%). Observed soils within the soil dump piles was a thick, dried, clay loam w/ some visible iron oxide. The soil appears to have been dumped from elsewhere and was observed placed on the ground surface. Exposed soils, observed in several patches of visible soil and in rodent disturbance areas, was a dry, coarse, silt loam w/ subangular gravels. No cultural resources were identified as a result of this survey.

Stantec, Inc.

Senior Archaeologist, Project Manager
Phone: (916) 291-7501
Fax: (916) 861-0430
Email: Ashley.hallock@stantec.com

Figure 1. Western side of the Project area. View is toward the west. IMG_0158. 9/2/2016. A. Hallock.

Reference: Cultural Survey Technical Memorandum for Ashton Place Unit 3, Vacaville, Solano County, California

Figure 2. Northeast quarter of the project area, dirt piles in background. IMG_0159. 9/2/2016. A. Hallock.

Figure 3. View of southeast project area, view is from the north wall. IMG_0160. 9/2/2016. A. Hallock.

Reference: Cultural Survey Technical Memorandum for Ashton Place Unit 3, Vacaville, Solano County, California

Figure 4. View of southern project area, looking towards the new fire station. IMG_0161. 9/2/2016. A. Hallock.

Figure 5. View of dirt pile. Detailed view. IMG_0162. 9/2/2016. A. Hallock.

Reference: Cultural Survey Technical Memorandum for Ashton Place Unit 3, Vacaville, Solano County, California

Figure 6. Western portion of the project area. IMG_0163. 9/2/2016. A. Hallock.

Figure 2. View of exposed soils. IMG_0164. 9/2/2016. A. Hallock.

APPENDIX D

PHILLIPPI ENGINEERING, INC.
CIVIL ENGINEERING - LAND SURVEYING

SEWER CALCULATIONS MEMO
ASHTON PLACE UNITS 1-3, POTTERS PLACE, AND PARK PARISH
OCTOBER 21, 2016

The purpose of this memo is to compare the projected sewer flows from the Ashton Place Units 1-3, Potters Place and Park Parish properties as originally intended (Neighborhood Commercial and Residential Medium) versus the proposed sewer flows which would result from the conversion to Single Family Residential (RMD).

The projected commercial flows are identified in the *Southtown Area Sewer Plan Evaluation and CSP-S Trunk Sewer Service Area Master Plan (Master Plan).* The proposed revisions include converting the two Neighborhood Commercial sites to Residential Medium Density (32 RMD single family lots) and modifying the originally envisioned 30 Townhouses (RMD) to 32 Single family housing units (also RMD).

To adequately analyze the changes in the projected sewer flows it is important to compare the original Master Plan Projections with the Proposed Revisions which include the Approved and Existing uses.

Sewershed ST1848 includes the area known as Ashton Place Unit 3. This area, previously designated as neighborhood commercial is being converted to 15 RMD housing units. For this shed area, the original Master Plan envisioned 114 residential units (DUs), 1.4 acres commercial and 7.0 acres of park. The proposed revisions along with the approved and existing uses would yield the following uses: 108 DUs, 5.9 acres of park and 1 acre of Public Use (Fire Station).

In summary, the Master Plan envisioned the following flow from Sewershed ST1848:

- 114 DUs at 240 gpd/unit or 27,360 gpd
- 1.4 ac commercial at 1900 gpd/ac or 2,660 gpd
- 7.0 acres of Park for no flow
- Total projected sewer flow, per the Master Plan from ST 1848 was 30,020 gpd

With Approved and existing projects and the proposed Ashton Unit 3 revision, the flow from Sewershed ST1848 is as follows:

- 108 DU at 240 gpd/unit or 25,920 gpd
- 5.9 acres of park for no flow
- 1 ac of Public Use (Fire Station) at 1500 gpd/ac or 1,500 gpd
- Total projected flow from ST 1848 with revisions is 27,420 gpd

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There is a reduction of 2,600 gpd (30,020 gpd minus 27,420 gpd) in Sewershed ST1848, therefore there is No Impact to this Sewershed.

The Master Plan for Sewershed ST09, the area that includes Ashton Place Unit 1 and 2 and Potters Place, envisioned 138 residential units in the original Master Plan. With existing projects, approved projects and the proposed revision, the total number of residential units is reduced to 134. The sewer flow in Sewershed ST09 is reduced by 4 DUs times 240 gpd/DU or 960 gpd, therefore there is No Impact to this Sewershed.

Sewershed ST04 is the area that includes Park Parish. The original Master Plan, for this area, envisioned 136 DUs, 2.9 acres of commercial and 7 acres of park. With the existing and approved projects and the proposed revision, the following uses will comprise Sewershed ST04: 156 DUs and 7 acres of park.

In summary, the Master Plan envisioned the following flow from Sewershed ST04:

- 136 DUs at 240 gpd/unit or 32,640 gpd
- 2.9 ac commercial at 1900 gpd/ac or 5,510 gpd
- 7.0 acres of Park for no flow
- Total projected sewer flow, per the Master Plan from ST04 was 38,150 gpd

With approved and existing projects and the proposed Park Parish revision, the flow from Sewershed ST04 is as follows:

- 156 DU at 240 gpd/unit or 37,440 gpd
- 7.0 acres of park for no flow
- Total projected flow from ST04 with revisions is 37,440 gpd

There is a reduction of 710 gpd in Sewershed ST04, therefore there is No Impact to this Sewershed.

In summary:

- Sewer flow in Sewershed ST1848 has been reduced by 2,600 gpd from the original Master Plan,
- Sewer flow in Sewershed ST09 has been reduced by 960 gpd from the original Master Plan, and,
- Sewer flow in Sewershed ST04 has been reduced by 710 gpd from the original Master Plan.

Therefore, there is No Sewer Impact.

APPENDIX E

PHILLIPPI ENGINEERING, INC.
CIVIL ENGINEERING - LAND SURVEYING

STORM DRAIN RUNOFF COMPARISON
COMMERCIAL VS. RESIDENTIAL
ASHTON PLACE UNITS 1-3, POTTERS PLACE AND PARK PARISH
TWO SITE AREAS
ASHTON PLACE UNIT 3 – 1.33 AC
PARK PARISH -2.00 AC
October 20, 2016

Calculations based on the City of Vacaville Storm Drain Design Standards
And the Solano County Water Agency Hydrology Manual

QUANTITY OF RUNOFF EQUALS COEFFICIENT OF RUNOFF TIMES THE INTENSITY OF THE STORM TIMES THE AREA.

$$Q = C * I * A$$

Area (A_1) Ashton Place Unit 3 Project site is 1.33 Acres
Area (A_2) Park Parish Project site is 2.00 Acres

The Coefficient of Runoff for Commercial Property per Table DS 4-1 C_C= 0.9

The Coefficient of Runoff for Single Family Medium Density Residential Property per Table DS 4-1 C_R= 0.5

The Time of Concentration is the minimum required 10 minutes because both sites area are so small.

Per Figure 2-2 from the SCWA Hydrology Manual the Ashton Place Unit 3 area is located near the Mean Annual Precipitation isohyetal line 24.

Per Table 3-4B of the SCWA Manual the rainfall intensity for a 10-year storm event (10-minute time of concentration(t)) for isohyetal line 24 = 0.48 in.

The intensity (i) = 0.48 in. / (10 (min) /60 (min/hr)) = 2.88 in./hr.

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The following calculations compute the quantity of storm water runoff for the property at 1.33 acres in size, developed both commercially and residentially:

Q (1.33 ac. Commercial) = C_C * I * A = 0.9 * 2.88 * 1.33 = 3.45 cfs

Q (1.33 ac. Residential) = C_R * I * A = 0.5 * 2.88 * 1.33 = 1.92 cfs

The following calculations compute the quantity of storm water runoff for the property at 2.00 acres in size, developed both commercially and residentially:

Q (2.00 ac. Commercial) = C_C * I * A = 0.9 * 2.88 * 2.00 = 5.18 cfs

Q (2.00 ac. Residential) = C_R * I * A = 0.5 * 2.88 * 2.00 = 2.88 cfs

There is a storm water runoff reduction of 44% by converting the properties from a commercial use to a residential use.

Conclusion: Conversion of the Ashton Place Unit 3 and Park Parish properties from a commercial development to a residential development will result in a 44% reduction in storm water runoff in a 10-year storm event. Simply put, this reduction is directly related to the coefficient of runoff, which is 44% higher for commercial developments over residential developments. There is NO IMPACT.

APPENDIX F

PHILLIPPI ENGINEERING, INC.

CIVIL ENGINEERING - LAND SURVEYING

WATER SUPPLY CALCULATIONS MEMO
ASHTON PLACE UNITS 1-3, POTTERS PLACE AND PARK PARISH
October 21, 2016

The purpose of this memo is to compare the projected potable water requirements for the Ashton Place Units 1-3, Potters Place and Park Parish properties as originally intended (Neighborhood Commercial and Townhouses) versus the proposed potable water requirement which would result from the conversion to Single Family Residential (Residential Medium Density). To accurately reflect the comparison of water demand as originally envisioned in the EIR one must also account for all the proposed changes to the Southtown area. The following chart summarizes the changes in the number of residential lots in the Southtown and Southtown Commons areas that have occurred over time:

SOUTHTOWN AND SOUTHTOWN COMMONS (VANDEN RANCH) LOT COUNTS

	ORIGINAL TENTATIVE MAPS	WITH ANY REVISED TENTATIVE MAPS	CURRENT APPROVED TENTATIVE MAPS AND FINAL MAPS	PROPOSED ASHTON PLACE PARK PARISH REVISIONS
Southtown Phase 1	323	323	323	323
Southtown Phase 2	201	201	195	195
Southtown Phase 3	242	242	242	242
Southtown Phase 1A	117	141	141	141
Southtown Commons (AKA Vanden Ranch)	241	216	216	216
Vanden II	37	37	37	37
Ashton Place, Potters Place and Park Parish (RMD Single Family Detached)	0	0	0	64
TOTAL SINGLE FAMILY	**1161**	**1160**	**1154**	**1218**
Apartments	223	223	223	223
SUBTOTAL WITH APARTMENTS	**1384**	**1383**	**1377**	**1441**
Townhouses	60	60	60	0
TOTAL RESIDENTIAL UNITS	**1444**	**1443**	**1437**	**1441**
Neighborhood Commercial (Ashton Place Unit 3)	1.33 Ac	1.33 Ac.	N/A	0
Neighborhood Commercial (Park Parish))	2.00 Ac	2.00 Ac.	N/A	0
Other Commercial	N/C	N/C	N/C	N/C

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In summary, from the Tentative Map through all revisions, there is a net reduction of 3 residential units (60 less townhouses, 64 additional RMD single family and 7 less single family) for the Southtown and Southtown Commons areas when comparing against the original Tentative Map Approvals. In addition, there is a net reduction of 3.33 Acres of Neighborhood Commercial land.

With the above reductions, there is a total overall reduction of water demand as follows:

- 3 less Residential units at 350 gpd per unit or 1,050 gpd
- 3.33 acres less commercial development at 1,600 gpd or 5,328 gpd
- Total water demand in the Southtown and Southtown Commons area equals 6,378 gpd

Therefore, there is No Impact.

APPENDIX G

Existing Traffic Noise Levels

RESULTS: SOUND LEVELS <Project Name?>

<Organization?>
<Analysis By?>

16 September 2016
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 20 deg C, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated Avg: 61.1	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver6	6	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
Receiver7	7	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
Receiver8	8	1	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
Receiver9	9	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
Receiver10	10	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	5	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Construction Traffic Noise Levels

RESULTS: SOUND LEVELS <Project Name?>

<Organization?>
<Analysis By?>

16 September 2016
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 20 deg C, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			Avg: 62.3									
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver6	6	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
Receiver7	7	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
Receiver8	8	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
Receiver9	9	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
Receiver10	10	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	5	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Operational Noise Levels

RESULTS: SOUND LEVELS <Project Name?>

<Organization?>
<Analysis By?>

16 September 2016
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: <Run Title?>
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 20 deg C, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated Avg: 61.7	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver6	6	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
Receiver7	7	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
Receiver8	8	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
Receiver9	9	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
Receiver10	10	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	5	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX H

Stantec

Memo

To:	Christina Corsello	From:	Joy Bhattacharya and Maria Tribelhorn
	City of Vacaville Planning Department		Stantec Consulting Services Inc.
File:	Ashton Place Unit 3 Project	Date:	October 7, 2016

Reference: Ashton Place Unit 3 Project – Traffic Assumptions Memorandum

Stantec prepared this memo to provide some background information regarding the technical approach and assumptions for the Ashton Place Unit 3 Project, specifically with respect to the Vehicle Miles Traveled (VMT) analysis. To evaluate the potential impact of modifying the land use to include residential rather than commercial space, Stantec calculated the potential impact over a weekday week period. The metric used is VMT, in this case the average week day week vehicle miles traveled for a household.

The average weekday trip length for a single family home is 7.48 miles (Metropolitan Transportation Commission, 2008). This value represents the average length of all home-based trips taken during a day for a household, including commute, recreational, errand and any other type of trip. This value is a one-way trip, which would represent either an inbound or an outbound trip end. The weekday daily trip generation for the development of 15 homes was estimated to be 183 trips (which would include both inbound trips and outbound trips). Divided by the 15 homes, the trip generation per household is about 12 trips on a weekday, which would represent similar homes in the area. Since the average trip length is 7.48 miles, the average household would have a daily VMT of 90 miles (7.48*12). This translates to an average weekday week VMT of 450 miles (90*5) for a household in the Southtown area.

Over the course of a week, it was assumed that residents would have made three trips a week to the proposed commercial use at the study parcel, which would be on average a 0.48 mile trip for Southtown residents. With the change in planned land use, residents will not be able to make a short trip to a nearby location for commercial services. Instead, in the future they will need to go elsewhere for the same needs, which will increase VMT slightly over the course of the week. On average, a Southtown resident in the future will need to travel 2.22 miles for commercial services rather than 0.48 miles, which would be a reduction of 1.74 miles. At three trips a week, this would translate to 5.2 miles a week per household, which is about 1.2 percent of the current estimate VMT.

It is important to note that the VMT reduction would only apply to the future scenario in which commercial space were built rather than residential space. Residents do not currently experience trip length reduction as the commercial space has not been built and residents will not experience a change from current trip length in the future as a result of this land use change. The land use change simply limits the ability of the City to reduce future trip length for Southtown residents.

Reference: Ashton Place Unit 3 Project – Traffic Assumptions Memorandum

Stantec Consulting Services Inc.

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To:	Christina Corsello City of Vacaville Community Development Department Planning Division 650 Merchant Street Vacaville, CA 95688	From:	Joy Bhattacharya and Maria Tribelhorn 1340 Treat Boulevard Suite 300 Walnut Creek, CA 94597
File:	Ashton Place Unit 3 Project ISMND	Date:	October 10, 2016
Subject	Traffic Study		

The City of Vacaville (City) is subject to the California Environmental Quality Act (CEQA) which requires all discretionary decisions made by the City Council and City Planning Commission be reviewed for environmental impacts in accordance to CEQA. Approval of the proposed Ashton Place Unit 3 Project (Project) is considered a discretionary action of the City requiring an appropriate CEQA Document. The proposed residential development will consist of 15 two-story detached homes located on a 1.76 acre parcel identified as Assessor's Parcel Number 0136-874-010 bordered by existing residential to the north and west, Magnolia Park to the south beyond Cogburn Circle, and undeveloped/agricultural land to the east beyond Vanden Road. The Project consists of the 15 detached homes, private yard areas, and provides four (4) parking stalls per dwelling unit. All units would have rear entry and the units adjacent to Vanden Road and Vega Way would face the public street. The constructed project would be managed by one Homeowners Association (HOA).

In addition to the Project, the application and CEQA document would also evaluate the requested zoning of the site. The project site is currently zoned Neighborhood Commercial (CN). As part of the Village at Southtown application submitted to the City, the Project requests to change the General Plan Designation of the property to Residential Medium Density (RM) and also rezone the property to RM. In addition to the General Plan mapping change, the Village at Southtown application is requesting an exception to General Plan Policy 2.3-I 13 whereby new lots in the Southtown area are to meet or exceed the standards for the adjacent neighboring homes. The intent of the policy is to ensure that existing residences are not adversely affected by changes to the development plans on adjacent parcels. This policy would apply to the northern boundary of the subject parcel as the proposed lot sized for the parcels that abut the northern property line are between 1,752 square feet (sf) and 2,058 sf while the existing lots to the north are a minimum of 3,600+/- sf. There are four lots proposed which would about five existing houses to the north. The minimum setback from proposed homes to the property line is 12 feet (ft) which is in excess of the typical side yard setback of 10 ft required in Residential Low Density Zoning Districts.

EXISTING ROADWAY SYSTEM

The City contains a hierarchy of roadways that serve different functions, ranging from the highway system to arterial, collector, and local streets. A subset of these roads are designated as regionally significant routes and are subject to regional policy considerations, as described in the sections

below that summarize the Solano County Comprehensive Transportation Plan and Congestion Management Program (Solano CMP).

Highways

Vacaville is served by two freeways, Interstate 80 and Interstate 505, which are part of the interstate highway network. Interstate 80 primarily has four travel lanes in each direction in the Vacaville area. It extends southwest through Fairfield and Vallejo, crosses the Carquinez and Oakland Bay Bridges, terminating at Highway 101 in San Francisco. It also extends northeast through Dixon and Davis, over the Sacramento River to Sacramento and beyond. Interstate 505 links Interstate 80 with Interstate 5, a major north-south freeway serving the west coast of the United States. Interstate 505 has two travel lanes in each direction.

These freeways and their associated interchanges define the regional context, which affects the local access and circulation within Vacaville.

Local Street and Roadway System

The local street and roadway system is composed of a hierarchy of streets with varying functions. The classifications within this hierarchy are explained in detail in the Roadway Classifications and Standards section below. Arterial roads range from six-lane arterials, such as portions of Elmira Road, to four lane arterials, such as Peabody Road and Nut Tree Road. Two-lane roads can also be designated as arterial roads. Collectors, which have two travel lanes, include Orchard Avenue, Marshall Road, and Vanden Road. Local streets are primarily found in residential neighborhoods, carry little through traffic, and generally have the lowest traffic volumes. Collector routes funnel traffic from local roadways to the arterial roadway network.

TRIP GENERATION

As this Project proposes a change to the previously approved zoning from the Southtown Project EIR, Stantec compared the trip generation of the proposed land use to the approved trip generation of the Southtown Project EIR for the parcels affected by the proposed project. Trip generation for the proposed project was calculated based on the proposed number of detached housing units. The approved project trip generation was calculated based on commercial use.

The City of Vacaville has their own model for trip generation. The Vacaville Citywide MINUTP Model results (obtained from the Southtown Project EIR) were used to estimate the approved land use trip generation. Under the approved land use, three acres were allocated to commercial use, and 1.33 of those acres are part of the proposed project. The approved land use resulted in an estimated 44 p.m. peak hour person-trips as shown in Table 1.

The Institute of Transportation Engineer's (ITE) Trip Generation Manual results for the proposed land use were also compared against the MINUTP Model results. The ITE weekday daily, a.m. peak, and p.m. peak hour trip generation rates used for the proposed project are shown in Table 1 as well as the p.m. peak hour trip generation rates for the approved project. As shown, the proposed project

land use is expected to generate 183 daily person-trips, 20 a.m. peak hour person-trips and 19 p.m. peak hour person-trips during the weekday, including 12 inbound trips and 7 outbound trips. The MINUTP model generated five p.m. peak hour trips. Because the ITE trip rates were more conservative, the ITE trip rates were used for the analysis for the proposed land use.

The proposed change in land use is expected to generate 25 fewer trips than the approved land use during the p.m. peak hour. It would generate slightly more a.m. peak hour trips but over the course of the day it would generate substantially fewer trips.

Table 1: Trip Generation

Land Use (ITE Code)	Size		Daily		a.m. Peak Hour				p.m. Peak Hour			
			Rate/ Equ	Total	Rate/ Equ	In	Out	Total	Rate/ Equ	In	Out	Total
Proposed Project: Single-Family Detached Housing (210)	15	units	Equ A	183	Equ B	5	15	20	Equ C	12	7	19
Proposed Project: Approved Neighborhood Commercial*	1.33	acres	400	532	3% of Daily	10	6	16	32.9*	14	30	44
DIFFERENCE			**-**	**349**	**-**	**-5**	**+9**	**+4**	**-**	**-2**	**-23**	**-25**
Anticipated Conversion from Policy Change: Residential Conversion of Additional 2.0 acre parcel	17	units	Equ A	206	Equ B	6	16	22	Equ C	18	8	21
Anticipated Conversion from Policy Change: Total Approved Neighborhood Commercial	3	acres	400	1200	3% of Daily	22	14	36	32.9*	31	67	98

Notes:
Equ A: Ln (T) = 0.92 Ln (X) + 2.72
Equ B: T = 0.70 (X) + 9.74
Equ C: Ln (T) = 0.90 Ln (X) + 0.51
Source: For Single Family Detached Housing: ITE Trip Generation, 9th Edition; Stantec August 2015

Source for approved neighborhood commercial: SANDAG Traffic Generation Rates (specialty retail, strip

commercial), April 2002 *Trip generation rate from the 2003 Southtown Project EIR Source: Stantec 2016

Shown in Table I is the trip generation for the Southtown Project, when the proposed commercial would get converted to residential use. The approved commercial usage trip generation numbers for the full Southtown development is taken from the Southtown EIR. The Southtown development had planned for 3 acres of commercial use, which would result in t 1,200 daily trips, 36 a.m. peak hour trips, and 98 p.m. peak hour trips. As a worst case scenario, we have assumed the conversion of the 3 acres would result in building the proposed project's 15 residential homes plus an additional 17 residential units (additional 2.0 acre parcel). The trip generation of the additional 17 residential units would result in 206 daily trips, including 22 trips during the a.m. peak and 21 trips during the p.m. peak hour. Therefore, the conversion of this commercial use to residential use is estimated to reduce the number of trips generated in the Southtown Project Area.

TRIP DISTRIBUTION

To evaluate the impact of the project, three study intersections were selected for analysis:

1. Alamo Drive and Nut Tree Road
2. Alamo Drive and Vanden Road
3. Alamo Drive and Leisure Town Road

The trips estimated in the previous section were distributed to the transportation network for the Existing Plus Project scenario. All of the trips were routed northbound on Vanden Road for both the a.m. and p.m. peak period. Trips were distributed based on the current traffic patterns.

LEVEL OF SERVICE ANALYSIS METHODOLOGY

Potential project improvements at the study intersections were quantified through the determination of level of service (LOS), a qualitative measure describing operational conditions within a traffic stream. LOS has letter designations ranging from A to F, with LOS A representing free flow traffic with little or no delay and LOS F representing jammed conditions with excessive delay and long back-ups. Procedures for analyzing each type of facility are based on the Highway Capacity Manual 2000 (HCM 2000).

Data was collected in spring of 2016 for the Roberts Ranch Specific Plan EIR for the City of Vacaville. This data was input into Synchro to analyze the existing and existing plus project LOS.

INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING CONDITIONS

Table 2 below summarizes peak hour level of service at the study intersection under Existing Conditions. LOS worksheets are provided in **Attachment 1**. Under the existing a.m. and p.m. peak, the study intersections operate at an acceptable level of service (LOS) C.

Table 2 - Peak Hour Intersection LOS - Existing Conditions

Scenario	Intersection	Intersection Control	A.M. Peak Hour		P.M. Peak Hour	
			Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
Existing	Nut Tree Road/Alamo Drive	Signalized	28.5	C	32.4	C
Existing	Vanden Road/Alamo Drive	Signalized	21.2	C	28.4	C
Existing	Leisure Town Road/Alamo Drive	Signalized	26.9	C	29.2	C

Notes: LOS = Level of Service

INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Table 3, on the following page, summarizes peak hour level of service at the study intersections under the Plus Project condition, accounting for the trips generated by the proposed project land use. LOS worksheets are provided in **Attachment 1.**

Under the Existing Plus Project a.m. and p.m. peak, the study intersections continue to operate at an acceptable (LOS). The trips generated by the site do not have a significant impact on the study intersections.

Table 3 - Peak Hour Intersection LOS - Existing Plus Improved Conditions

Scenario	Intersection	Intersection Control	A.M. Peak Hour		P.M. Peak Hour	
			Avg. Delay (sec/veh)	LOS	Avg. Delay (sec/veh)	LOS
Existing Plus Project	Nut Tree Road/Alamo Drive	Signalized	28.6	C	32.4	C
Existing Plus Project	Vanden Road/Alamo Drive	Signalized	21.5	C	28.6	C
Existing Plus Project	Leisure Town Road/Alamo Drive	Signalized	27.2	C	29.3	C

Notes: Delay = Average control delay in seconds per vehicle, LOS = Level of Service.

VEHICLE MILES TRAVELED

The current Solano CMP states a goal of reducing Vehicle Miles Traveled (VMT) by 10%. The previously approved commercial land use would have provided service facilities such as a grocery

store or convenience store, allowing for short (potentially non-automobile) trips. Calculation of Vehicle Miles Traveled (VMT) is based on the number of vehicle-trips made and the length of those trips. In the Southtown area, the weekday daily trip generation rate for a single household is estimated to be about 12 person-trips (derived from 183 person-trips/15 households in Trip Generation section). Divided by the 15 homes, the trip generation per household is about 12 trips on a weekday, which would represent similar homes in the area. Since the average trip length is 7.48 miles, the average household would have a daily VMT of 90 miles (7.48*12). This translates to an average weekday week VMT of 450 miles (90*5) for a household in the Southtown area.

The previously approved commercial land use had potential to reduce the VMT of the Southtown area by providing the residences with close-by services. Over the course of a week, it was assumed that residents would have made three trips a week to the proposed commercial use at the study parcel, which would be on average a 0.48 mile trip for Southtown residents. With the change in planned land use, residents will not be able to make a short trip to a nearby location for commercial services. Instead, in the future they will need to go elsewhere for the same needs, which will increase VMT slightly over the course of the week. On average, a Southtown resident in the future will need to travel 2.22 miles for commercial services rather than 0.48 miles, which would be a reduction of 1.74 miles. At three trips a week, this would translate to 5.2 miles a week per household, which is about 1.2 percent of the current estimate VMT.

Although there are fewer trips generated for the proposed land use than the approved land use, there would be no reduction in VMT as would have been possible with the commercial land use. However, a reduction of 1.2% is not a significant amount. Also, as was previously noted, with the proposed residential use, Southtown residents would be subject to an average 2.22 mile trip to the nearest commercial service rather than a shorter trip to the project site. However, as 2.22 miles is less than the average trip length of 7.48 miles, this distance is presumed to be insignificant.

PARKING

Parking conditions were also evaluated for the proposed land use. The Project would need to incorporate a minimum of 32 parking spaces to meet the anticipated demand. However, as discussed in Section 2.0, Project Description, the proposed project accounts for 60 parking spots: 24 parking stalls, 30 garage spaces (each of the 15homes includes a double car garage), and six driveway spaces (as shown in **Table 4**). At an 85th percentile parking demand rate of 2.14 vehicles per dwelling unit, a demand of 32 vehicles during the peak weekday period was calculated. This demand should be accommodated by the on-site provided parking, and should not have a significant impact on the neighborhood on-street parking.

Table 4: Parking Generation

Land Use (ITE Code)	Size		Peak Demand		Peak Supply
			Rate/Equ	Total	Total
Proposed: Single-Family Detached Housing (210)	15	units	2.14[1]	32	32
Notes: *ITE 85th Percentile parking demand rate for peak time (ITE Parking Generation)					

CONCLUSION

The Project is expected to generate 20 person trips during the a.m. peak hour and 19 person trips during the p.m. peak hour. Under the Existing Conditions and the Existing Plus Project Conditions all three study intersections operate at an acceptable LOS. The change in land use results in fewer estimated trips, but would not allow for the reduction of VMT that may have been accomplished under commercial use. Additionally, the site is not expected to have a significant impact on the surrounding on-street parking. In general, the relatively low amount of traffic generated by the site is not expected to have a significant impact on the transportation network.

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Attachment: Attachment 1 – LOS Reports

References:

Vacaville, City of. Roberts Ranch Specific Plan Draft EIR. 12 September 2016. (not yet posted online)

Institute of Transportation Engineers. *Trip Generation Manual*. 9th ed. Vol. 2. Washington, DC: Institute of Transportation Engineers, 2012. Print.

Vacaville, City of. "Southtown Project Environmental Impact Review." April 2004. *City of Vacaville*. 9 September 2016.

Solano Transportation Authority. "Solano County Congestion Management Program." December 2015. Solano Transportation Authority. 12 September 2016.

Institute of Transportation Engineers. Parking Generation. 4th ed. Washington, DC: Institute of Transportation Engineers, 2010. Print.

Municipal Transportation Commission. Travel Forecasts for the San Francisco Bay Area 2006 – 2035. Metropolitan Transportation Commission. 2008.

Attachment 1– LOS Reports

HCM Signalized Intersection Capacity Analysis
1: Nut Tree Rd & Alamo Dr

9/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	351	79	62	474	104	175	221	80	105	129	164
Future Volume (vph)	170	351	79	62	474	104	175	221	80	105	129	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.96		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	3366		1570	3428		1770	3359		1719	3157	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	3366		1570	3428		1770	3359		1719	3157	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	382	86	67	515	113	190	240	87	114	140	178
RTOR Reduction (vph)	0	14	0	0	15	0	0	34	0	0	155	0
Lane Group Flow (vph)	185	454	0	67	613	0	190	293	0	114	163	0
Confl. Peds. (#/hr)			3			4			3			8
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	6%	4%	4%	15%	2%	3%	2%	2%	5%	5%	2%	5%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	13.2	28.0		6.6	21.4		13.1	15.2		8.2	10.3	
Effective Green, g (s)	13.2	28.0		6.6	21.4		13.1	15.2		8.2	10.3	
Actuated g/C Ratio	0.17	0.35		0.08	0.27		0.17	0.19		0.10	0.13	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Vehicle Extension (s)	1.6	2.2		1.6	2.1		1.6	1.6		1.6	2.1	
Lane Grp Cap (vph)	283	1190		130	926		292	644		177	410	
v/s Ratio Prot	c0.11	0.13		0.04	c0.18		c0.11	c0.09		0.07	0.05	
v/s Ratio Perm												
v/c Ratio	0.65	0.38		0.52	0.66		0.65	0.46		0.64	0.40	
Uniform Delay, d1	30.9	19.1		34.8	25.7		30.9	28.3		34.1	31.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	0.1		1.4	1.4		3.9	0.2		5.9	0.3	
Delay (s)	35.0	19.2		36.2	27.1		34.8	28.5		40.0	31.9	
Level of Service	C	B		D	C		C	C		D	C	
Approach Delay (s)		23.7			28.0			30.8			34.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	21.2
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	287	131	29	288	11	83	30	85	20	40	213
Future Volume (vph)	117	287	131	29	288	11	83	30	85	20	40	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.89		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3440		1805	3587		1805	1690		1805	1642	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3440		1805	3587		1805	1690		1805	1642	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	139	342	156	35	343	13	99	36	101	24	48	254
RTOR Reduction (vph)	0	35	0	0	2	0	0	75	0	0	154	0
Lane Group Flow (vph)	139	463	0	35	354	0	99	62	0	24	148	0
Confl. Peds. (#/hr)						3						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.8	22.5		3.1	15.8		6.5	16.8		2.0	12.3	
Effective Green, g (s)	9.8	22.5		3.1	15.8		6.5	16.8		2.0	12.3	
Actuated g/C Ratio	0.15	0.35		0.05	0.24		0.10	0.26		0.03	0.19	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.6	2.1		1.6	2.1		1.6	1.6		1.6	1.6	
Lane Grp Cap (vph)	272	1190		86	871		180	436		55	310	
v/s Ratio Prot	c0.08	c0.13		0.02	0.10		c0.05	c0.04		0.01	c0.09	
v/s Ratio Perm												
v/c Ratio	0.51	0.39		0.41	0.41		0.55	0.14		0.44	0.48	
Uniform Delay, d1	25.4	16.1		30.1	20.7		27.9	18.6		30.9	23.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.1		1.1	0.1		2.1	0.1		2.0	0.4	
Delay (s)	26.1	16.2		31.2	20.8		29.9	18.6		33.0	23.9	
Level of Service	C	B		C	C		C	B		C	C	
Approach Delay (s)		18.3			21.7			23.4			24.6	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	71	12	20	65	39	6	220	11	50	317	123
Future Volume (vph)	264	71	12	20	65	39	6	220	11	50	317	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1793		1805	1887		1805	1820	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1900	1615	1805	1793		1805	1887		1805	1820	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	318	86	14	24	78	47	7	265	13	60	382	148
RTOR Reduction (vph)	0	0	9	0	23	0	0	2	0	0	16	0
Lane Group Flow (vph)	318	86	5	24	102	0	7	276	0	60	514	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	15.5	22.1	22.1	2.0	8.6		0.7	19.1		4.0	22.8	
Effective Green, g (s)	15.5	22.1	22.1	2.0	8.6		0.7	19.1		4.0	22.8	
Actuated g/C Ratio	0.23	0.33	0.33	0.03	0.13		0.01	0.29		0.06	0.34	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Vehicle Extension (s)	1.5	2.3	2.3	1.5	2.4		1.5	2.3		1.5	2.3	
Lane Grp Cap (vph)	419	629	535	54	231		18	540		108	622	
v/s Ratio Prot	c0.18	0.05		0.01	c0.06		0.00	0.15		c0.03	c0.28	
v/s Ratio Perm			0.00									
v/c Ratio	0.76	0.14	0.01	0.44	0.44		0.39	0.51		0.56	0.83	
Uniform Delay, d1	23.9	15.6	15.0	31.8	26.8		32.8	19.9		30.5	20.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.9	0.1	0.0	2.1	0.9		5.0	0.5		3.5	8.6	
Delay (s)	30.7	15.7	15.0	33.9	27.7		37.8	20.4		34.0	28.7	
Level of Service	C	B	B	C	C		D	C		C	C	
Approach Delay (s)		27.1			28.7			20.8			29.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	19.5
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Nut Tree Rd & Alamo Dr

9/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	371	137	99	485	162	141	203	54	155	348	208
Future Volume (vph)	234	371	137	99	485	162	141	203	54	155	348	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3414		1719	3427		1805	3430		1787	3356	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3414		1719	3427		1805	3430		1787	3356	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	382	141	102	500	167	145	209	56	160	359	214
RTOR Reduction (vph)	0	42	0	0	37	0	0	27	0	0	99	0
Lane Group Flow (vph)	241	481	0	102	630	0	145	238	0	160	474	0
Confl. Peds. (#/hr)			6			4			2			1
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	1%	1%	5%	1%	1%	0%	1%	4%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	14.0	27.5		6.4	19.9		9.9	14.2		10.2	14.5	
Effective Green, g (s)	14.0	27.5		6.4	19.9		9.9	14.2		10.2	14.5	
Actuated g/C Ratio	0.18	0.35		0.08	0.25		0.12	0.18		0.13	0.18	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Vehicle Extension (s)	1.6	2.2		1.6	2.1		1.6	1.6		1.6	2.1	
Lane Grp Cap (vph)	311	1180		138	857		224	612		229	612	
v/s Ratio Prot	c0.14	0.14		0.06	c0.18		0.08	0.07		c0.09	c0.14	
v/s Ratio Perm												
v/c Ratio	0.77	0.41		0.74	0.74		0.65	0.39		0.70	0.77	
Uniform Delay, d1	31.2	19.8		35.7	27.4		33.1	28.8		33.2	30.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.1		16.2	2.9		4.8	0.1		7.3	5.6	
Delay (s)	41.7	19.9		52.0	30.3		37.9	29.0		40.5	36.6	
Level of Service	D	B		D	C		D	C		D	D	
Approach Delay (s)		26.8			33.2			32.1			37.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	21.2
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	310	98	64	408	14	246	69	39	9	26	77
Future Volume (vph)	90	310	98	64	408	14	246	69	39	9	26	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00		1.00	0.95		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3480		1805	3589		1805	1797		1805	1670	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3480		1805	3589		1805	1797		1805	1670	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	103	356	113	74	469	16	283	79	45	10	30	89
RTOR Reduction (vph)	0	23	0	0	2	0	0	12	0	0	72	0
Lane Group Flow (vph)	103	446	0	74	483	0	283	112	0	10	47	0
Confl. Peds. (#/hr)						3						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.4	17.8		7.8	18.2		16.5	30.5		0.9	14.9	
Effective Green, g (s)	7.4	17.8		7.8	18.2		16.5	30.5		0.9	14.9	
Actuated g/C Ratio	0.10	0.23		0.10	0.23		0.21	0.39		0.01	0.19	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.6	2.1		1.6	2.1		1.6	1.6		1.6	1.6	
Lane Grp Cap (vph)	172	798		181	841		383	706		20	320	
v/s Ratio Prot	c0.06	0.13		0.04	c0.13		c0.16	c0.06		0.01	0.03	
v/s Ratio Perm												
v/c Ratio	0.60	0.56		0.41	0.57		0.74	0.16		0.50	0.15	
Uniform Delay, d1	33.7	26.4		32.7	26.3		28.5	15.2		38.1	26.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	0.5		0.5	0.6		6.3	0.0		7.0	0.1	
Delay (s)	37.4	27.0		33.3	26.9		34.8	15.3		45.1	26.1	
Level of Service	D	C		C	C		C	B		D	C	
Approach Delay (s)		28.8			27.8			28.9			27.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	20.6
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	83	14	10	110	62	15	399	39	62	215	272
Future Volume (vph)	173	83	14	10	110	62	15	399	39	62	215	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1797		1805	1875		1805	1741	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1900	1615	1805	1797		1805	1875		1805	1741	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	206	99	17	12	131	74	18	475	46	74	256	324
RTOR Reduction (vph)	0	0	12	0	22	0	0	4	0	0	55	0
Lane Group Flow (vph)	206	99	5	12	183	0	18	517	0	74	525	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	12.0	23.5	23.5	0.9	12.4		1.6	24.8		5.6	29.2	
Effective Green, g (s)	12.0	23.5	23.5	0.9	12.4		1.6	24.8		5.6	29.2	
Actuated g/C Ratio	0.16	0.32	0.32	0.01	0.17		0.02	0.33		0.08	0.39	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Vehicle Extension (s)	1.5	2.3	2.3	1.5	2.4		1.5	2.3		1.5	2.3	
Lane Grp Cap (vph)	291	600	510	21	299		38	625		136	684	
v/s Ratio Prot	c0.11	0.05		0.01	c0.10		0.01	0.28		c0.04	c0.30	
v/s Ratio Perm			0.00									
v/c Ratio	0.71	0.17	0.01	0.57	0.61		0.47	0.83		0.54	0.77	
Uniform Delay, d1	29.5	18.3	17.4	36.5	28.7		35.9	22.8		33.1	19.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.3	0.1	0.0	21.2	3.1		3.4	8.5		2.4	4.8	
Delay (s)	35.8	18.4	17.4	57.7	31.8		39.3	31.3		35.5	24.4	
Level of Service	D	B	B	E	C		D	C		D	C	
Approach Delay (s)		29.5			33.2			31.6			25.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	353	79	62	480	105	175	221	80	106	129	164
Future Volume (vph)	170	353	79	62	480	105	175	221	80	106	129	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.96		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1703	3366		1570	3429		1770	3359		1719	3157	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1703	3366		1570	3429		1770	3359		1719	3157	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	384	86	67	522	114	190	240	87	115	140	178
RTOR Reduction (vph)	0	14	0	0	15	0	0	34	0	0	155	0
Lane Group Flow (vph)	185	456	0	67	621	0	190	293	0	115	163	0
Confl. Peds. (#/hr)			3			4			3			8
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	6%	4%	4%	15%	2%	3%	2%	2%	5%	5%	2%	5%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	13.3	28.3		6.6	21.6		13.2	15.2		8.2	10.2	
Effective Green, g (s)	13.3	28.3		6.6	21.6		13.2	15.2		8.2	10.2	
Actuated g/C Ratio	0.17	0.36		0.08	0.27		0.17	0.19		0.10	0.13	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Vehicle Extension (s)	1.6	2.2		1.6	2.1		1.6	1.6		1.6	2.1	
Lane Grp Cap (vph)	284	1198		130	931		293	642		177	405	
v/s Ratio Prot	c0.11	0.14		0.04	c0.18		c0.11	c0.09		0.07	0.05	
v/s Ratio Perm												
v/c Ratio	0.65	0.38		0.52	0.67		0.65	0.46		0.65	0.40	
Uniform Delay, d1	30.9	19.1		34.9	25.8		31.0	28.5		34.3	31.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.1		1.4	1.5		3.7	0.2		6.0	0.3	
Delay (s)	35.0	19.2		36.4	27.2		34.7	28.7		40.3	32.1	
Level of Service	C	B		D	C		C	C		D	C	
Approach Delay (s)		23.6			28.1			30.9			34.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	21.2
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	287	134	30	288	11	90	32	91	20	41	213
Future Volume (vph)	117	287	134	30	288	11	90	32	91	20	41	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.89		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3437		1805	3587		1805	1689		1805	1643	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3437		1805	3587		1805	1689		1805	1643	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	139	342	160	36	343	13	107	38	108	24	49	254
RTOR Reduction (vph)	0	36	0	0	2	0	0	75	0	0	151	0
Lane Group Flow (vph)	139	466	0	36	354	0	107	71	0	24	152	0
Confl. Peds. (#/hr)						3						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.8	22.7		3.1	16.0		6.8	17.3		2.0	12.5	
Effective Green, g (s)	9.8	22.7		3.1	16.0		6.8	17.3		2.0	12.5	
Actuated g/C Ratio	0.15	0.35		0.05	0.24		0.10	0.26		0.03	0.19	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.6	2.1		1.6	2.1		1.6	1.6		1.6	1.6	
Lane Grp Cap (vph)	269	1187		85	873		186	444		54	312	
v/s Ratio Prot	c0.08	c0.14		0.02	0.10		c0.06	c0.04		0.01	c0.09	
v/s Ratio Perm												
v/c Ratio	0.52	0.39		0.42	0.41		0.58	0.16		0.44	0.49	
Uniform Delay, d1	25.8	16.3		30.4	20.9		28.1	18.6		31.3	23.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.1		1.2	0.1		2.7	0.1		2.1	0.4	
Delay (s)	26.5	16.4		31.7	21.0		30.7	18.7		33.4	24.2	
Level of Service	C	B		C	C		C	B		C	C	
Approach Delay (s)		18.6			22.0			23.8			24.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	20.6
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	269	72	12	20	65	39	6	220	11	50	317	124
Future Volume (vph)	269	72	12	20	65	39	6	220	11	50	317	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1793		1805	1887		1805	1820	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1900	1615	1805	1793		1805	1887		1805	1820	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	324	87	14	24	78	47	7	265	13	60	382	149
RTOR Reduction (vph)	0	0	9	0	23	0	0	2	0	0	16	0
Lane Group Flow (vph)	324	87	5	24	102	0	7	276	0	60	515	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	15.7	22.3	22.3	2.0	8.6		0.7	19.2		4.0	22.9	
Effective Green, g (s)	15.7	22.3	22.3	2.0	8.6		0.7	19.2		4.0	22.9	
Actuated g/C Ratio	0.23	0.33	0.33	0.03	0.13		0.01	0.29		0.06	0.34	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Vehicle Extension (s)	1.5	2.3	2.3	1.5	2.4		1.5	2.3		1.5	2.3	
Lane Grp Cap (vph)	422	632	537	53	230		18	540		107	622	
v/s Ratio Prot	c0.18	0.05		0.01	c0.06		0.00	0.15		c0.03	c0.28	
v/s Ratio Perm			0.00									
v/c Ratio	0.77	0.14	0.01	0.45	0.44		0.39	0.51		0.56	0.83	
Uniform Delay, d1	23.9	15.6	15.0	32.0	27.0		32.9	20.0		30.6	20.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	0.1	0.0	2.2	0.9		5.0	0.5		4.0	8.6	
Delay (s)	31.3	15.7	15.0	34.2	27.9		37.9	20.5		34.6	28.9	
Level of Service	C	B	B	C	C		D	C		C	C	
Approach Delay (s)		27.6			28.9			20.9			29.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	375	137	100	488	163	141	203	54	157	348	208
Future Volume (vph)	234	375	137	100	488	163	141	203	54	157	348	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3415		1719	3427		1805	3430		1787	3356	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3415		1719	3427		1805	3430		1787	3356	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	241	387	141	103	503	168	145	209	56	162	359	214
RTOR Reduction (vph)	0	41	0	0	37	0	0	27	0	0	99	0
Lane Group Flow (vph)	241	487	0	103	634	0	145	238	0	162	474	0
Confl. Peds. (#/hr)			6			4			2			1
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	2%	1%	1%	5%	1%	1%	0%	1%	4%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	14.0	27.5		6.5	20.0		9.9	14.2		10.3	14.6	
Effective Green, g (s)	14.0	27.5		6.5	20.0		9.9	14.2		10.3	14.6	
Actuated g/C Ratio	0.18	0.35		0.08	0.25		0.12	0.18		0.13	0.18	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.6		5.0	5.6	
Vehicle Extension (s)	1.6	2.2		1.6	2.1		1.6	1.6		1.6	2.1	
Lane Grp Cap (vph)	310	1178		140	859		224	611		230	614	
v/s Ratio Prot	c0.14	0.14		0.06	c0.19		0.08	0.07		c0.09	c0.14	
v/s Ratio Perm												
v/c Ratio	0.78	0.41		0.74	0.74		0.65	0.39		0.70	0.77	
Uniform Delay, d1	31.4	19.9		35.8	27.4		33.2	28.9		33.2	31.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	0.1		15.8	2.9		4.8	0.2		7.8	5.5	
Delay (s)	42.0	20.1		51.6	30.4		38.0	29.1		41.0	36.5	
Level of Service	D	C		D	C		D	C		D	D	
Approach Delay (s)		26.9			33.2			32.2			37.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	79.7	Sum of lost time (s)	21.2
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

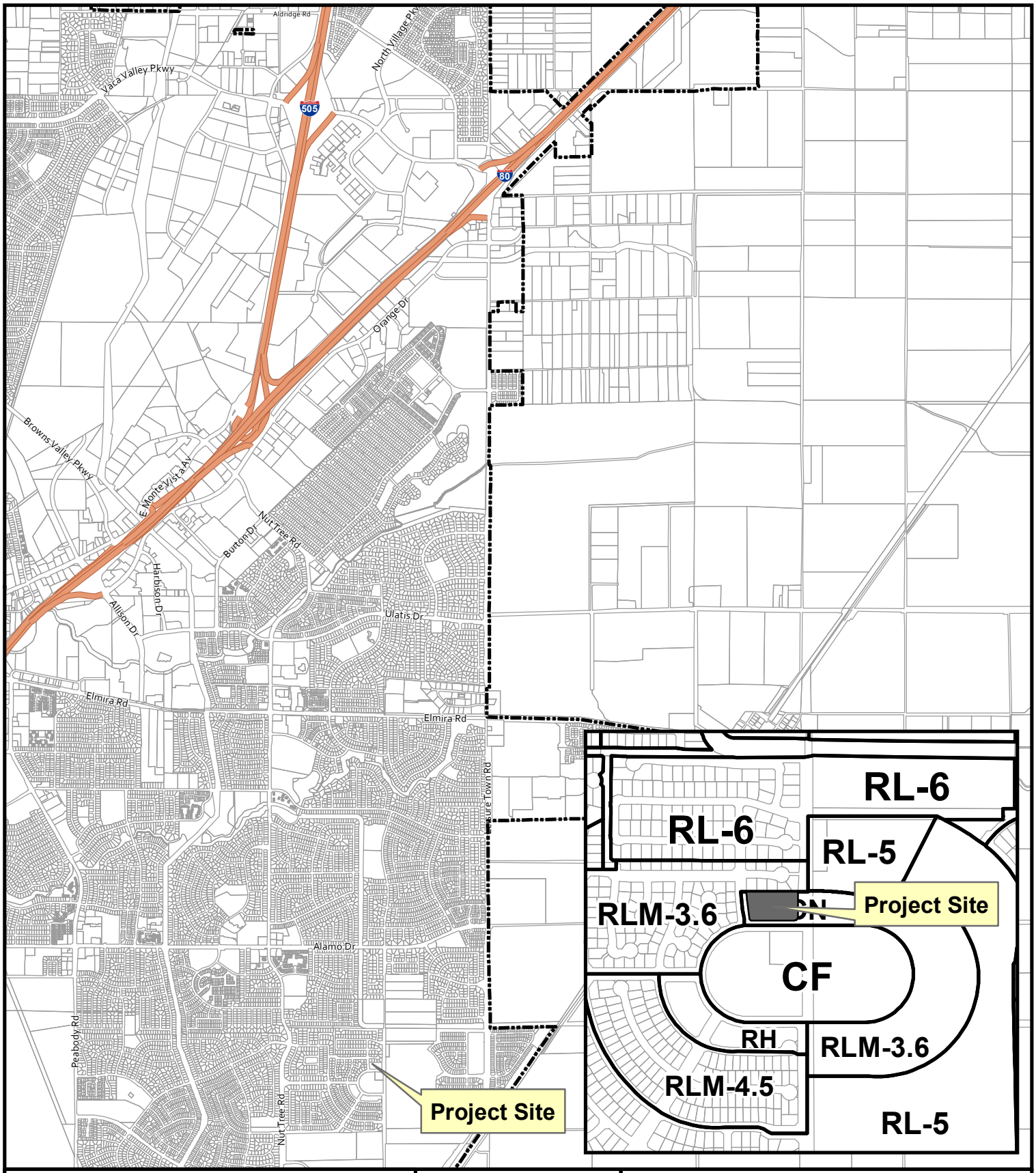
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	310	104	68	408	14	251	70	40	9	28	77
Future Volume (vph)	90	310	104	68	408	14	251	70	40	9	28	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00		1.00	0.95		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3473		1805	3589		1805	1796		1805	1674	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3473		1805	3589		1805	1796		1805	1674	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	103	356	120	78	469	16	289	80	46	10	32	89
RTOR Reduction (vph)	0	25	0	0	2	0	0	12	0	0	70	0
Lane Group Flow (vph)	103	451	0	78	483	0	289	114	0	10	51	0
Confl. Peds. (#/hr)						3						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.5	17.9		7.8	18.2		17.0	31.0		0.9	14.9	
Effective Green, g (s)	7.5	17.9		7.8	18.2		17.0	31.0		0.9	14.9	
Actuated g/C Ratio	0.10	0.23		0.10	0.23		0.22	0.40		0.01	0.19	
Clearance Time (s)	5.0	5.6		5.0	5.6		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.6	2.1		1.6	2.1		1.6	1.6		1.6	1.6	
Lane Grp Cap (vph)	173	794		180	835		392	711		20	318	
v/s Ratio Prot	c0.06	0.13		0.04	c0.13		c0.16	c0.06		0.01	0.03	
v/s Ratio Perm												
v/c Ratio	0.60	0.57		0.43	0.58		0.74	0.16		0.50	0.16	
Uniform Delay, d1	33.9	26.7		33.1	26.6		28.5	15.2		38.4	26.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	0.6		0.6	0.6		6.1	0.0		7.0	0.1	
Delay (s)	37.5	27.3		33.7	27.3		34.6	15.2		45.4	26.5	
Level of Service	D	C		C	C		C	B		D	C	
Approach Delay (s)		29.1			28.1			28.8			28.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	20.6
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	83	14	10	111	62	15	399	39	62	215	275
Future Volume (vph)	174	83	14	10	111	62	15	399	39	62	215	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1798		1805	1875		1805	1740	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1900	1615	1805	1798		1805	1875		1805	1740	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	207	99	17	12	132	74	18	475	46	74	256	327
RTOR Reduction (vph)	0	0	12	0	22	0	0	4	0	0	55	0
Lane Group Flow (vph)	207	99	5	12	184	0	18	517	0	74	528	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	12.0	23.5	23.5	0.9	12.4		1.6	24.9		5.6	29.3	
Effective Green, g (s)	12.0	23.5	23.5	0.9	12.4		1.6	24.9		5.6	29.3	
Actuated g/C Ratio	0.16	0.32	0.32	0.01	0.17		0.02	0.33		0.08	0.39	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.1	5.7		4.1	5.3	
Vehicle Extension (s)	1.5	2.3	2.3	1.5	2.4		1.5	2.3		1.5	2.3	
Lane Grp Cap (vph)	291	600	510	21	299		38	627		135	685	
v/s Ratio Prot	c0.11	0.05		0.01	c0.10		0.01	0.28		c0.04	c0.30	
v/s Ratio Perm			0.00									
v/c Ratio	0.71	0.17	0.01	0.57	0.62		0.47	0.82		0.55	0.77	
Uniform Delay, d1	29.6	18.4	17.5	36.6	28.8		36.0	22.7		33.2	19.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	0.1	0.0	21.2	3.1		3.4	8.4		2.4	5.0	
Delay (s)	36.2	18.4	17.5	57.8	31.9		39.3	31.1		35.6	24.7	
Level of Service	D	B	B	E	C		D	C		D	C	
Approach Delay (s)		29.8			33.3			31.4			25.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Exhibit

NOT TO SCALE

Project Site

City Limits

VACAVILLE

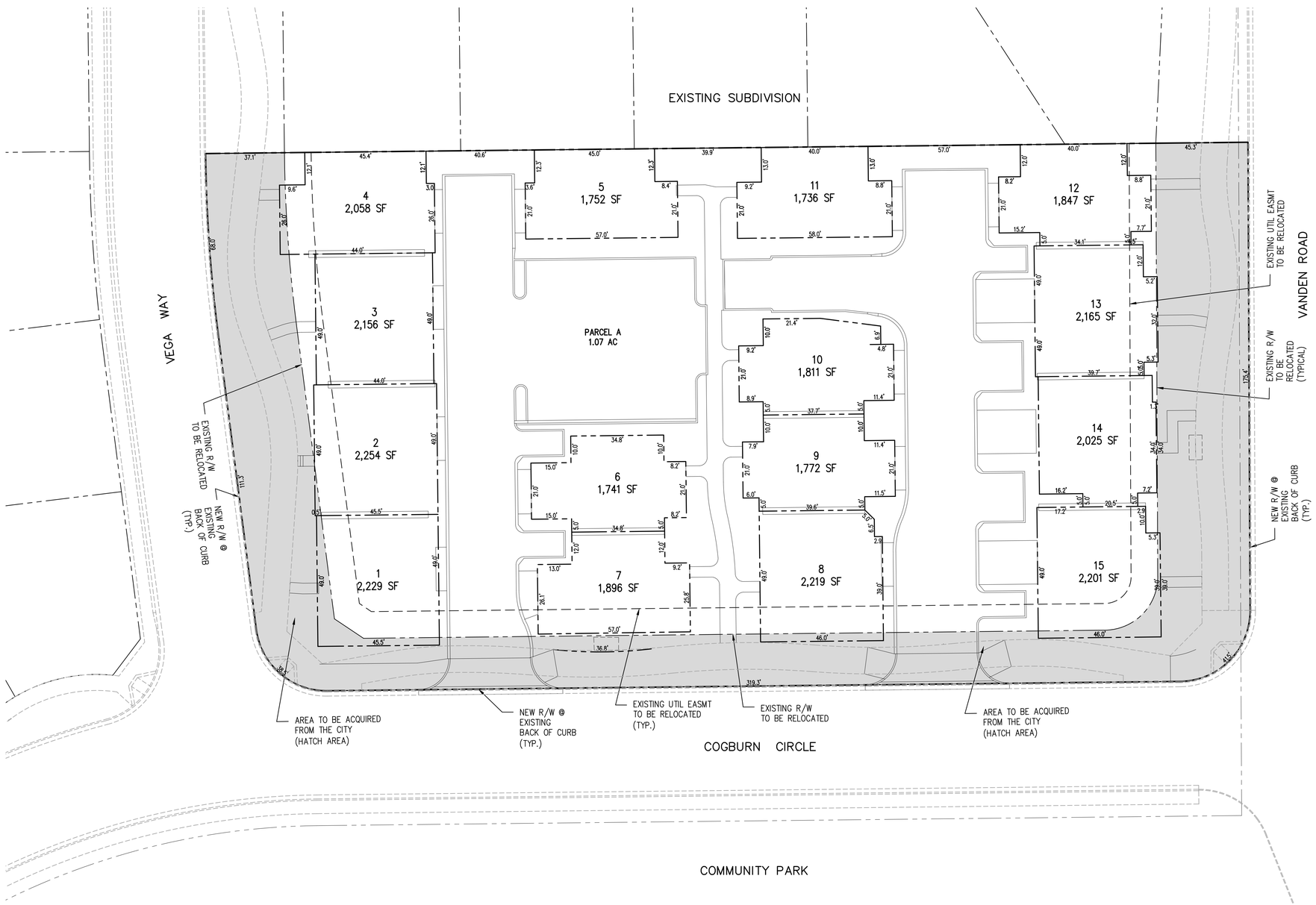
CITY OF VACAVILLE

ASHTON 3
COGBURN CIRCLE AND VANDEN ROAD

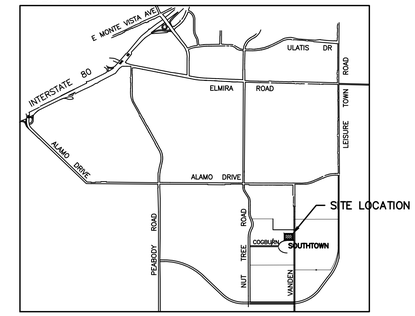
FILE NO. 15-084

DATE PLOTTED: 10/31/2016

TENTATIVE MAP
ASHTON PLACE UNIT-3
VILLAGES AT SOUTHTOWN



LOCATION MAP



ASHTON PLACE UNIT–3

DEVELOPER:
WESTERN PACIFIC HOUSING
1210 CENTRAL BLVD.
BRENTWOOD, CA 94513
(925) 634–6023

ENGINEER:
PHILLIPPI ENGINEERING, INC.
425 MERCHANT ST
P.O. BOX 6556
VACAVILLE, CA 95688
(707)451–6556

A.P.N.:
ASHTON PLACE 3: 136–874–010

ACREAGE/DENSITY:
1.76±AC
NUMBER OF UNITS=15
DENSITY=8.5 UNITS/AC

INDEX OF SHEET

1 TITLE SHEET/SUBDIVISION MAP
2 SITE LAYOUT
3 GRADING PLAN
4 UTILITY PLAN
5 CONTEXTUAL MAP
6 TOPOGRAPHIC MAP

GENERAL NOTES

1. THE OWNER RESERVES THE RIGHT TO FILE MULTIPLE FINAL MAPS.
2. ALL NEW RESIDENTIAL PARCELS WILL BE SERVED WITH WATER, SEWER AND DRAINAGE SERVICE BY THE CITY OF VACAVILLE.
3. ALL PARCELS WILL BE SERVED BY PG&E, SBC AND COMCAST.

LEGEND

PROPOSED	EXISTING	
		SANITARY SEWER CLEANOUT
		CURB GUTTER AND SIDEWALK
		DROP INLET
		PUBLIC STREET LIGHT
		PRIVATE STREET LIGHT
TC	EX.TC	TOP OF CURB GRADE
12"ø SS		FIRE HYDRANT AND VALVE ASSEMBLY
		SANITARY SEWER PIPE AND MANHOLE, SIZE AND SLOPE DIRECTION
18"ø SD		STORM DRAIN PIPE AND MANHOLE, SIZE AND SLOPE DIRECTION
		TRAFFIC SIGN AS NOTED
8"ø WM	8"ø WM	WATER MAIN PIPE, SIZE AND VALVE
8"ø WM–NP	8"ø WM–NP	WATER MAIN PIPE, SIZE AND VALVE NON POTABLE
		OVERLAND RELEASE ARROW

N

SCALE: 1"=20'

CALL BEFORE YOU DIG 800-642-2444

REGISTERED PROFESSIONAL ENGINEER THOMAS A. PHILLIPPI No. 32061 Exp. 12-31-16 CIVIL STATE OF CALIFORNIA

PHILLIPPI ENGINEERING
CIVIL ENGINEERING - LAND SURVEYING
425 MERCHANT STREET VACAVILLE, CA 95688
P.O.BOX 6556 VACAVILLE, CA 95696
PHONE (707) 451-6556 FAX (707) 451-6305

DESIGNED BY: E.T.V.
DRAFTED BY: E.T.V.
CHECKED BY: T.A.P.

PROJECT NAME/LOCATION:
ASHTON PLACE UNIT 3
VILLAGES AT SOUTHTOWN
VACAVILLE CA

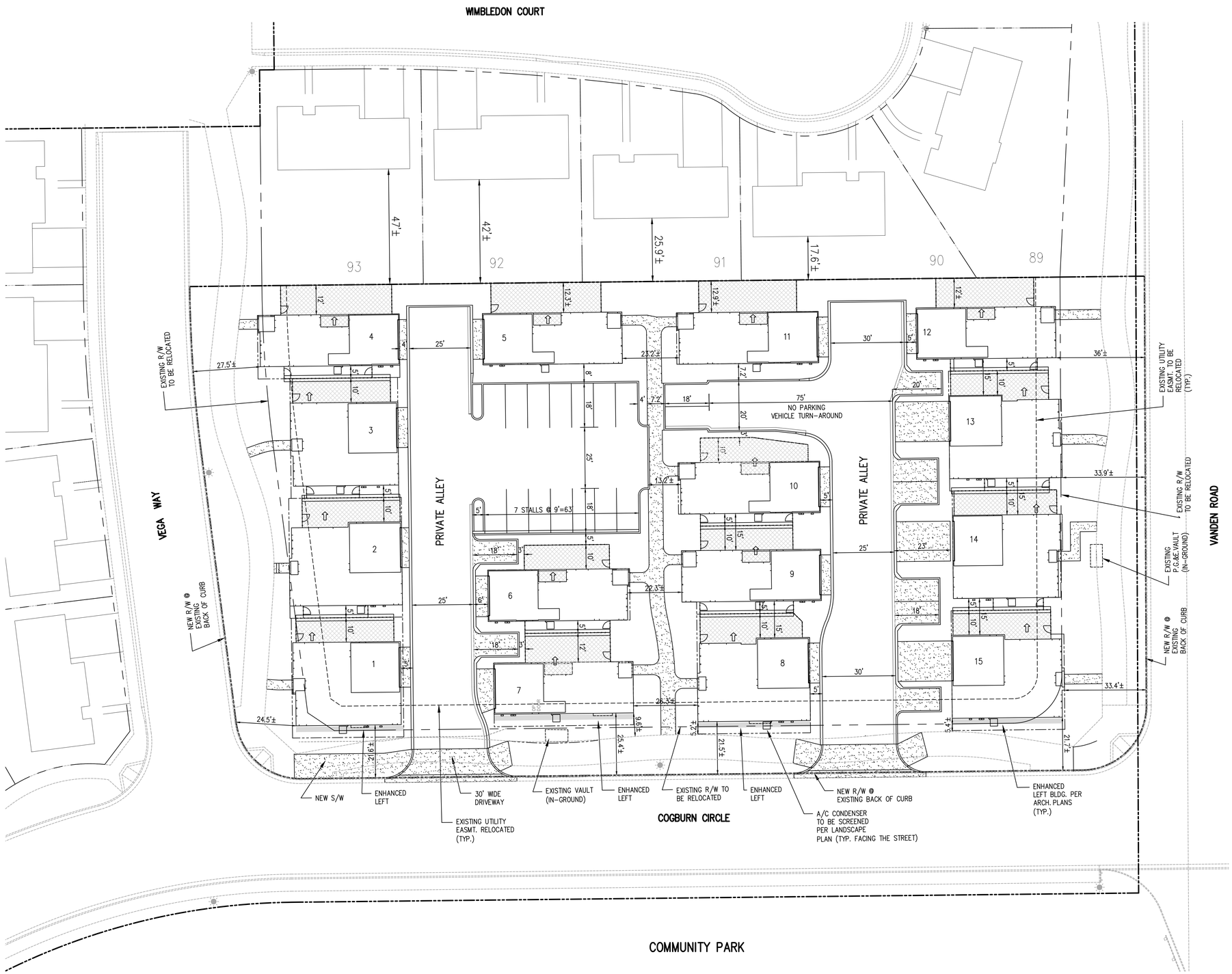
DRAWING TITLE:
TITLE/SUBDIVISION MAP

REVISIONS:

NO.	DESCRIPTION	DATE
		04-22-2015

DRAWING FILE:
210860/TENTATIVE PLANS

ISSUE DATE: 08–17–16
PROJECT NO.: 20140210
SHEET NO.: 1 OF 6



ON-SITE PARKING:

GARAGES – 30 (2 PER UNIT)
GARAGE DRIVEWAYS – 6
PRIVATE ALLEY – 24
TOTAL – 60
RATIO – 4 PARKING/UNIT

USEABLE YARD AREA ⇧

LOT #	YARD AREA (SF)	LOT #	YARD AREA (SF)
1	400	9	433
2	437	10	461
3	400	11	574
4	606	12	536
5	611	13	441
6	404	14	420
7	474	15	437
8	459		

N

SCALE: 1"=20'

CALL BEFORE YOU DIG 800.642.2444

REGISTERED PROFESSIONAL ENGINEER THOMAS K. PHILLIPPI No. 32061 Exp. 12-31-16 CIVIL STATE OF CALIFORNIA

PHILLIPPI ENGINEERING
CIVIL ENGINEERING • LAND SURVEYING
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P.O.BOX 4508 VACAVILLE, CA 95696
OFFICE (707) 451-6556 FAX (707) 451-6555

DESIGNED BY: E.T.V.
DRAFTED BY: E.T.V.
CHECKED BY: T.A.P.

PROJECT NAME/LOCATION:
ASHTON PLACE UNIT 3
VILLAGES AT SOUTHTOWN
VACAVILLE CA

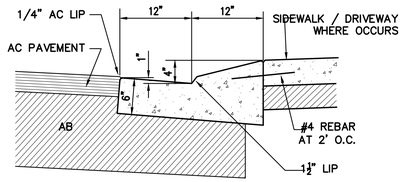
DRAWING TITLE:
SITE LAYOUT

REVISIONS:

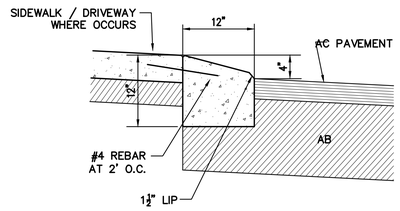
NO.	DESCRIPTION	DATE
		04-22-2015

DRAWING FILE: 210860/TENTATIVE PLANS

ISSUE DATE: 08-17-16
PROJECT NO.: 20140210
SHEET NO.: 2 OF 6



1 LOW PROFILE CURB & GUTTER
NOT TO SCALE



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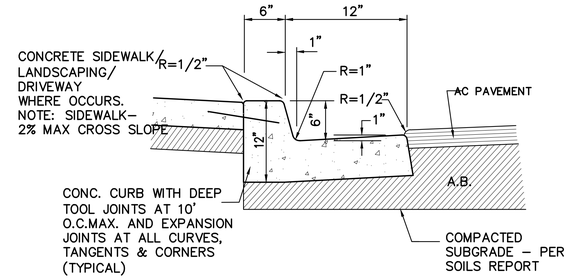
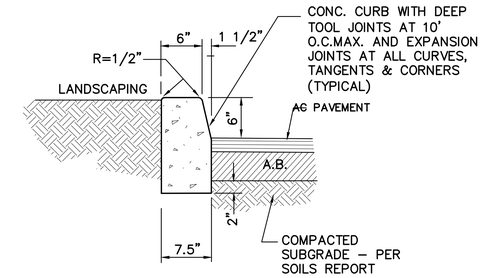
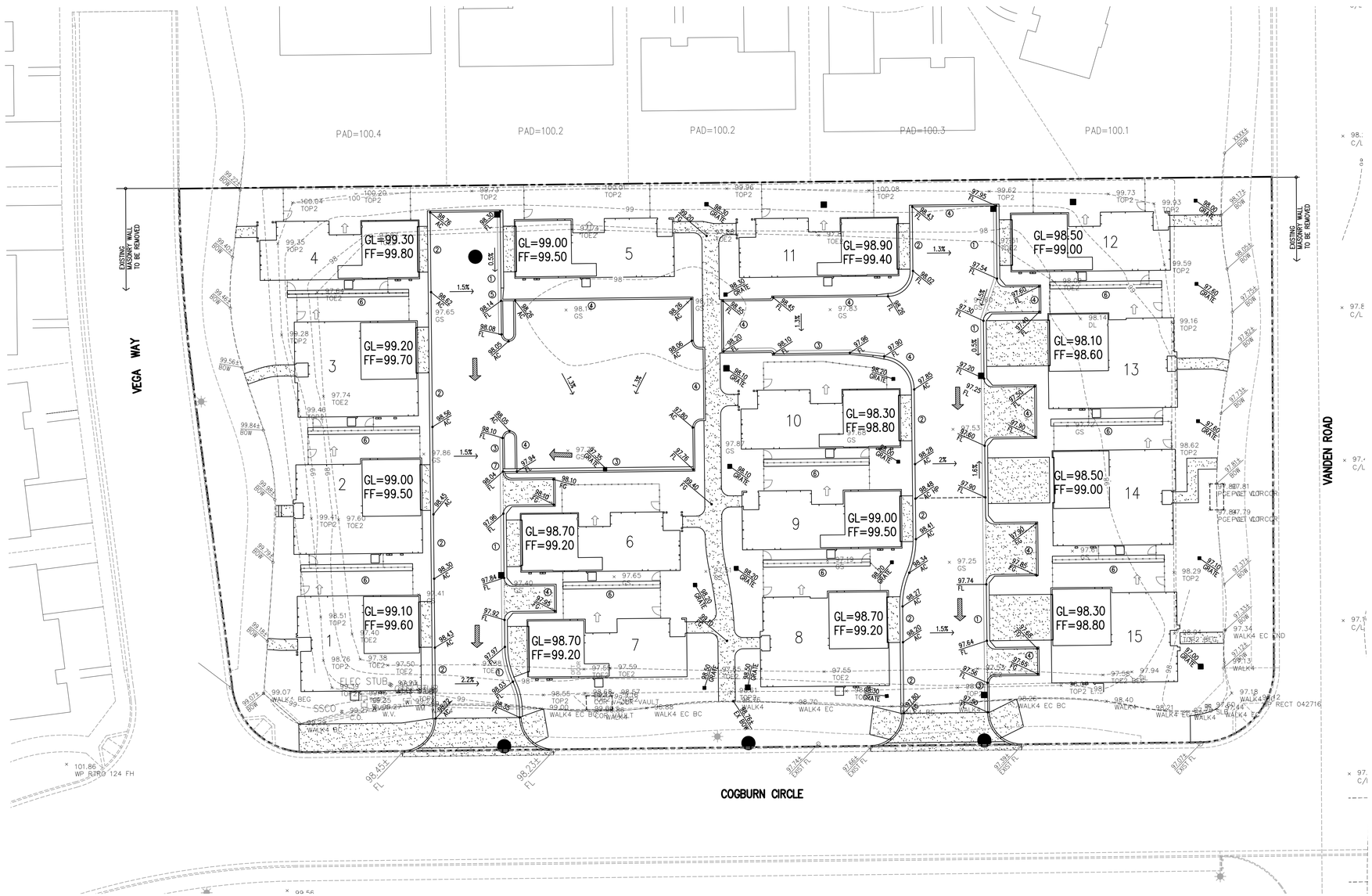
NOT TO SCALE

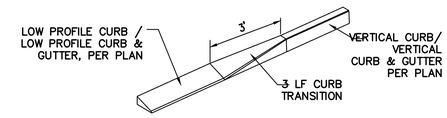


3 CURB & GUTTER
NOT TO SCALE

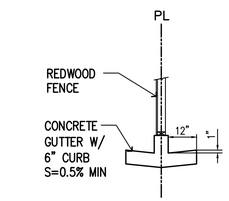


4 VERTICAL CURB
NOT TO SCALE

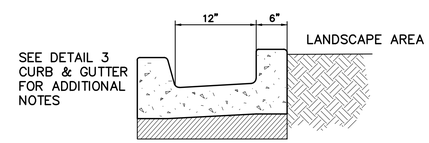




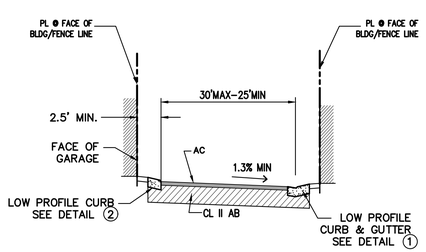
LOW PROFILE TO VERTICAL CURB TRANSITION
5 NOT TO SCALE



6 CURB AND GUTTER AT SIDE YARD FENCE
NOT TO SCALE



7 DRAIN–THRU GUTTER
NOT TO SCALE



PRIVATE ALLEY AND PRIVATE STREET
NOT TO SCALE 3.5" AC 13.0" AB TI=6 R=5

GL=GARAGE LIP
FF=FINISHED FLOOR

N

SCALE: 1"=20'

CALL BEFORE YOU DIG 800-642-2444

REGISTERED PROFESSIONAL ENGINEER THOMAS A. PHILLIPPI No. 32063 Exp. 12-31-16 CIVIL STATE OF CALIFORNIA

PHILLIPPI ENGINEERING
CIVIL ENGINEERING • LAND SURVEYING
425 MERCHANT STREET VACAVILLE, CA 95688
P.O.BOX 4556 VACAVILLE, CA 95696
OFFICE (707) 451-6556 FAX (707) 451-6553

DESIGNED BY:	E.T.V.
DRAFTED BY:	E.T.V.
CHECKED BY:	T.A.P.

PROJECT NAME/LOCATION: ASHTON PLACE UNIT 3 VILLAGES AT SOUTHTOWN VACAVILLE CA

DRAWING TITLE: GRADING PLAN

REVISIONS:

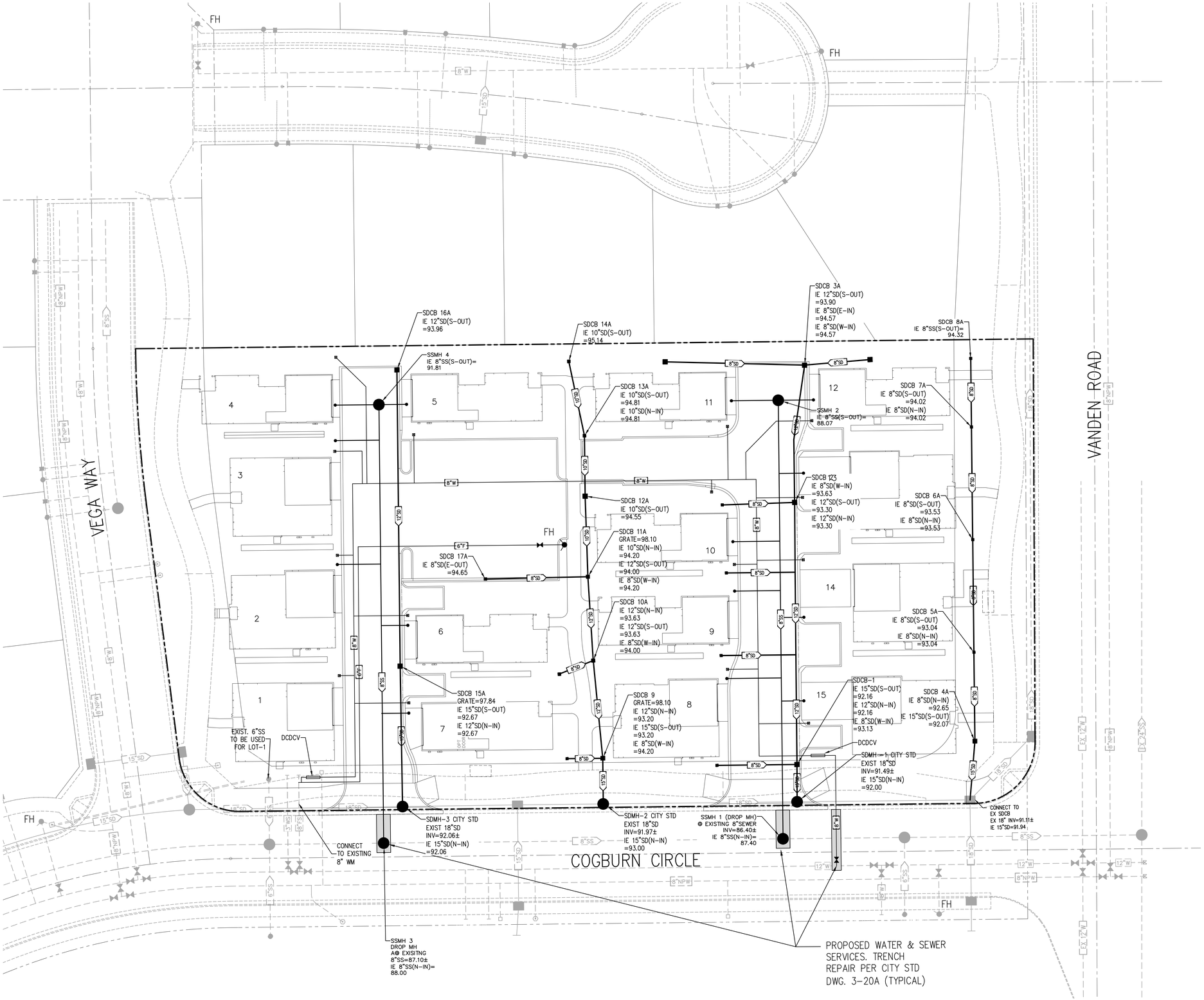
NO.	DESCRIPTION	DATE
		04-22-2015

DRAWING FILE: 210860/TENTATIVE PLANS

ISSUE DATE: 08-17-16

PROJECT NO.: 20140210

SHEET NO.: 3 OF 6



N

SCALE:
1"=20'

CALL BEFORE YOU DIG
USA
800-642-2444
CITY
PACIFIC
GAS & ELECTRIC

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. PHILLIPPI
No. 32063
Exp. 12-31-16
CIVIL
STATE OF CALIFORNIA

PHILLIPPI ENGINEERING
CIVIL ENGINEERING & LAND SURVEYING
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P.O.BOX 6556 VACAVILLE, CA 95696
OFFICE (707) 451-6556 FAX (707) 451-6553

DESIGNED BY: E.T.V.
DRAFTED BY: E.T.V.
CHECKED BY: T.A.P.

PROJECT NAME/LOCATION:
ASHTON PLACE UNIT 3
VILLAGES AT SOUTHTOWN
VACAVILLE CA

DRAWING TITLE:
UTILITY PLAN

REVISIONS: NO.	DESCRIPTION	DATE
		04-22-2015

DRAWING FILE:
210860/TENTATIVE PLANS

ISSUE DATE: 08-17-16
PROJECT NO.: 20140210
SHEET NO.: 4 OF 6

N

SCALE:
1"=20'

CALL BEFORE YOU DIG
800-642-2444

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. PHILLIPPI
No. 32063
Exp. 12-31-16
CIVIL
STATE OF CALIFORNIA

PEI PHILLIPPI ENGINEERING
CIVIL ENGINEERING • LAND SURVEYING
425 MERCHANT STREET VACAVILLE, CA 95688
P.O.BOX 6556 VACAVILLE, CA 95696
OFFICE (707) 451-6556 FAX (707) 451-6553

DESIGNED BY: E.T.V.
DRAFTED BY: E.T.V.
CHECKED BY: T.A.P.

PROJECT NAME/LOCATION:
ASHTON PLACE UNIT 3
VILLAGES AT SOUTHTOWN
VACAVILLE CA

DRAWING TITLE:
CONTEXTUAL MAP

REVISIONS:		
NO.	DESCRIPTION	DATE
		04-22-2015

DRAWING FILE:
210860/TENTATIVE PLANS

ISSUE DATE: 08-17-16
PROJECT NO.: 20140210
SHEET NO.: 5 OF 6

N

SCALE:
1"=20'

CALL BEFORE YOU DIG
USA
800 642 2444

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. PHILLIPPI
No. 32063
Exp. 12-31-16
CIVIL
STATE OF CALIFORNIA

PEI PHILLIPPI ENGINEERING
CIVIL ENGINEERING • LAND SURVEYING
425 MERCHANT STREET VACAVILLE, CA 95688
P.O.BOX 45506 VACAVILLE, CA 95696
OFFICE (707) 451-6556 FAX (707) 451-6565

DESIGNED BY:	E.T.V.
DRAFTED BY:	E.T.V.
CHECKED BY:	T.A.P.

PROJECT NAME/LOCATION:
ASHTON PLACE UNIT 3
VILLAGES AT SOUTHTOWN
VACAVILLE CA

DRAWING TITLE:
TOPOGRAPHIC MAP

REVISIONS:

NO.	DESCRIPTION	DATE
		04-22-2015

DRAWING FILE:
210860/TENTATIVE PLANS

ISSUE DATE: 08-17-16
PROJECT NO.: 20140210
SHEET NO.: 6 OF 6

Solano County Airport Land Use Commission

675 Texas Street Suite 5500
Fairfield, CA 94533
Tel 707.784.6765
Fax 707.784.4805

LAND USE COMPATIBILITY DETERMINATION: APPLICATION FORM

TO BE COMPLETED BY STAFF	
APPLICATION NUMBER:	FILING FEE:
DATE FILED:	RECEIPT NUMBER:
JURISDICTION:	RECEIVED BY:
PROJECT APN(S): 0129-170-040	

TO BE COMPLETED BY THE APPLICANT		
I. GENERAL INFORMATION		
NAME OF AGENCY: City of Vacaville Community Development Department Planning Division Offices		DATE: 10/3/2016
ADDRESS: City Hall 650 Merchant Street Vacaville, CA 95688		
E-MAIL ADDRESS: christina.corsello@cityofvacaville.com	DAYTIME PHONE: (707) 449-5140	FAX: (707) 449-5423
NAME OF PROPERTY OWNER: DR Horton	ADDRESS: 5050 Hopyard Rd, Ste 108 Pleasanton, CA 94588	DATE: 4/1/2015 PHONE: (925) 225-7487 EMAIL:
NAME OF APPLICANT: Same	ADDRESS: same	DATE: PHONE: EMAIL:
NAME OF DOCUMENT PREPARER: Christina Corsello Associate Planner		DATE: 10/3/2016
ADDRESS: Planning Division Offices 650 Merchant Street Vacaville, CA 95688	DAYTIME PHONE: (707) 449-5140 (707) 449-5374	FAX: (707) 449-5423
NAME OF PROJECT: Ashton 3		
PROJECT LOCATION: Northwest corner of Cogburn Circle and Vanden Road, across from Fire Station 75. APN 0136-874-010 at an elevation of 198 ft. above mean sea level.		
STREET ADDRESS: Cogburn Circle Vacaville, CA 95687		

PLEASE CALL THE APPOINTMENT DESK AT (707) 784-6765 FOR AN APPLICATION APPOINTMENT.

TO BE COMPLETED BY THE APPLICANT

II. DESCRIPTION OF PROJECT

The project site is currently designated Neighborhood Commercial (CN) in the City's General Plan and public right-of-way. The Applicant is proposing to change the General Plan designation of the project site to Residential Medium Density (RMD) and also rezone the project site from Neighborhood Commercial (CN) to Residential Medium Density (RM).

The Applicant is proposing to develop a 1.76 acre site as a 15 lot single-family detached residential the APN is 0136-874-010. The Applicant is requesting to change the General Plan Land Use Designation of the property from CN to RMD, amend General Plan Policy LU-P23.1 to remove commercial requirements in the project area and exempt new development within the Southtown development from having to meet or exceed the standard for any adjacent neighboring homes, and also rezone the property from CN to RM. Per the Land Use and Development Code (Division 14.09 of the Municipal Code). The 15 two-story residential units would range in size from 1,696 to 2,217 square feet (sf) to sf with an on lots ranging from 1,736 to 2,254 sf, and a gross density of 8.52 dwelling units per acre (du/ac). The proposed project also includes private yard areas and provides four parking stalls per residential unit. All units would have rear entry to the garage, and the units adjacent to Vanden Road and Vega Way would face the public street. The proposed project includes an in-lieu fee for off-site improvements to Magnolia Park instead of on-site recreation/open space. The constructed project would be managed by the same Homeowners Association (HOA) and Ashton Place 1 & 2.

The project site is part of the Southtown Project Area, an EIR for which was adopted by the City Council in April 27, 2004. As described in the Southtown Project EIR, the proposed land uses included approximately 1,410 housing units, 30,000 square feet of commercial space, 33.5 acres of park space, a fire station, and 14 acres of public/civic space on an approximately 287-acre site. While majority of the Southtown Project Area was planned as residential, two parcels on the northeast and northwest corner of Vanden Road and Cogburn Circle were zoned for neighborhood commercial. The Ashton Place Unit 3 Project is proposed on the parcel northwest corner of Vanden Road and Cogburn Circle. A separate development application for residential uses has been submitted for the second parcel on the northeast corner, but is not part of the proposed project.

(SEE ATTACHED PROJECT DESCRIPTION FOR MORE INFORMATION)

PLEASE CALL THE APPOINTMENT DESK AT (707) 784-6765 FOR AN APPLICATION APPOINTMENT.

TO BE COMPLETED BY THE APPLICANT

II. DESCRIPTION OF PROJECT (CONT'D)

POTENTIAL PROJECT EMISSIONS: (i.e. smoke, steam, glare, radio, signals):
The project will include electronic transceivers (radios) for connectivity with traditional wired telephone lines, and passive antennas that send wireless signals. Pursuant to the attached FAA Determination, the proposed monopine will include beacon lighting in accordance with FAA Advisory Circular 70/7460-1 L (Obstruction Marking and Lighting, Red Lights – Chapters 4, 5 (Red) and 12).

PROJECT AIRPORT LAND USE COMPATIBILITY PLAN:	COMPATIBILITY ZONE:
Travis Air Force Base Compatibility Plan	Travis Air Force Base Plan: Zone D
PERCENTAGE OF LAND COVERAGE: 7.2% coverage. Site contains 7,700 sq. ft. of existing church floor area. Project will add 1,130 sq. ft. of floor area (lease area).	MAXIMUM PERSONS PER ACRE: The facility will be unmanned: 0 persons. Occupancy load for existing church: 426 persons.

THE FOLLOWING INFORMATION MUST BE SUBMITTED AS A MINIMUM REQUIREMENT:

- ☒ JURISDICTION REFERRAL LETTER: ***See attachment.***
- ☒ ENVIRONMENTAL DOCUMENTATION: ***IS/MND, attached.***
- ☒ LOCATION MAP: ***See attachment.***
- ☒ ASSESSOR'S PARCEL MAP, with subject property marked in red: ***See attachment.***
- ☒ SITE PLAN, drawn to scale and fully dimensioned including topographical information, and 8½x11 inch reduction(s): ***See attachment.***
- ☒ ELEVATIONS, if located in APZ, clear zones and A,B,C compatibility zones or over 200' in height, plus 8½x11 inch reduction(s): ***See attachment.***
- ☐ WIND TURBINE STUDY, including cumulative impact studies. Such studies shall include an analysis of (1) the individual effects of the proposed project, and (2) as required by law, an analysis of the cumulative effects of the proposed project considered in connection with the effects of past projects, the effects of other current projects and proposed projects, and the effects of probable future projects, including (i) the probable build out for wind energy development of the remaining vacant parcels within the wind resource areas described in the Solano County General Plan and (ii) any probable replacement of existing turbines or meteorological towers with structures having different dimensions: ***Not applicable.***
- ☐ SUPPLEMENTAL INFORMATION:
- ☒ FEES: *$200.00*
- ☒ ELECTRONIC COPIES OF ALL APPLICATION MATERIALS ON A CD: ***Transmitted via email.***

APPLICANT SIGNATURE: DATE:

X ..... November 1, 2016

DOES THE PROJECT PROPOSE THE DEMOLITION OR ALTERATION OF ANY EXISTING STRUCTURES ON THE PROJECT SITE? ☐ YES ☒ NO If yes, describe below:

PLEASE CALL THE APPOINTMENT DESK AT (707) 784-6765 FOR AN APPLICATION APPOINTMENT

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM B

LOCAL AGENCY REFERRAL LETTER

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM C

GENERAL PLAN MERIT HEARING
STAFF REPORT

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM D

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM E

LOCATION MAP

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM F

ASSESSOR'S PARCEL MAP

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM G

AIRPORT BOUNDARY MAP

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM H

PROJECT PLANS

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM I

ELEVATIONS INCLUDED ON ITEM H

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM J-K

PROJECT DESCRIPTION
ALSO INCLUDED IN IS/MND AND
ON APPLICATION FORM

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM L

SEE PROJECT DESCRIPTION
WITH ITEMS J-K

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM M

~~COMMERCIAL WIND TURBINE PROJECTS~~

NOT APPLICABLE

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM N

NOT APPLICABLE

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM O

~~FAA DETERMINATION~~

NOT APPLICABLE

AIRPORT LAND USE COMMISSION

APPLICATION SUBMITTAL ITEMS

ITEM P

NOT APPLICABLE

AIRPORT LAND USE COMMISSION

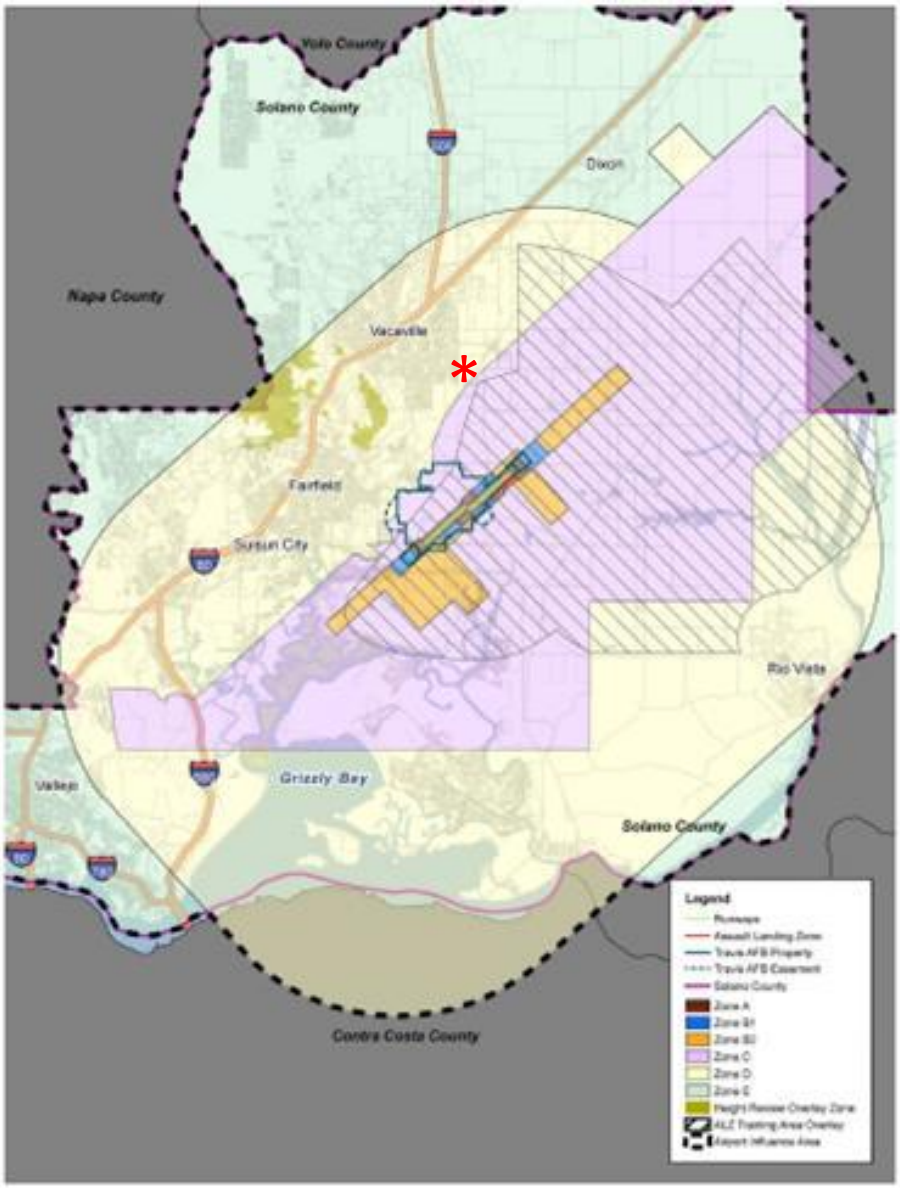
APPLICATION SUBMITTAL ITEMS

ITEM Q

APPLICATION FEE ($200.00)

INCLUDED WITH APPLICATION FORM

Attachment E Travis Plan Map



Solano County

675 Texas Street
Fairfield, California 94533
www.solanocounty.com

Agenda Submittal

Agenda #:	2	**Status:**	ALUC-Regular-NW
Type:	ALUC-Document	**Department:**	Airport Land Use Commission
File #:	AC 16-029	**Contact:**	
Agenda date:	12/8/2016	**Final action:**	
Title:	Public Hearing to consider the consistency of the Roberts Ranch Specific Plan, Pre-Zoning and Annexation (ALUC-16-09) (hereafter, 'Roberts Ranch Project') with the Travis Air Force Base Land Use Compatibility Plan: Applicant - City of Vacaville		
Governing body:			
District:			
Attachments:	A - Roberts' Ranch Specific Plan DEIR B - Roberts Ranch Location Map C - Roberts Ranch Land Use Plan D - Roberts Ranch Travis Plan Map		

Date	Ver.	Action By	Action	Result

RECOMMENDATION

Adopt the recommended findings and determine that the Roberts Ranch Project is **consistent** with the Travis Air Force Base Land Use Compatibility Plan.

INTRODUCTION

The City of Vacaville is considering the Roberts Ranch Specific Plan, Zoning Amendment and Annexation (hereafter, 'Roberts Ranch Project'), which would permit the development of 775 homes, two schools and a neighborhood park on 248 acres. The proposed project is located at the northeast corner of Fry Road and Leisure Town Road.
State law requires that any proposed general plan amendments (including specific plans) or revisions and any rezoning actions be reviewed for consistency with adopted airport land use compatibility plans. This project involves both types of entitlements, which are analyzed below.

Required Tests for Consistency for General Plan and Specific Plan Amendments

The review criteria for general plan amendments, specific plans and zoning amendments are embodied in the State's California Airport Land Use Planning Handbook and the Travis AFB Land Use Compatibility Plan (Travis Plan).
The State Department of Aeronautics has published the California Airport Land Use Planning Handbook as a guide for Airport Land Use Commissions in the preparation and implementation of Land Use Compatibility Plans and Procedure Documents. In order to be considered fully consistent with the applicable compatibility plan(s), the general plan revisions proposed must meet two specific tests, as identified in the California Airport Land Use Planning Handbook. The tests are:

1. **Elimination of any direct conflicts between the General Plan and/or Specific Plan and relevant compatibility plan(s)**

Direct conflicts primarily involve general plan/specific plan land use designations which do not meet the density (for residential uses) or intensity (for non-residential uses) criteria specified in the compatibility plan, although conflicts with regard to other policies also may exist.

2. **Delineation of a mechanism or process for ensuring that individual land use development proposals comply with the ALUC's adopted compatibility criteria**

   Elimination of direct conflicts between a county's or a city's general plan/specific plan and the ALUC's compatibility plan is not enough to guarantee that future land use development will adhere to the compatibility criteria set forth in the compatibility plan. An implementation process must also be defined either directly in the general plan or specific plan or by reference to a separately adopted ordinance, regulation, or other policy document.
   There are three facets to the process of ensuring compliance with airport land use compatibility criteria:

   a. **Delineation of Compatibility Criteria**

      Airport land use compatibility criteria must be defined either in a policy document adopted by the county or city or through adoption of or reference to the ALUC's compatibility plan itself.

   b. **Identification of Mechanisms for Compliance**

      The mechanisms by which applicable compatibility criteria will be tied to an individual development and continue to be enforced must be identified. A conditional use permit or a development agreement are two possibilities.

   c. **Indication of Review and Approval Procedures**

      Lastly, the procedures for review and approval of individual development proposals must be defined. At what level within a county or a city are compatibility approvals made: staff, planning commission or governing body? The types of actions which are submitted to the ALUC for review and the timing of such submittals relative to internal review and approval process also must be indicated.

Required Tests for Consistency for Rezoning Actions
State law, under Section 21661.5 of the Public Utilities Code, requires that any proposed zoning regulations or revisions to the local zoning ordinance be reviewed for consistency with adopted airport land use compatibility plans.

California Airport Land Use Planning Handbook
The State Department of Aeronautics has published the California Airport Land Use Planning Handbook as a guide for Airport Land Use Commissions in the preparation and implementation of Land Use Compatibility Plans and Procedure Documents. Section 6.4.2 sets forth procedures for the review of local zoning ordinances and directs agencies to consider the topics listed in Table 5A, as follows:

Zoning or Other Policy Documents *(from Table 5A, CalTRANS Airport Land Use Planning Handbook)*
The Handbook lists the following topics for consideration when reviewing zoning or other policy documents.

- *Intensity Limitations on Nonresidential Uses*
- *Identification of Prohibited Uses*
- *Open Land Requirements*
- *Infill Development*
- *Height Limitations and Other Hazards to Flight*
- *Buyer Awareness Measures*
- *Non-conforming Uses and Reconstruction*

Staff has reviewed the Roberts Ranch Project in light of the tests outlined above. Our analysis is presented below.

ANALYSIS

Project Description

The Roberts Ranch Project contains approximately 248-acres located in northern Solano County adjacent to the southeastern corner of the City of Vacaville approximately four miles from Downtown Vacaville (See Attachments A and B). The project site is bounded by Leisure Town Road on the west, Alamo Drive extension and Fry Road on the South, the Union Pacific Railroad right-of-way on the east, and the approved Brighton Landing project in the City of Vacaville to the north.

The Roberts' Ranch Specific Plan includes approximately 785 single-family residences with an average density of 3.2 dwelling units/acre (du/ac), parks, 25 acres of open space and trails, and a future 16-acre school site (See Attachment C). The proposed project includes four neighborhoods (or villages) that each contain one or two small "stroller parks" connected by a multipurpose trail system designed to link all the parks together. The site lies entirely within Compatibility Zone D of the Travis Air Force Base Land Use Compatibility Plan.

Relevant Issues for the ALUC

The ALUC is concerned with those aspects of the Roberts Ranch Project that have the potential to be incompatible with any of the Travis Air Force Base Land Use Compatibility Plan, and more particularly, the plan only encompasses lands which lie within Compatibility Zone D.

Consequently, the issues to be analyzed would be compliance with the following compatibility criteria:

Compatibility Criteria for Zone D

Compatibility Zone D includes all other locations beneath any of the Travis AFB airspace protection surfaces delineated in accordance with FAR Part 77 as well as areas subject to frequent aircraft overflight.

There are no density limitations on residential uses or intensity limitations on non-residential uses within this Compatibility Zone. There are "Other Development Conditions" listed in Compatibility Zone D, as follows:

1. ALUC review required for objects > 200 feet AGL
2. All proposed wind turbines in excess of 100 feet in height must meet line-of-sight criteria in Policy 3.4.4
3. All new or expanded commercial-scale solar facilities must conduct an SGHAT glint and glare study for ALUC review
4. All new or expanded meteorological towers > 200 feet AGL, whether temporary or permanent, require ALUC review
5. For areas within the Bird Strike Hazard Zone, reviewing agencies shall prepare a WHA for discretionary projects that have the potential to attract wildlife that could cause bird strikes. Based on the findings of the WHA, all reasonably feasible mitigation measures must be incorporated into the planned land use.
6. For areas outside of the Bird Strike Hazard Zone but within the Outer Perimeter, any new or expanded land use involving discretionary review that has the potential to attract the movement of wildlife that could cause bird strikes are required to prepare a WHA.

Discussion of Consistency

Compatibility Zone D

As previously mentioned, there are no land use limitations within compatibility zone D. However, within Compatibility Zone D, the relevant factors for consideration would be "Height Limitations and Other Development Conditions" which include height review for objects in excess of 200 feet in height, wind turbines in excess of 100 feet in height, and projects within either the Bird Strike Hazard Zone or the Outer Perimeter Area. None of the hazards are associated with the lawful use of single family homes and are not expected to exist within the development for reasons discussed in the following sections.

General Plan/Specific Plan Consistency Factors

In order for a general plan/specific plan amendment to be considered consistent with the Travis Plan, two tests must be applied: 1) Elimination of Direct Conflicts, and 2) Mechanisms to assure compliance with Compatibility Criteria

Elimination of Direct Conflicts

As discussed above, the proposed Roberts Ranch Project lies entirely within zone D, where there are no land use restrictions within the Travis Land Use Compatibility Plan. The residential project is consistent with the Other Development Conditions for the following reasons:

Height Review for Objects Greater than 200 Feet in Height

The Project's Specific Plan land use designation and City's Zoning Ordinance do not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.

Wind Turbines in Excess of 100 Feet in Height

The City's zoning ordinance does not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.

Projects within the Bird Strike Hazard Zone or the Outer Perimeter Area

The project lies outside of the Bird Strike Hazard Zone but within the Outer Perimeter Area. For projects within the Outer Perimeter Area, the Travis Plan requires consideration of whether any new or expanded land use has the potential to attract the movement of wildlife and cause bird strikes. If the potential exists, a Wildlife Hazards Assessment must be prepared.

The Draft EIR concludes that the project will reduce the potential for bird strikes by replacing agriculturally developed property with urbanization. The EIR states:

> "Section 4.2, Biological Resources, addresses whether or not the proposed project would create uses that would attract birds to the area that could result in a potential hazard to aircraft associated with a bird strike, and concludes that the project would have a less than significant effect on aircraft safety. The Travis Air Force Base ALUCP does not allow land uses within 12,500 feet of the Travis Air Force Base runways that may cause bird strike hazards to aircraft in flight. Such land uses typically include wetlands, agricultural operations, landfills, or golf courses. The proposed project would not affect bird strike hazard for aircraft using Travis Air Force Base, because it is located outside the runway approach/departure surface (Figure 2C in the Travis Air Force Base ALUCP) and the completed project would be composed of residential development with landscaped or managed open space areas. The project site is currently composed of agricultural operations, which when replaced with the project land uses would result in a net decrease in bird attractants at the site and a reduction in bird strike hazard to aircraft. In addition, the project does not include any sources of water (i.e., ponds, detention or retention facilities) that have the potential to attract the movement of wildlife and cause bird strikes with aircraft. Therefore, this impact would be **less than significant**."

Staff recommends that the Commission find that, in this particular case, the project reduces the potential for bird strikes from present conditions and is therefore consistent with the provisions of the Travis Plan.

In conclusion, based on the analysis above, the proposed Roberts Ranch Project meets the first test for consistency by the ALUC - the elimination of direct conflicts with an airport's LUCP compatibility criteria.

Assurance of Compliance with Compatibility Criteria

The second test for consistency is the assurance that there will be compliance with the compatibility criteria contained within any adopted LUCP's. The California Airport Land Use Planning Handbook provides guidance to local ALUC's in making consistency determinations on General Plans.

> *Elimination of direct conflicts between a county's or a city's general plan and the ALUC's compatibility plan is not enough to guarantee that future land use development will adhere to the compatibility criteria set forth in the compatibility plan. An implementation process must also be defined either directly in the general plan or specific plan or by reference to a separately adopted ordinance, regulation or other policy document*.

The Handbook identifies three facets to the process of insuring compliance with airport land use compatibility criteria:

a. Delineation of Compatibility Criteria-

Airport land use compatibility criteria must be defined either in a policy document adopted by the county or city or through adoption of or reference to the ALUC's compatibility plan itself.

Consistency between the City's General Plan/Specific Plan and the applicable Land Use

Compatibility Plans is established by General Plan Land Use Element Implementing Policy 2.1- I 12, requiring that "Land use changes and development proposals within the Vacaville planning area shall be consistent with the Nut Tree and Travis Airport Land Use Compatibility Plans (ALUCP's). This in effect gives the City a basis for requiring that projects under review comply with the applicable Airport land Use Compatibility Plan.

b. Identification of Mechanisms for Compliance-
The mechanisms by which applicable compatibility criteria will be tied to an individual development and continue to be enforced must be identified. A conditional use permit or a development agreement are two possibilities.
Adoption of the Specific Plan amendment does not authorize the residential development. Subsequent legislative actions by the City Council will be required, including a rezoning of the property. Tentative subdivision maps will also be required. Under California state law, both the rezoning and the tentative subdivision maps must be consistent with the City's General Plan. This requirement addresses conformance with applicable LUCP's and as such, the City's mechanism for compliance is adequately assured.

c. Indication of Review and Approval Procedures-
Lastly, the procedures for review and approval of individual development proposals must be defined. At what level within a county or city are compatibility approvals made: staff, planning commission or governing body? The types of actions which are to be submitted to the ALUC for review and the timing of such submittals relative to the internal review and approval process must be indicated.
Per state law, legislative actions (e.g., General Plan/Specific Plan Amendments and Zoning Ordinance Amendments) that have an impact on the Travis LUCP must be approved by the Vacaville City Council following a public hearing. They must also be reviewed by the ALUC prior to the City Council's action.
<u>Procedures for planning review:</u>
The Tentative Map must be approved by the City Council.
<u>Types of actions submitted to ALUC:</u>
Any revisions to the General Plan or Zone Change are required to come before the ALUC for statutory review.
<u>Timing:</u>
ALUC review would be completed before the City takes further action on any development proposal. As a result, the review procedures are adequate to assure that applicable compatibility criteria will be tied to an individual development and continue to be enforced.

Zoning Change Consistency Factors
As previously discussed, the CalTRANS Handbook lists the following topics for consideration when reviewing zoning or other policy documents.
Each of these categories is reviewed below:
<u>Intensity Limitations on Nonresidential Uses</u>

Within Compatibility Zone D, there are no limitations on density for residential land uses or limitations on intensity for non-residential land uses.

<u>Identification of Prohibited Uses</u>

Residential units are not prohibited uses within Compatibility Zone D.

<u>Open Land Requirements</u>

Compatibility Zone D has no open land requirements for development.

<u>Infill Development</u>

This project is a part of the currently developing South Town area within Vacaville and would not be

considered an infill development.

Height Limitations and Other Hazards to Flight
As previously discussed, within Compatibility Zone D, the relevant factors for consideration include height review for objects in excess of 200 feet in height, wind turbines in excess of 100 feet in height, and projects within either the Bird Strike Hazard Zone or the Outer Perimeter Area. None of the hazards are associated with the lawful use of single family homes and are not expected to exist within the development for reasons discussed in the following sections.

Height Review for Objects Greater than 200 Feet in Height
The Project's General Plan land use designation and City's Zoning Ordinance do not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.

Wind Turbines in Excess of 100 Feet in Height
The City's zoning ordinance does not permit structures taller than 100 feet, so airspace review standards in zone D are satisfied.

Projects within the Bird Strike Hazard Zone or the Outer Perimeter Area
The project lies outside of the Bird Strike Hazard Zone but within the Outer Perimeter Area. For projects within the Outer Perimeter Area, the Travis Plan requires consideration of whether any new or expanded land use has the potential to attract the movement of wildlife and cause bird strikes. If the potential exists, a Wildlife Hazards Assessment must be prepared.
The Draft EIR concludes that the project will reduce the potential for bird strikes by replacing agriculturally developed property with urbanization. The EIR states:

> "Section 4.2, Biological Resources, addresses whether or not the proposed project would create uses that would attract birds to the area that could result in a potential hazard to aircraft associated with a bird strike, and concludes that the project would have a less than significant effect on aircraft safety. The Travis Air Force Base ALUCP does not allow land uses within 12,500 feet of the Travis Air Force Base runways that may cause bird strike hazards to aircraft in flight. Such land uses typically include wetlands, agricultural operations, landfills, or golf courses. The proposed project would not affect bird strike hazard for aircraft using Travis Air Force Base, because it is located outside the runway approach/departure surface (Figure 2C in the Travis Air Force Base ALUCP) and the completed project would be composed of residential development with landscaped or managed open space areas. The project site is currently composed of agricultural operations, which when replaced with the project land uses would result in a net decrease in bird attractants at the site and a reduction in bird strike hazard to aircraft. In addition, the project does not include any sources of water (i.e., ponds, detention or retention facilities) that have the potential to attract the movement of wildlife and cause bird strikes with aircraft. Therefore, this impact would be **less than significant**."

Staff recommends that the Commission find that, in this particular case, the project reduces the potential for bird strikes from present conditions and is therefore consistent with the provisions of the Travis Plan.

Buyer Awareness Measures

The proposed project lies within Compatibility Zone D and outside of any noise contours of concern. As a result, Buyer Awareness Measures are not required by the Travis Plan.

Non-conforming Uses and Reconstruction
The project is new construction and therefore does not contain any non-conforming uses or reconstruction activities.
In light of the above discussion, the Roberts Ranch Project's zoning amendment is consistent with the Travis Plan.

RECOMMENDATION

Based on the analysis and discussions above, Staff recommends that the Solano County Airport Land Use Commission find as follows:

Determination:

1). That the Roberts Ranch Specific Plan Amendment is consistent with the Travis Air Force Base Land Use Compatibility Plan, because no direct conflicts exist between the specific plan and the Travis Air Force Base Land Use Compatibility Plan and the mechanisms for assurance of compliance with applicable compatibility criteria are in place.

2). That the Roberts Ranch Project Rezoning is consistent with the Travis Air Force Base Land Use Compatibility Plan, because it is consistent with the regulations for height and the prohibitions on “Other Hazards to Flight” contained within Compatibility Zone D.

ATTACHMENTS

Attachment A: Draft EIR
Attachment B: Location Map
Attachment C: Site Plan
Attachment D: Travis Plan Map

ROBERTS RANCH

Roberts' Ranch Specific Plan
Draft Environmental Impact Report
(SCH # 2015112042)

November 2016

VACAVILLE

Prepared by
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Prepared for
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Draft Environmental Impact Report
for the
Roberts' Ranch Specific Plan Project

SCH no. 2015112042

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CHAPTER 1
INTRODUCTION AND SCOPE OF THE EIR

1.0 PURPOSE AND INTENDED USE OF THIS EIR

The City of Vacaville (City) has prepared this Draft Environmental Impact Report (Draft EIR) to inform the general public, the local community, responsible agencies, trustee agencies, and other interested public agencies, and the City's decision-making bodies (City Council) regarding the potential significant environmental effects resulting from implementation of the Roberts' Ranch Specific Plan Project (proposed project), as well as possible measures to mitigate those significant effects and alternatives to the proposed project that were not covered in the certified 2015 Program EIR for the City's General Plan Update (General Plan EIR). This Draft EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.), the CEQA Guidelines (14 CCR 15000 et seq.), and the City's procedures for implementing CEQA. This Draft EIR is a "Project EIR," pursuant to CEQA Guidelines Section 15161. A Project EIR examines the environmental impacts of a specific project. The Roberts' Ranch EIR focuses on the environmental effects peculiar to the proposed project that are not covered by the General Plan EIR as contemplated by Sections 15168 and 15183 of the CEQA Guidelines.

As described in CEQA Guidelines Section 15121(a), an EIR is an informational document that assesses potential environmental impacts of a proposed project, as well as identifies mitigation measures and alternatives to a proposed project that could reduce or avoid adverse environmental impacts. As the CEQA lead agency for this project, the City is required to consider the information in the EIR along with any other available information in deciding whether to approve the project entitlements requested. The basic requirements for an EIR include providing information that establishes the environmental setting (or project baseline), and identifying environmental impacts, mitigation measures, project alternatives, growth inducing impacts, and cumulative impacts. In a practical sense, an EIR functions as a method of fact-finding, allowing an applicant, the public, other public agencies, and agency staff an opportunity to collectively review and evaluate baseline conditions and project impacts through a process of full disclosure. Additionally, this EIR provides the primary source of environmental information for the lead agency to consider when exercising any permitting authority or approval power directly related to implementation of this project. It is not the intent of an EIR to recommend either approval or denial of a project.

1.1 USE OF PREVIOUSLY PREPARED ENVIRONMENTAL DOCUMENTATION

On August 11, 2015, the City of Vacaville City Council certified the General Plan EIR (SCH # 2011022043) and approved the City of Vacaville General Plan. A Modified Initial Study has been prepared (Appendix B) to identify and assess the anticipated environmental impacts of the

proposed project that were not adequately covered by the General Plan EIR. The environmental analysis in the Modified Initial Study is based on CEQA Section 21094 and Sections 15168 and 15183 of the CEQA Guidelines, which governs program EIRs and projects consistent with a general plan or community plan. Under these sections, the program EIR, in this case the General Plan EIR, serves as a basis for the Modified Initial Study to determine if project-specific impacts would occur that are not adequately covered in the previously certified EIR. Here, the proposed project's land uses and development assumptions are consistent with the City's General Plan and the General Plan EIR and therefore the project is within the scope of the General Plan and the General Plan EIR. The Modified Initial Study provides an analysis of whether the General Plan EIR adequately analyses the environmental impacts of the proposed project. The Modified Initial Study indicates whether the proposed project would result in significant impacts that: (1) are peculiar to the project or the project site; (2) were not identified as a significant effect in the General Plan EIR; or (3) are previously identified significant effects which as a result of substantial new information that was not known at the time that the General Plan EIR was certified, and are determined to have a more sever adverse impact than discussed in the General Plan EIR. Such impacts are evaluated in this EIR. Pursuant to CEQA Section 21094, if approved, the proposed project would be required to be conditioned or otherwise obligated to mitigate to the extent feasible, the significant environmental effects identified in the General Plan EIR that are not further analyzed in this EIR. The Modified Initial Study identifies the policies and mitigation measures developed during the environmental review of the General Plan and discusses how the proposed project would comply with those policies and measures.

CEQA Guidelines Section 15150 allows for incorporation by reference of "all or portions of another document which is a matter of public record or is generally available to the public." Incorporation by reference is used principally as a means of reducing the size of EIRs. This Draft EIR relies in part on data, environmental evaluations, mitigation measures, and other components of EIRs and plans prepared by the City for areas within the project vicinity. These documents are listed here and used as source documents for this EIR. All documents are available for public review during normal business hours (Monday through Friday, 8:30 a.m. to 5 p.m.) at the City of Vacaville Planning Division, 650 Merchants Street, Vacaville, California 95688, and on the City's website at www.cityofvacaville.com/RobertsRanch.

- City of Vacaville General Plan and Energy and Conservation Action Strategy (ECAS), adopted August 11, 2015
- Draft and Final General Plan and ECAS EIR, City of Vacaville General Plan (SCH No. 2011022043)
- Vacaville Municipal Code, updated through June 2016.

1.2 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

Lead Agency

In accordance with CEQA Guidelines Sections 15050 and 15367, the City of Vacaville has been designated the "'lead agency," which is defined as the "public agency which has the principal responsibility for carrying out or disapproving a project." The lead agency is also responsible for determining the scope of the environmental analysis, preparing the EIR, and responding to comments received on the Draft EIR. Prior to making a decision to approve a project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the City.

Responsible Agencies

Responsible agencies are state and local public agencies, other than the lead agency, that have some authority to carry out or approve a project or that are required to approve a portion of the project or approve a permit for which a lead agency is preparing or has prepared an EIR or Initial Study/Negative Declaration (CEQA Guidelines Section 15813). The following agencies would potentially act as responsible agencies for the purposes of this project:

- **Central Valley Regional Water Quality Board (CVRWQCB)**. Ensures compliance with the City's National Pollutant Discharge Elimination System (NPDES) Permit for any stormwater discharge associated with construction activity.
- **Yolo-Solano Air Quality Management District (YSAQMD).** Oversees air quality and has the authority to require mitigation fees.
- **Solano Local Agency Formation Commission (LAFCO).** Makes the determination to either approve or deny the City's request to annex the 248-acre project site into the City's boundary.
- **Solano Irrigation District (SID).** The project would require modifications to SID facilities that are located within the project area.

Trustee Agencies

Trustee agencies are designated public agencies with legal jurisdiction over natural resources that are held in trust for the people of California and that would be affected by a project, whether or not the agencies have authority to approve or implement the project (CEQA Guidelines Section 15386). The following agency was identified as a trustee agency with potential jurisdiction over the proposed project:

- California Department of Fish and Wildlife

1.3 EIR PROCESS

Notice of Preparation

In accordance with CEQA Guidelines Section 15082, a Notice of Preparation (NOP) was circulated for public and agency review from November 19 through December 18, 2015 (included as Appendix A). The purpose of the NOP was to provide notification that an EIR for the proposed project was being prepared and to solicit guidance on the scope and content of the document. A summary of the comments received on the NOP is included in the Executive Summary, as well as in the introduction of each technical section.

Pursuant to CEQA Guidelines Section 15082, the lead agency held a public scoping meeting on December 15, 2015. Responsible agencies and members of the public were invited to attend and provide input on the scope of the EIR. Comments from agencies and the public in response to the NOP are provided in Appendix A. General concerns and issues raised in response to the NOP are summarized in the Executive Summary and addressed in this Draft EIR.

Draft EIR and Public Review

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and public agencies can submit comments to the lead agency on the Draft EIR's accuracy and completeness. Release of this Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA Guidelines Section 15105. The 45-day public review period for the Draft EIR will be from November 18, 2016, through January 3, 2017. The public can review the Draft EIR at the following address during normal business hours (Monday through Friday, 8:30 a.m. to 5 p.m.) or on the City's website at www.cityofvacaville.com/RobertsRanch.

City of Vacaville
Planning Division
650 Merchant Street
Vacaville, California 95688

The City encourages all comments on the Draft EIR be submitted in writing. All comments or questions regarding the Draft EIR should be addressed to:

Fred Buderi, City Planner
City of Vacaville Planning Division
650 Merchant Street
Vacaville, California 95688
707.449.5307
Fred.buderi@cityofvacaville.com

Final EIR and EIR Certification

Upon completion of the Draft EIR public review period, a Final EIR will be prepared that will include written comments on the Draft EIR received during the public review period and the City's responses to those comments. The Final EIR will also include the Mitigation Monitoring Program (MMP) prepared in accordance with Section 21081.6 of the Public Resource Code. The Final EIR will address any revisions to the Draft EIR made in response to agency or public comments. The Draft EIR and Final EIR together will comprise the EIR for the proposed project. Before the City can review the project for approval, it must first certify that the EIR has been completed in compliance with CEQA, that the City Council has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the City. The City Council also would be required to adopt Findings of Fact and a Statement of Overriding Considerations (if any significant and unavoidable impacts are identified). If no significant and unavoidable impacts (assuming the City Council finds all proposed mitigation measures to be feasible), are identified the City Council would not be required to adopt a Statement of Overriding Considerations if it approves the proposed project (see also Public Resources Code Section 21081).

EIR Adequacy

The level of detail contained throughout this EIR is consistent with Section 15151 of the CEQA Guidelines, which states the following:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of the environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

1.4 SCOPE OF THE DRAFT EIR

Based on a review of the project and comments received during the NOP public review period and preparation of a Modified Initial Study (see Appendix B), the City determined that an EIR should be prepared that addresses the following technical issue areas:

- Air Quality
- Biological Resources

- Cultural Resources
- Hydrology, Water Quality, and Drainage
- Land Use and Planning
- Public Utilities
- Transportation and Circulation

The specific topics evaluated are described in each of the technical sections presented in Chapter 4.

Based on the analysis found in the Modified Initial Study, the proposed project's potential environmental impact related to the following topics were determined to be adequately covered in the General Plan EIR.

- Aesthetics
- Greenhouse Gas Emissions
- Population and Housing
- Agriculture and Forestry Resources
- Hazards and Hazardous Materials
- Mineral Resources
- Public Services
- Geology and Soils
- Noise
- Recreation

A summary of the Modified Initial Study's conclusions related to these impact categories is found in Chapter 2, Section 2.3 of this EIR.

This EIR evaluates the direct impacts, reasonably foreseeable indirect impacts, and cumulative impacts resulting from planning, construction, and operation of the proposed project using the most current information available and in accordance with the provisions set forth in CEQA and the CEQA Guidelines. In addition, the EIR recommends potentially feasible mitigation measures, where possible, and project alternatives that would reduce or eliminate significant adverse environmental effects.

The alternatives chapter of the EIR (Chapter 6, Project Alternatives) was prepared in accordance with Section 15126.6 of the CEQA Guidelines. CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid

significant environmental impacts that would otherwise occur. Project modification or alternatives are not required, however, where significant environmental impacts will not occur.

The EIR evaluates the following alternatives to the proposed project:

Alternative 1: No Project/No Build Alternative. This alternative assumes no development would occur, and the site would remain in its current undeveloped condition.

Alternative 2: Active Park Alternative. This alternative assumes development of the same residential project but includes an active-use facility within a portion of the large open space area identified on the eastern side of the project site. Such facilities would include recreational features typically found within a Community Park site and would be placed outside of agricultural buffer areas designated on the site. The same number of residential units along with circulation and site access would be provided as the proposed project and some on-site parking would be placed within the active use areas.

Alternative 3: No School Alternative. This alternative assumes that the future middle school site, 16.5 acres in size, would not be developed for school uses and that the same number of residential units would be constructed on the Roberts' Ranch site, including use of the school site for residential use. The same circulation and site access would be provided as the proposed project.

Alternative 4: Open Space Alternative. This alternative assumes the approximately 16.5 acre future school site would be set aside as undeveloped open space. The same number of residential units along with circulation and site access would be provided as the proposed project.

1.5 ORGANIZATION OF THE DRAFT EIR

Chapter 1, Introduction and Scope of the Draft EIR—Provides an introduction and overview of the EIR process and describes the intended use of the EIR and the review process.

Chapter 2, Executive Summary—Summarizes the elements of the project and the environmental impacts that could result from implementation of the proposed project and provides a table that lists impacts, describes proposed mitigation measures, and indicates the level of significance of impacts before and after mitigation.

Chapter 3, Project Description—Provides a detailed description of the proposed project, including its location, background information, project objectives, and technical characteristics.

Chapter 4, Environmental Impacts and Mitigation Measures—Describes the baseline environmental setting and provides an assessment of potential project impacts for each technical issue area presented. Each section is divided into four sub-sections: Introduction, Environmental Setting, Regulatory Background, and Impacts and Mitigation Measures (project-specific and cumulative).

Chapter 5, CEQA Considerations—Provides information required by CEQA regarding impacts that would result from the proposed project, including a summary of cumulative impacts, secondary impacts including potential impacts resulting from growth inducement, and significant irreversible changes to the environment.

Chapter 6, Project Alternatives—Describes and compares the proposed project alternatives to the proposed project.

Chapter 7, References—Provides a list of references used in preparation of the environmental analysis.

Chapter 8, EIR Preparation—Lists report authors who provided technical assistance in the preparation and review of the EIR.

Appendices—Includes various documents and data that support the analysis presented in the Draft EIR.

CHAPTER 2
EXECUTIVE SUMMARY

2.1 PROJECT UNDER REVIEW

This Draft Environmental Impact Report (EIR) evaluates the environmental impacts of the proposed Roberts' Ranch Specific Plan Project (proposed project) in the City of Vacaville (City). The proposed project includes development of a 785-unit residential project along with parks on an approximately 248-acre site located in the City. A detailed description of the project and all its components is contained in Chapter 3, Project Description.

This document has been prepared to satisfy the California Environmental Quality Act (CEQA), Public Resources Code (Section 21000 et seq.) and the State CEQA Guidelines (14 CCR 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects. The environmental analysis in the Modified Initial Study (Appendix B) is based on Sections 15168 and 15183 of the CEQA Guidelines, which governs program EIRs and projects consistent with a general plan or community plan. Under these sections, the program EIR, in this case the City's General Plan EIR, serves as a basis for the Modified Initial Study to determine if project-specific impacts would occur that are not adequately covered in the previously certified EIR. The proposed project's land uses and development assumptions are consistent with the City's General Plan.

This Draft EIR evaluates the environmental impacts of the proposed project that are not addressed in the General Plan EIR. The Modified Initial Study prepared for the project indicated whether the proposed project would result in significant impact that: (1) is peculiar to the project or the project site; (2) was not identified as a significant effect in the General Plan EIR; or (3) are previously identified significant effects which as a result of substantial new information that was not known at the time that the General Plan EIR was certified, and are determined to have a more severe adverse impact than discussed in the General Plan EIR (see Appendix B). Such impacts are evaluated in this EIR (CEQA Guidelines Section 15183).

2.2 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION

This summary chapter provides an overview of the technical analysis of the project's environmental effects contained in Sections 4.1 through 4.7 in Chapter 4, Environmental Analysis. This summary also includes an overview of: (a) effects found to be less than significant, (b) comments received in response to the Notice of Preparation (NOP), (c) potential areas of controversy, (d) potentially significant impacts and mitigation measures to avoid or reduce identified significant impacts, and (e) alternatives to the proposed project. Each of these issues is discussed in detail in this Draft EIR.

The California Environmental Quality Act (CEQA) Guidelines Section 15382 defines a significant effect as a substantial, or potentially substantial, adverse change in any physical conditions within the area affected by the project including land, air, water minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Implementation of the proposed project would result in significant impacts to the environment. As lead agency, the City determined that this Draft EIR will address the following technical issue areas:

- Air Quality
- Biological Resources
- Cultural Resources
- Hydrology, Water Quality, and Drainage
- Land Use and Planning
- Public Utilities
- Transportation and Circulation

The specific topics evaluated are described in each of the technical sections presented in Chapter 4. A brief summary of the findings in each of the technical sections in Chapter 4 is included below followed by a discussion of those issue areas determined to be less than significant and therefore not further evaluated in this Draft EIR.

Air Quality

This section describes the project's impacts on local and regional air quality and contribution to regional air quality conditions. The analysis evaluates construction and operational air emissions associated with the proposed project. Construction-related activities are considered short-term and include site clearing, grading, and the use of construction equipment that would generate air pollutants. Operational impacts associated with an increase in vehicle trips and use of consumer equipment was also evaluated. The analysis was prepared in compliance with the Yolo-Solano Air Quality Management District (YSAQMD) guidelines.

An increase in construction-related air emissions and dust would exceed the YSAQMD thresholds resulting in a potentially significant impact. Implementation of mitigation measures identified in Section 4.1, Air Quality and in Table 2-1, Summary of Impacts and Mitigation Measures would reduce impacts to less than significant. Emissions associated with project operation would result in a significant impact. Implementation of mitigation measures would not reduce the impact to less than significant; therefore, the impact would be significant and unavoidable. The proposed project would also result in a significant and unavoidable cumulative impact associated with operational emissions.

Biological Resources

This section evaluates the potential effects on biological resources associated with construction and operation of the proposed project. The biological resources present within the project site are described and special-status plant and wildlife species that could occur within the project site are identified. Potential impacts to biological resources associated with proposed off-site improvements are also evaluated. Numerous biological surveys were prepared for the project to determine the presence or absence of species and are reported and discussed in this section (see Appendix D).

There are no heritage trees or wildlife corridors present on the site; therefore, the project would not impact these resources. With implementation of the mitigation measures identified in Section 4.2, Biological Resources, and in Table 2-1, Summary of Impacts and Mitigation Measures, the project would have a less-than-significant impact on nesting birds and foraging habitat for protected raptors and loss of wetlands.

Cultural Resources

The cultural resources section describes the existing historic and archaeological resources within the project site and evaluates the potential for unknown resources to exist. A Cultural Resource Assessment for the project site was prepared (see Appendix E). No structures exist on the project site so there are no potential impacts to historic resources associated with the demolition of an existing building.

The proposed project would result in potentially significant impacts associated with the potential to unearth unknown historic or archaeological resources during site construction. Implementation of mitigation measures identified in Section 4.3, Cultural Resources, and in Table 2-1, Summary of Impacts and Mitigation Measures, would reduce project impacts on cultural resources to less than significant.

Hydrology, Water Quality, and Drainage

This section describes the existing hydrology, drainage and water quality of the project site and identifies infrastructure improvements associated with the proposed project. The increase in impervious surface area and the potential for an increase in localized flooding is evaluated along with hazards associated with a levee or dam failure.

Based on the Drainage Plan prepared for the project site (see Appendix F) and assuming compliance with existing federal, state, and local regulations and mitigation, impacts associated with construction-related surface water quality, water quality degradation associated with urban runoff, and increased peak stormwater flows would be less than significant.

Land Use and Planning

This section of the Draft EIR describes existing and planned land uses in and adjacent to the project site, current land uses, General Plan land use designations, and zoning, and analyzes the consistency of the proposed project with existing land use plans and policies as well as land use compatibility with adjacent lands. CEQA Guidelines Section 15125(d) provides that the environmental setting of an EIR must discuss “any inconsistencies between the proposed project and applicable general plans and regional plans.” Potential inconsistencies between the proposed project and the City of Vacaville General Plan, the City of Vacaville General Plan 2015–2023 Housing Element (adopted May 12, 2015), and the City of Vacaville Zoning Ordinance are discussed in this chapter.

The analysis concludes that the proposed project would be consistent with the intent of the City’s General Plan and would be compatible with the existing adjacent uses. Population generated by the project is anticipated in the City’s Housing Element and would not result in any plan inconsistencies.

Public Utilities

This section describes the utility systems and facilities within the project area and potential impacts resulting from implementation of the proposed project. Utilities and service systems considered in the analysis include wastewater treatment and collection, solid waste collection and disposal, and energy. This section describes the existing energy resources derived from petroleum products, electricity, and natural gas available within the project area and analyzes impacts related to energy resources resulting from implementation of the proposed project.

Implementation of the proposed project would contribute to an increased demand for public services and utilities in the City of Vacaville. However, the increase in demand would not exceed capacity or exceed City projections; therefore, impacts are less than significant.

Transportation and Circulation

This section describes potential impacts to the transportation system near the proposed project site. The impact analysis examines the roadway, transit, bicycle, pedestrian, and construction components of the overall transportation system under existing conditions, existing plus project, cumulative, and cumulative plus project conditions.

The proposed project would increase traffic on local roadways and intersections during project construction and operation. During project operation, under existing plus project conditions, the level of service (LOS) on area roadways and roadway segments, and intersections would be affected, but implementation of mitigation would reduce all of the impacts to less than significant

with the exception of one roadway segment that is not part of the Jepson Parkway Road Widening project. This impact would be significant and unavoidable. Impacts to transit, bicycle and pedestrian facilities under existing plus project conditions would also be impacted, but mitigation would reduce to less than significant. Under cumulative plus project conditions the project would result in impacts to seven intersections and six roadway segments. Implementation of required mitigation would reduce all impacts to less than significant with the exception of two roadway segments and two intersections that are not part of the Jepson Parkway Road Widening project and would remain significant and unavoidable.

2.3 EFFECTS FOUND TO BE ADEQUATELY ADDRESSED IN THE GENERAL PLAN EIR

As described in further detail in Chapter 1, Section 1.1 of this EIR, the Modified Initial Study (Appendix B) provides an analysis of whether the General Plan EIR adequately analyzes the environmental impacts of the proposed project. The Modified Initial Study indicates whether the proposed project would result in significant impacts that: (1) are peculiar to the project or the project site; (2) were not identified as a significant effect in the General Plan EIR; or (3) are previously identified significant effects which as a result of substantial new information that was not known at the time that the General Plan EIR was certified, and are determined to have a more sever adverse impact than discussed in the General Plan EIR. The Modified Initial Study concludes that the following impact topics were adequately addressed in the General Plan EIR and that, due to certain aspects of the project, project characteristics, or existing regulatory requirements, the project is not anticipated to have significant impacts on the following resources: aesthetics, agricultural and forestry resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, mineral resources, noise, population and housing, public services, and recreation. Under CEQA Sections 15168 and 15183, the City's General Plan EIR, serves as a basis for the Modified Initial Study to determine if project-specific impacts would occur that are not adequately covered in the previously certified General Plan EIR. The proposed project's land uses and development assumptions are consistent with the City's General Plan and are adequately evaluated in that program EIR. The following analysis provides an overview that explains why the project would not adversely affect these resources and therefore these resources are not further analyzed in this Draft EIR. The Modified Initial Study prepared for the project includes more information that addresses these issue areas and is included in Appendix B.

Aesthetics

The project site is bounded by Leisure Town Road to the west, Alamo Drive extension and Fry Road to the south, the Southern-Pacific Railroad right-of-way to the east, and the approved Brighton Landing project to the north. The City does not have any designated State Scenic Highways (City of Vacaville 2015). The City recognizes uninterrupted views of vistas within the

rural residential and agricultural area near the project site which are provided along Hawkins Road, Elmira Road, and Fry Road (City of Vacaville 2014). The City's 2035 General Plan includes policies that encourage preservation of scenic features and the character of the City. These policies include Policy LU-P1.2, which requires the protection of the City's natural environment by integrating hills, creeks, and other natural features into major development plans. Policies COS-P8.1 and P8.2, require preservation of scenic features including view corridors to the hills, and retaining major ridgelines and hillsides as open space.

Since there are no designated State Scenic highways within the City, the General Plan EIR concluded that buildout would have no impact on scenic resources within a State Scenic Highway. Future development in the east of Leisure Town area, which includes the project site, currently contains large open spaces and provides expansive views of the hillsides to the west. Much of the open space in the east of Leisure Town area is designated for development. Compliance with General Plan policies requires that development preserve natural areas and view corridors and integrate open spaces and buffer areas into proposed developments.

The City's Land Use Development Code includes policies that require compliance with Off-Street Parking and Loading Design Guidelines and other guidelines for limiting the amount of light and glare from a project site. The General Plan EIR concluded that with implementation of General Plan policies and compliance with other applicable codes, impacts from development on scenic vistas and increasing nighttime light and glare would be less than significant. Due to the substantial rural and agricultural lands in the planning area buildout of the General Plan would substantially change the character and appearance of these undeveloped areas. The General Plan EIR concluded the change could not be mitigated except by foregoing development and identified this as a significant and unavoidable impact. Development of the project site is anticipated under the General Plan; therefore, impacts to aesthetics have been adequately addressed in the General Plan EIR and the project would not have any additional impacts.

Agricultural and Forestry Resources

The majority of the project site is designated as Prime Farmland, with smaller portions designated as Farmland of Statewide Importance and Unique Farmland on the Department of Conservation Important Farmland Maps (DOC 2014). The project site is not under an active Williamson Act contract or a Farmland Security Zone contract (City of Vacaville 2013). The City's 2035 General Plan includes policies that encourage the preservation of existing local agricultural lands and operations in areas outside of the City and development that reduces conflict between existing agricultural areas and areas of new development. These policies include Policy LU-P5.2, which requires preservation of at least one acre of land outside the Urban Growth Boundary for every acre of agricultural land developed, and Policy COS-P4.1,

which requires new developments to maintain a 300- to 500-foot-wide buffer along the eastern boundary of all residential developments and existing agricultural lands.

The City's General Plan EIR identified approximately 199 acres of Prime Farmland and 1,079 acres of non-prime farmland under active Williamson Act contracts within the City. Although the City still contains agricultural land or land designated as Prime Farmland, Farmland of Statewide Importance and Unique Farmland, much of this land within the City has been designated and zoned for development, and in many instances, has been entitled for future development. It is the City's policy to limit the conversion of agricultural lands outside of the City limits. By keeping development within established growth areas, the City seeks to limit urban sprawl into other agricultural regions, thereby helping to minimize or reduce impacts on agricultural resources and operations in more agriculturally productive areas. Infrastructure already exists or is planned for undeveloped areas within the City, signaling the City's intention for urban growth to occur. The General Plan EIR concluded that impacts to agricultural resources, specifically conversion of farmland and land under Williamson Act contracts, that could occur with implementation of the 2035 General Plan would be significant and unavoidable. Development of the project site is anticipated under the General Plan; therefore, the impact has been adequately addressed in the General Plan EIR and the project would not have any additional impacts.

There are no trees within the project boundaries that would be considered timberland or forest land. Forestry resources or forest land is typically defined as land covered with forests or reserved for the growth of forests. The Solano County Zoning Code does not contain a zoning district for forest or timberland and the project site is not located in an area mapped by the California Department of Forestry and Fire Protection as forest or timberland (City of Vacaville 2013, p.4.2-14). Construction of the project would not result in the loss of protected forestry resources, and no impact would occur.

Geology and Soils

The project site is located in the City of Vacaville, which is considered a seismically active region and earthquakes have the potential to cause ground shaking or liquefaction. One fault system, the Vaca-Kirby Fault System, passes through the City, although the Vaca fault has not experienced displacement for the past 11,700 years and the Kirby Hills fault has no evidence of displacement in the last 700,000 years (KC Engineering Company 2016a). There are no regulated Earthquake Fault Zones or mapped seismic hazard zones in the City. All development in California is subject to the requirements of the California Building Code (CBC). The CBC contains more stringent building standards than the Uniform Building Code, specific to conditions in California.

The project site is generally flat and does not contain any slopes steep enough to present a landslide hazard during construction or operation of the project. During construction, measures would be incorporated to shore slopes and prevent potential ground movement. A Geotechnical Report was prepared for the project site in April 2016 by KC Engineering Company to assess the soils on the site to determine any potential constraints for construction. A total of 24 test borings were taken up to depths of 40 feet below existing grade level. Soils encountered within the upper 2 to 7 feet of the surface consist of soft to very stiff, highly expansive sandy and silty clays. Groundwater was encountered at depths between 10 to 17.5 feet below existing grade level (KC Engineering Company 2016a).

Grading activities associated with project construction would result in the disruption, displacement, compaction, and over covering of soils associated with site preparation (grading and trenching for utilities). There are no notable topographic features on the site. Any grading activities would be limited to the project site and all grading and improvement plans would be required to comply with the Vacaville Land Use and Development Code Chapters 14.20 (California Building Code), 14.19, (Grading and Erosion Sediment Control), and 14.26 (Urban Storm Water Quality Management and Discharge Control Ordinance) for consistency with the City's development standards. Grading activities would require a grading permit from the City, which requires including the provision of proper drainage and appropriate dust control and erosion control measures. Grading and erosion control measures would be incorporated into the required grading plans. Project construction is subject to the requirements of the National Pollutant Discharge Elimination System (NPDES) permit requirements. Compliance with the requirements of the City Code and the federal NPDES, and the limited exposure of soils anticipated the potential for substantial soil erosion or loss of topsoil is less than significant.

Additionally, the City's 2035 General Plan finds such impacts to be less than significant since new buildings and structures are required to comply with all applicable state and local building codes. The project would also be required to comply with the recommendations provided in the Geotechnical Engineering Report (KC Engineering Company 2016a). Development of the project site is anticipated under the General Plan; the impact has been adequately addressed in the General Plan EIR and the project would not have any additional impacts.

Greenhouse Gas Emissions

The 2006 California Assembly Bill (AB) 32 requires that California reduce its greenhouse gas (GHG) emissions to 1990 levels by 2020. The AB 32 Scoping Plan, approved December 12, 2008, includes a range of GHG reduction actions including a cap and trade program that covers 85% of the State's emissions. The Association of Bay Area Governments and the Metropolitan Transportation Commission are preparing a sustainable communities strategy for the Bay Area, Plan Bay Area, which includes the City of Vacaville. A 2008 GHG emissions inventory for the

City was prepared to use as a baseline against which to measure future GHG emissions reductions. The City's Energy Conservation Action Strategy (ECAS) includes the 2008 GHG emissions inventory, a 2020 Business as Usual (BAU) forecast model, targets for GHG emissions reduction and measures to meet those reduction targets.

The General Plan EIR concluded that the ECAS was a qualified GHG emissions reduction strategy because it contained the elements required by the BAAQMD. The General Plan includes policies to ensure that future development is consistent with the policies outlined in the ECAS aimed at reducing GHG emissions in the City. Since the City is required to conduct a GHG emissions inventory every five years, future development would be subject to relevant environmental design standards necessary to attain ECAS goals. The General Plan EIR concluded that future development, including the proposed project, would not conflict with the ECAS and would have a less-than-significant impact on the generation of GHG emissions.

Executive Order S-03-05 establishes a target for statewide GHG emissions reduction by 80% below 1990 levels by 2050. However, the timeframe for the General Plan and the ECAS do not go up to the year 2050. The General Plan EIR concluded that buildout of the General Plan, including application of measures in the ECAS, would conflict with the State's reduction goal and the impact would be significant. It is assumed that a majority of the reductions needed to reach the 2050 goals would come from State measures. All feasible GHG emission reduction measures considered during the ECAS process have already been included in the ECAS. Since no additional mitigation is available, the General Plan EIR determined this impact to be significant and unavoidable. GHG emissions are cumulative in nature and the project's contribution to GHG emissions was assumed by the land uses for the project site included in the City's General Plan GHG forecast. Since the project is consistent with the designated land use the project would not result in a significant impact not already identified in the General Plan EIR.

Hazards and Hazardous Materials

According to a Phase I Environmental Site Assessment (ESA) completed for the project there are no recognized environmental conditions present on the site and no hazardous substances, pollutants, contaminants, petroleum or petroleum products identified on the project site (KC Engineering Company 2016b). The proposed project would be expected to generate limited amounts of household hazardous waste and would not generate hazardous waste equal to the quantities regulated by the Solano County Hazardous Waste Management Plan. The project site is not included in the Cortese List for hazardous waste and substances (DTSC 2007). The project site is not mapped in an area of moderate or high wildland fire risk; however, open space agricultural lands in eastern Vacaville pose a threat related to grass fires. The City has adopted the Association of Bay Area Governments (ABAG's) regional hazard mitigation plan, *Taming Natural Disasters: Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*, as the local hazard mitigation plan for natural disasters and emergency response (City of Vacaville 2015, p. SAF-24-25).

The General Plan EIR did not identify any significant impacts from future development associated with the release of hazardous materials through routine transport, use, disposal or reasonably foreseeable upset and accident conditions. Additionally, the General Plan EIR did not identify any significant impacts from future development on known hazardous materials sites. The General Plan EIR concluded for these impacts that implementation of General Plan policies and compliance with applicable federal and state laws would ensure that impacts would be less than significant. The project would be required to comply with all applicable federal and state regulations and General Plan policies and the impact would not change from what was evaluated in the General Plan EIR.

The project site is located within Compatibility Zone D for Travis Air Force Base. Compatibility Zone D does not limit residential development or other uses, but would require airspace review for objects greater than 200 feet tall and to ensure that no wildlife attractant hazards are created by the project (Solano County 2015). Since there would be no buildings or structures that would exceed 200 feet no airspace review is required and this impact would be less than significant.

The General Plan EIR concluded that General Plan policies requiring City of Vacaville Fire Department (VFD) review of all development applications would reduce risks related to inadequate emergency access or impairment of the local hazard mitigation plan. The project would be required to get review and approval from the VFD and this impact would not change from what was evaluated in the General Plan EIR. The General Plan EIR also concluded that General Plan policies and compliance with the Land Use and Development Code would be sufficient to reduce risks related to wildfires to a less-than-significant level. The project would include a 100-foot-wide defensible fire protection zone, an Emergency Access and Evacuation Plan would be prepared for each phase of development, and roads would be sized adequately to accommodate fire trucks in accordance with General Plan policies and the Land Use and Development Code. Therefore, this impact would not change from what was evaluated in the General Plan EIR.

Mineral Resources

The project site is not located near Cement Hill or the western hills, which are the only places within the City where mineral resources are known to exist. California Geologic Survey has not mapped the City as an area containing aggregate mines (CGS 2012, Map Sheet 52). Additionally, there are no mapped Mineral Resource Zone (MRZ)-2 zones in the City, which are the zones where adequate information indicates the presence or high likelihood of the presence of significant mineral resource deposits.

The General Plan EIR concluded that the lack of designated MRZ-2 zones within the City and delineated locally important resource recovery sites would result in a less-than-significant impact to mineral resources. The project site is not located in an area known to contain mineral

resources or have active or historic mineral resource recovery sites. Development of the project site is anticipated under the General Plan; the impact has been adequately addressed in the General Plan EIR and the project would not have any additional impacts.

Noise

The project site is surrounded by undeveloped agricultural land to the south and east and residential development to the west and to the north. Documented sources of audible noise include vehicle traffic, aircraft overflights, heavy equipment operations, construction activity, loading and unloading operations, commercial activities, dogs barking, birds chirping, wind blowing and people conversing. Noise monitoring conducted by LSA in 2010 for the General Plan EIR indicates that existing daytime noise levels throughout the City range from 54 to 70 dBA L_{eq}, which is typical of urban or suburban settings (City of Vacaville 2013, p. 4.11-18). According to measurements conducted in 2009 adjacent to Leisure Town Road between Elmira and Marshall Roads, the ambient noise level near the project site is 74.8 L_{dn} (City of Vacaville 2013, Table 4.11-7). The project site is not located within a noise contour for Travis Air Force Base or the Nut Tree Airport. The 2035 General Plan includes policies for noise and vibration reduction including Policy NOI-P2.5 which encourages the use of open space, parking, accessory buildings, and landscaping to buffer new and existing development, and Policy NOI-P2.7 which requires setbacks at least 100 feet from the centerline of railroad tracks. Policy NOI-P4.2 lists construction noise control measures including use of mufflers, location of stationary noise-generation equipment and limited hours of operation.

The General Plan EIR concluded that future development would have a less-than-significant impact related to exposure of sensitive receptors to noise impacts from stationary sources, rail sources, transportation sources and ground-borne vibration with implementation of General Plan policies. The General Plan EIR also concluded that with implementation of General Plan policies and compliance with the Noise Ordinance (Section 8.10.030 of the City's Municipal Code) impacts related to short-term construction noise would be less than significant. The project would be required to comply with all provisions of the Noise Ordinance and with General Plan policies; therefore, this impact would not change from what was identified in the General Plan EIR.

The project is consistent with the land uses assumed in the General Plan EIR and would implement all General Plan policies to reduce traffic related noise impacts. Therefore, the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, and the impact would not change from what was identified in the General Plan EIR.

No portion of the City falls within the 60 dBA community noise equivalent level (CNEL) noise contour for Travis Air Force Base. Some portions of the City fall within the 60 dBA CNEL noise contour for the Nut Tree Airport; however, all proposed land use designations within these areas

are compatible with the 60 dBA contour. The General Plan EIR concluded that compliance with land use designations and General Plan policies would ensure any potential aircraft noise impacts on sensitive receptors associated with future development would be less than significant. Since the project site is not within a noise contour for the Nut Tree Airport or Travis Air Force Base and is not within the vicinity of a private airstrip this impact would not change from what was identified in the General Plan EIR.

Population and Housing

The City's most recent Housing Element was adopted on May 12, 2015, and includes a housing needs assessment that identifies current and projected housing needs, as well as policies to accommodate affordable housing development for a range of income and household types. Future buildout of the City's General Plan includes 9,680 new dwelling units, 26,500 new residents, 9,720 new jobs, 1 million square feet of new commercial space, 1.1 million square feet of new office space, and 2.1 million square feet of new industrial space (City of Vacaville 2013, Table 4.12-3). ABAG projections for development by 2035 in the City includes 4,550 new households, 11,400 new residents and 13,730 new jobs between 2010 and 2035 (City of Vacaville 2013, p. 4.12-6). However, because ABAG projections did not accurately reflect past development trends, the City did not use the ABAG projections and instead based projections off of actual development trends within the City.

General Plan policies require that development in new urban areas should be planned and new growth should only occur in areas served by existing utilities and public services. The City's urban growth boundary (UGB) would continue to protect agricultural lands from conversion to non-agricultural uses. General Plan and ECAS policies would require orderly, planned growth within the UGB in areas already served, or planned to be served, by urban services. However, since buildout of the 2035 General Plan would significantly exceed development projected by the ABAG's existing and future 2035 projections, this would be a significant impact. The General Plan EIR determined that in order to meet ABAG projections for population growth, housing opportunities would have to be reduced to less than half of what is currently projected in the 2035 General Plan. The City has already approved projects accounting for 4,900 new units, which would exceed the ABAG's projections. The General Plan EIR concluded that this impact would be significant and unavoidable because it is not feasible to rescind existing development entitlements or to reduce development to meet ABAG projections. The project site is assumed for residential development under the 2035 General Plan and the projected population increase was evaluated as part of the General Plan EIR. Therefore, the project would not contribute to an additional significant impact beyond what was identified in the General Plan EIR.

Most of the future development within the City would be developed on agricultural, vacant or underutilized parcels. The General Plan EIR concluded that impacts related to displacing people or housing as a result of future development would be less than significant. The project site is

currently vacant and does not contain housing or people. Therefore, implementation of the proposed project would not change from what was identified in the General Plan EIR.

Public Services

Fire and emergency medical services are currently provided by Solano County, but will be provided to the project site by the Vacaville Fire Department (VFD) and law enforcement services will be provided by Vacaville Police Department (VPD) upon annexation of the site into the City limits. The closest VFD station is Station 75 located at Cogburn Circle and Vanden Road approximately 1 mile southwest of the project site. VFD's adopted standard response time and success rate is 7 minutes for 90% of calls, which refers to the time period between VFD notification and arrival on the scene of the incident within the City limits (City of Vacaville 2013, p. 4.13-12). The single main VPD police station is located at 660 Merchant Street, adjacent to Vacaville City Hall, and is approximately 3.40 miles northwest of the project site. VPD standards for average response time are 6 minutes and 1 second for Priority I calls and 16 minutes and 28 seconds for Priority II calls. Currently, the VPD has an average response time of exactly 6 minutes for Priority I calls and 15 minutes for Priority II calls (City of Vacaville 2013, p. 4.13-3).

New development would be required to create or annex into a Community Facilities District (CFD) and pay a fair and equitable impact fee to offset for the cost of fire and emergency medical services and law enforcement services under General Plan policies PUB-P1.2 and PUB-P2.3. The City's development and review process would ensure that adequate fire and law enforcement services are available to serve new developments. The General Plan EIR concluded that impacts to the provision of fire and emergency services as well as law enforcement services would be less than significant. The project would comply with all General Plan policies and the impact would not change from what was identified in the General Plan EIR.

The project site is located with the Vacaville Unified School District (VUSD) and students would attend Callison Elementary School, located approximately 0.52 mile to the west, Vaca Pena Middle School located approximately 1.11 miles northwest, and Will C. Wood High School located approximately 2.40 miles west.

Buildout of the General Plan could generate over 3,000 new students which would exceed the capacity of the VUSD. VUSD has plans for future school sites and the General Plan identifies three new schools in the area east of Leisure Town Road, including a 16-acre designated school site on the north portion of the project site. Development of these school sites would increase capacity by approximately 1,300 students, which would accommodate new students generated by future development under the General Plan. The General Plan EIR concluded that impacts to the VUSD would be less than significant since payment of development fees is deemed to fully mitigate the impacts of new development on school facilities under Section

65996 of the California Government Code. The project would pay the required development fees and this impact would not change from what was identified in the General Plan EIR.

The City is currently served by two libraries, the Town Square Branch Library, located at 1 Town Square Place and the Cultural Center Branch Library, located at 1020 Ulatis Drive (City of Vacaville 2013, p. 4.13-33). Buildout of the General Plan would increase the population and could increase demand for other public services such as libraries. It is anticipated that school library facilities would decrease the potential impact of new development on City and County library facilities. The General Plan EIR concluded that impacts to library facilities would be less than significant with compliance with General Plan policies. Since the project would comply with General Plan policies the impact would not change from what was identified in the General Plan EIR.

Recreation

The City's General Plan classifies park and recreational facilities into six categories: Neighborhood parks, community parks, regional parks, accessible open space, special purpose facilities, and bikeways, multi-use trails and nature trails (City of Vacaville 2015, p. PR-1-3). Development of parks, recreation and open space facilities in the City is guided by the City's *Comprehensive Parks, Recreation, and Open Space Master Plan* adopted in 1992.The City's standards for the provision of parks and open space is 1.8 acres per 1,000 people for neighborhood parks, 1.7 acres per 1,000 people for community parks, and 1.0 acre per 1,000 people for regional parks (City of Vacaville 2015, p. PR-13). The City is currently deficient in meeting the provision standards for neighborhood and community parkland, but exceeds the standard for regional and total parkland. The City is also currently deficient in meeting the service standard for eight of the eleven types of recreational facilities (City of Vacaville 2013, p. 4.13-53).

The nearest existing neighborhood park to the project site is Normandy Meadows Park located approximately 0.34 mile to the southwest and the nearest existing community park is Nelson Park, located approximately 1.0 mile to the northwest. The only regional park in the project area is Lagoon Valley Regional Park, located approximately 4.40 miles generally west of the project site. A new neighborhood park, East of Leisure Town Road Park, and a new community park, Elmira Park, are planned just north of the project site (City of Vacaville 2015, Figure PR-4).

The General Plan is projected to increase Vacaville's total population to 112,000 residents by 2035 including the project, which would exacerbate the deficiencies in neighborhood and community parks and recreational facilities. It is estimated that in order to meet these standards by 2035, an additional 91 acres of neighborhood parkland and 50 acres of community parkland would be needed (City of Vacaville 2013, p. 4.13-49). Parkland and recreational facility goals are met through General Plan policies requiring the construction of new park facilities or payment of an in-lieu park fee for land acquisition and development impact fees. The proposed

project would include over 23 acres of open space and five smaller 0.5-acre “stroller” parks throughout the development. The General Plan EIR concluded that with implementation of General Plan policies, impacts to parks and recreational facilities would be less than significant. In addition to providing open space, stroller parks, and a school site that includes a shared park facility, the project would comply with General Plan policies and pay any park fees related to the adequate provision of parkland and recreational facilities. Therefore, the project’s impacts on recreation facilities and parks would not result in a significant impact not already identified in the General Plan EIR.

2.4 COMMENTS RECEIVED IN RESPONSE TO THE NOTICE OF PREPARATION

The NOP for this Draft EIR was released on November 19, 2015, and the public comment period closed on December 18, 2015. The City received a total of seven letters; no comments were received from the public. Comment letters were received from seven public agencies including the California Department of Transportation (Caltrans), YSAQMD, Solano Local Agency Formation Commission, and the U.S. Army Corps of Engineers. A brief overview of the primary concerns raised in the NOP comment letters is included below. The purpose of the NOP process is to solicit input from public agencies and the public on the scope of the EIR analysis. Opinions on the merits of the project are noted, but are not considered relevant for the purposes of defining the scope of the analysis. The Introduction of each technical section in Chapter 4 provides a brief summary of comments relevant to that particular issue area. All of the NOP comment letters received are included in Appendix A.

Agricultural and Forestry Resources

Comments received expressed concerns regarding the project’s impact on agriculture on the project site, potential impacts to adjacent agricultural property, and a request to include a discussion of the consistency of any mitigation measures or buffers with the Solano County General Plan. Additional comments suggested including a discussion regarding the potential impacts to preserving prime agriculture and open space from extension of the City’s urban growth boundary.

Air Quality

Comments received from the YSAQMD provided information regarding the YSAQMD Handbook for assessing and mitigation air quality impacts as well as the preferred emissions modeling software. Other comments received on this subject expressed concerns associated with siting a residential project adjacent to the Southern Pacific railroad tracks where air quality has the potential to contain high-levels of toxins or particulate matter that can lead to negative health effects on future residents. Another comment expressed concern for the

potential of odors from the nearby City of Vacaville detention basin and Easterly Wastewater Treatment Plant on future residents.

Biological Resources

Comments included a suggestion that a wetland delineation be performed to determine the extent of jurisdictional waters on the project site and that the range of alternatives considered includes alternatives that avoid impacts to wetlands or other waters of the United States. An additional comment states if no practical alternatives to filling waters of the United States are available the mitigation plans should be developed to compensate for the loss.

Cultural Resources

Comments received identified the project site as being within the aboriginal territories of the Yocha Dehe Wintun Nation and the Wintun Nation requested a copy of the Cultural Resources Report be provided. The City provided a copy of the Cultural Resources Report to the Wintun Nation for their review and there was no request for additional follow up. A copy of the response from the Wintun Nation is also provided in Appendix A.

Hydrology, Water Quality, and Drainage

Comments received included information on the regulations protecting water quality and permit requirements that could be necessary for the proposed project. The comments state that the project's potential impacts to both surface and groundwater quality should be analyzed in the Draft EIR. Other concerns were related to the filling of waters of the United States and recommended completing a wetland delineation, if necessary. An additional comment was received regarding stormwater and requesting a discussion of the detention basin northeast of the project site since the basin is important to stormwater services in the City.

Land Use and Planning

Comments received from the Solano Local Agency Formation Commission (LAFCO) suggest that LAFCO be identified as one of the responsible agencies under CEQA and the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 be identified in the regulatory setting. Another comment requests that the portion of the site that would remain in Solano County be evaluated for consistency with the County's General Plan and zoning ordinance. Additional comments suggested a discussion regarding the potential to annex the adjacent storm water detention pond into the City limits.

Transportation and Circulation

Comments received from Caltrans requested identification of the traffic impact fees and suggested that the City participate in a contribution program to plan for impacts of future growth on the regional transportation system. Comments also expressed concern that traffic from the proposed project would contribute to a cumulative impact to the already congested state highway system, specifically Interstate 80. Caltrans noted what information should be included in the Traffic Impact Study and suggested that the Caltran's *Guide for the Preparation of Traffic Impact Studies* be used to determine which scenarios and methodologies are evaluated. A comment from Solano County requested that the Draft EIR analyze project specific and cumulative traffic impacts to County roads. Other comments suggested the analysis examine the project's incorporation of features to reduce vehicle miles traveled, such as electric vehicle charging stations, street bicycle facilities, pedestrian facilities, and policies to encourage use of the nearby public transportation. An additional comment requested that barriers to non-motorized transportation to and from the future school site be minimized in order to allow for students to travel safely and conveniently.

Public Utilities

One comment was received requesting a discussion of the detention basin northeast of the project site since the basin is important to stormwater services in the City.

2.5 POTENTIAL ISSUES OF CONCERN

The primary issues of concern raised were the potential increase in traffic on City and County roads, as well as the already congested state highway system; and the protection of water quality and the project's potential impacts on stormwater. Additional concerns were raised regarding the preservation of agriculture, and the maintenance of appropriate agricultural buffers as well as the project's consistency with the Solano County General Plan and zoning code.

Other concerns were raised regarding potential impacts to future residents related to toxins from operation of the Southern Pacific Railroad and related to odors from the adjacent Easterly Wastewater Treatment Plant. These effects are beyond the scope of analysis in this EIR because they are concerned with the existing environment's impact on the project and do not fall into one of the exceptions to CEQA's general rule, articulated in *CBIA v. BAAQMD* (2015 62 Cal.4th 369 and CBIA v. BAAQMD (2016) 2 Cal.App.5th 485), that an EIR must only evaluate the projects' impact on the environment. However, this EIR discloses these effects for information purposes and these topics may be addressed by the decision-makers as part of the land use planning review for this project.

2.6 SUMMARY OF PROJECT ALTERNATIVES

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Project modification or alternatives are not required, however, where significant environmental impacts will not occur.

As is evident from the text of the EIR, all significant effects of the project would be mitigated to less than significant levels by the adoption of feasible mitigation measures. There are no impacts that remain as significant and unavoidable and which cannot be substantially lessened. The EIR evaluates the following alternatives to the proposed project:

Alternative 1: No Project/No Build Alternative. This alternative assumes no development would occur, and the site would remain in its current undeveloped condition.

Alternative 2: Active Park Alternative. This alternative assumes development of the same residential project but includes an active-use facility within a portion of the large open space area identified on the eastern side of the project site. Such facilities would include recreational features typically found within a Community Park site and would be placed outside of agricultural buffer areas designated on the site. The same circulation and site access would be provided as the proposed project and some on-site parking would be placed within the active use areas.

Alternative 3: No School Alternative. This alternative assumes that the future middle school site, approximately 16.5 acres in size, would not be developed for school uses and that the same number of residential units (785) would be constructed on the project site, including use of the school site for residential development. The same circulation and site access, parks, utilities, and open space would be provided as the proposed project.

Alternative 4: Open Space Alternative. Under this alternative the approximately 16.5 acre future middle school site would not be developed with a school but would be designated as Open Space. This alternative would provide over 30 acres of open space with the remainder of the site developed consistent with the proposed project.

Information in Table 2-1, Summary of Impacts and Mitigation Measures, has been organized to correspond with environmental issues discussed in Chapter 4. The summary table is arranged in four columns and organized as follows:

2.7 SUMMARY OF IMPACTS AND MITIGATION MEASURES

1. Environmental impacts;
2. Level of significance prior to mitigation;

3. Applicable mitigation; and
4. The level of significance after implementation of mitigation.

This Draft EIR assumes that all applicable plans, policies, and regulations would be implemented, including state laws and regulations, the City of Vacaville General Plan policies, and requirements or recommendations of the City of Vacaville and applicable building codes. Applicable plans, policies, and regulations are identified and described in the Regulatory Setting of each issue area in Chapter 4 and within the relevant impact analysis. A description of the organization of the environmental analysis, as well as key foundational assumptions regarding the approach to the analysis, is provided in Chapter 4, Introduction to the Analysis.

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		4.1 Air Quality	
4.1-1: Construction of the proposed project could result in emissions of ROG, NOx, or $PM_{10/2.5}$ at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	Potentially Significant	**AQ-1** The applicant shall implement Best Management Practices and shall submit a construction dust control plan for the project that includes the following conditions: • Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure. • Ensure haul trucks maintain at least 2 feet of freeboard. • Cover all trucks hauling dirt, sand, or loose materials. • Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area. • Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days). • Plant vegetative ground cover in disturbed areas as soon as possible. • Cover inactive storage piles. • Sweep streets if visible soil material is carried out from the construction site.	Less than Significant
4.1-2: Operation of the proposed project would result in emissions of	Significant	**AQ-2** Operational Emission Reduction Measures. The applicant shall incorporate the following measures to reduce emissions associated with	Significant and Unavoidable

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
ROG, NOx, or $PM_{10/2.5}$ at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.		vehicle trip generation and area sources from the proposed project: • Equip all residential garages, as well as parking lots at parks, with infrastructure to install electric vehicle charging outlets and equipment. • Provide transit facilities (e.g., bus bulbs/turnouts, benches, shelters). • Provide bicycle lanes and/or paths, connected to the existing community-wide network. • Where feasible, provide sidewalks and/or paths, connected to adjacent land uses, transit stops, and the existing community-wide trail network. • Traffic calming devices such as bulb-outs and pedestrian refuges shall be implemented on residential streets in areas of high pedestrian activity and adjacent to neighborhoods. • The Roberts' Ranch Specific Plan shall be modified to include bicycle parking standards as follows: o For residential development, one, sheltered, secure bicycle parking space per dwelling unit shall be required. Garages, storage sheds, utility rooms, or similar areas that can be secured from unauthorized access and are sheltered from sun and rain would satisfy this requirement without the addition of special improvements or racks. Additional convenience bicycle parking may	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		be provided with exterior racks but does not count toward the sheltered bicycle parking requirement. ○ New parking areas created to serve nonresidential uses should provide one bicycle parking space for every 20 vehicle parking spaces, with a minimum of four bicycle spaces. ○ For all school developments, secured bicycle parking shall be provided at a minimum rate of 10% of the student capacity plus 3% of the maximum number of employees. • All wood burning devices shall be prohibited in residential units. Only natural gas fueled hearths shall be permitted. • During the Design Review process for each home design application, the City shall confirm compliance with measures incorporated into the City's Energy & Conservation Action Strategy (ECAS), through use of a checklist identifying the residential design measures feasible for residential structures.	
4.1-3: The proposed project would not result in CO concentrations that exceed the 1-hour state ambient air quality	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm).			
4.1-4: The proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations.	Less than Significant	None Required	Less than Significant
4.1-5 The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).	Significant	**AQ-3** Implement Mitigation Measure AQ-2.	Significant and Unavoidable
4.2 Biological Resources			
4.2-1: Implementation of the proposed project may result in substantial	Potentially Significant	**Short-Eared Owl** **BIO-1** Impacts from construction-related noise may occur to avian wildlife if construction occurs	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.		during the breeding season (i.e., February 1–August 31 for most bird species; and January 1–August 31 for raptors). Protection of general bird species shall be accomplished by either scheduling construction between July 15 and February 1 or if construction must occur during the nesting season (February 1–July 15), a one-time biological survey for nesting bird species shall be conducted. The biological survey shall be conducted by a qualified biologist to identify the presence of nesting birds no more than 72 hours prior to the commencement of work. If any active nests are detected, the area shall be flagged and mapped on construction plans along with a minimum 25-foot buffer with up to a 300-foot maximum buffer for raptors, as determined by the qualified biologist. These areas shall be avoided until the nesting cycle is complete or it is determined that the nest has failed. **Burrowing Owl** **BIO-2** Burrowing owls could be significantly impacted by both the loss of suitable nesting and foraging habitat, as well as direct destruction of burrows, eggs, nestlings, and nesting owls. Mitigation Measures BIO-2 through BIO-3 correspond to Avoidance and Minimization Measures BO 1 through BO 4 in the Solano HCP (Solano County Water Agency 2012) and	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		recommendations detailed in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). a. Within 14 days prior to the anticipated start of construction, a qualified biologist approved by the CDFW shall conduct preconstruction surveys within the project site to identify burrowing owls or their nesting areas for burrowing owl. This survey shall follow survey protocols outlined in the most current draft of the Solano HCP and as developed by the Burrowing Owl Consortium (Solano County Water Agency 2012; CDFW 2012). If no active burrows or burrowing owls are observed, no further mitigation is required. If a lapse in construction of 15 days or longer occurs during the nesting season, additional preconstruction surveys shall be repeated before work may resume. b. If burrowing owls or active burrows are identified within the project site during the preconstruction surveys, the following measures shall be implemented: 1. During the non-breeding season for burrowing owls (September 1 through January 31), exclusion zones shall be established around any active burrows identified during the preconstruction survey. The exclusion zone shall be no less than 160 feet in radius centered on	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		the active burrow. With approval from CDFW, burrowing owls shall be passively evicted and relocated from the burrows using one-way doors. The one-way doors shall be left in place for a minimum of 48 hours and shall be monitored daily to ensure proper function. Upon the end of the 48-hour period, the burrows shall be excavated with the use of hand tools and refilled to discourage reoccupation. 2. During the breeding season (February 1 through August 31), a qualified biologist familiar with the biology and behavior of this species shall establish exclusion zones of at least 250 feet in radius centered on any active burrow identified during the preconstruction survey. No construction activities shall occur within the exclusion zone as long as the burrow is active and young are present. Once the breeding season is over and young have fledged, passive relocation of active burrows may proceed as described in measure b.1, above. 3. The buffer widths may be reduced in consultation with CDFW and with the following measures: • A site specific plan shall be prepared that documents and described how the	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		nesting or wintering owls would not be adversely affected by construction activities; • Monitoring shall occur by a qualified biologist approved by CDFW. All monitoring shall be conducted for a sufficient time, for a minimum of 10 consecutive days following initiation of construction and it is shown the owls do not exhibit adverse reactions to construction activities; • Burrows are not in danger of collapse due to equipment traffic; and • Monitoring is continued at least once a week through the nesting/wintering cycle at the site and no change in behavior by owls is observed; biological monitoring reports shall be submitted to CDFW. **BIO-3** Mitigation for the permanent loss of burrowing owl foraging habitat for urban development or other permanent facilities shall be provided at a 1:1 land/area ratio. The final acreage for mitigation calculations shall be determined based on final design of the open space areas within the project site. This measure may be accomplished in conjunction with Swainson's hawk Mitigation BIO-4, below, provided the following additional measures are implemented. • At least 5 acres of mitigation area shall be	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		permanently taken out of agricultural production, either on the project site or in another suitable location, to provide suitable nesting habitat and cover for burrowing owls. • At least four artificial burrow complexes (three multi-entrance burrows per complex) shall be installed within the habitat set aside for burrowing owls. • Vegetation within the owl habitat shall maintain an average effective vegetation height less than or equal to 6 inches from February 1 to April 15, when owls typically select mates and nest burrows. In addition, tree and shrub canopy cover shall be limited to the edges of the set aside area and shall not be within 200 feet of the artificial burrows. • Burrowing owl habitat mitigation areas shall be subject to deed restrictions that would limit future urban development. • An Open Space Maintenance Plan shall be prepared and implemented to insure open space lands within the project site and mitigation lands are maintained, to the extent feasible, to be compatible for use by burrowing owl. • Adequate funding shall be provided to manage the owl mitigation area, including maintenance of the artificial burrows and	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		grass height, in perpetuity. **Swainson's Hawk** **BIO-4** This Mitigation Measure is consistent with Avoidance and Minimization Measures SH-1 through SH-5 in the Solano HCP (Solano County Water Agency 2012). a. If construction occurs during the nesting season for Swainson's hawk (March 1 through August 31), a qualified biologist approved by the CDFW shall conduct preconstruction surveys no more than 15 days prior to construction to identify nesting Swainson's hawk within 0.25 mile of the project site. If a lapse in project-related construction activities of 15 days or longer occurs, additional preconstruction surveys shall be conducted prior to reinitiating work. b. If an active Swainson's hawk nest is identified within 0.25 mile of the project site, an exclusion buffer shall be established in consultation with the biologist and CDFW. No construction work such as grading, earthmoving, or any operation of construction equipment shall occur within the buffer zone except as provided below in mitigation measure BIO-5 and in consultation with CDFW. Construction may commence normally in the buffer zone if the nest becomes inactive	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		(e.g., the young have fully fledged), as determined by the qualified biologist. **BIO-5** The project applicant shall mitigate for the loss of Swainson's hawk irrigated foraging habitat by preserving a minimum of 1:1 land/area ratio of similar habitat. The final acreage for mitigation calculations shall be determined based on final design of the open space areas within the project site. The preservation of the mitigation area shall be accomplished through purchase of credits from a bank approved by the CDFW to provide such credits, such as the Elsie Gridley Mitigation Bank or the Burke Ranch Conservation Bank (CDFW 2016) or through preservation of irrigated agricultural lands protected in perpetuity by a conservation easement. Such an easement shall include provisions that provide for agricultural uses that are compatible with Swainson's hawk foraging needs. Agricultural foraging habitats shall consist of alfalfa, tomatoes, other annual vegetable row crops, and grain. The mitigation area shall not include crop types and land uses incompatible with Swainson's hawk foraging. The following additional restrictions and prohibited uses, at a minimum, shall also be noted as forbidden within the conservation easement: • Commercial feedlots, which are defined as any open or enclosed area where domestic livestock are grouped together for intensive	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		feeding purposes. • Horticultural specialties, including sod, nursery stock, ornamental shrubs, ornamental trees, Christmas trees, or flowers. • Commercial greenhouses or plant nurseries. • Commercial aquaculture of aquatic plants, animals, and their byproducts. • Planting orchards or vineyards for the production of fruits, nuts, or berries except in designated farmstead areas. • Cultivation of perennial vegetable crops such as artichokes and asparagus, as well as annual crops such as cotton or rice. • Construction, reconstruction, or placement of any building, billboard or sign, antennas, towers, and facilities for generation of electrical power, or any other structure or improvement of any kind, except as may be specifically permitted in site-specific management plan. Acreage occupied by any such existing facilities may not be counted toward mitigation requirements. The City shall consult with CDFW prior to approving the site, conservation easement, and conservation easement holder. **Northern Harrier, White-Tailed Kite, Loggerhead Shrike, and Mountain Plover** **BIO-6** Impacts from construction-related noise may	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		occur to avian wildlife if construction occurs during the breeding season (i.e., February 1–August 31 for most bird species; and January 1–August 31 for raptors). Protection of general bird species shall be accomplished by either scheduling construction between July 15 and February 1, or if construction must occur during the nesting season (February 1–July 15). A one-time biological survey for nesting bird species shall be conducted by a qualified biologist in all suitable habitat for the presence of nesting birds 72 hours prior to the commencement of work. If any active nests are detected, the area shall be flagged and mapped on construction plans along with a minimum 25-foot buffer up to a 300-foot maximum for raptors, as determined by the qualified biologist. These areas shall be avoided until the nesting cycle is complete, or it is determined that the nest has failed.	
4.2-2: Implementation of the proposed project could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies,	No Impact	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
or regulations, or by the CDFW or USFWS.			
4.2-3: Implementation of the proposed project may result in placement of fill into potential jurisdictional waters of the U.S and State.	Potentially Significant	**BIO-7** To mitigate for the loss of potentially jurisdictional waters of the United States and/or waters of the State, the project applicant shall create, preserve, or restore an equivalent amount of jurisdictional waters not exempt from Sections 404 or 401 of the Clean Water Act. Actual mitigation acreage requirements shall be adjusted in conjunction with the U.S. Army Corps of Engineers and the Regional Water Quality Control Board. Mitigation may be accomplished by either of the following: a. Creation of similar habitat either on- or off-site at an appropriate mitigation site; or b. Purchase of the appropriate number of credits at an agency-approved off-site wetland mitigation bank. The Elsie Gridley Mitigation Bank services in Solano County has been approved by the USFWS to provide wetland mitigation credits (ACOE 2016).	Less than Significant
4.2-4: Implementation of the proposed project may interfere with the movement of any native resident or migratory fish or wildlife species or with established native	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.			
4.2-5: Implementation of the proposed project could conflict with applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, including the Solano County Water Agency's draft HCP adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources.	Significant	**BIO-8** Implement Mitigation Measures BIO-4 and BIO-5.	Less than Significant
4.2-6: The proposed project could contribute to cumulative impacts to special-status species in the region due to removal of foraging and breeding habitat.	Potentially Significant	**BIO-9** Implement Mitigation Measures BIO-4, BIO-5, and BIO-7.	Less than significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.3 Cultural Resources			
4.3-1: Implementation of the proposed project may cause a substantial adverse change in the significance of an archaeological resource.	Potentially Significant	**CUL-1** If deposits of prehistoric or historical archaeological materials are encountered during construction activities, all work within 25 feet of the discovery shall be redirected until an archaeologist is contracted to assess the finds, consult with agencies and descendant communities (as appropriate), and make recommendations for the treatment of the discovery. If preservation in place is not feasible, the archaeologist shall evaluate the deposit for its eligibility for listing in the California Register of Historical Resources. If the deposit is not eligible, mitigation is not necessary. If the deposit is eligible, mitigation shall include excavation of the archaeological deposit in accordance with a data recovery plan (see *CEQA Guidelines* Section 15126.4(b)(3)(C)). The City of Vacaville shall ensure that descendant communities are consulted for their input and concerns during the development and implementation of any mitigation plan. Upon completion of the evaluation and/or mitigation, the report shall be submitted to the City of Vacaville, the applicant, the Northwest Information Center at Sonoma State University, and descendant communities.	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.3-2: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries.	Potentially Significant	**CUL-2** In the event that human remains are encountered, the on-site construction foreman shall stop all work within 25 feet of the discovery and shall immediately contact the City's Community Development Department and the County Coroner. At the same time, a qualified archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. On-site construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission shall identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate, and in coordination with the recommendations of the Most Likely Descendant. The report shall be submitted to the City of Vacaville Community Development Department and the Northwest Information Center, and descendant communities.	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.3-3: The proposed project could contribute to cumulative impacts to historical, archaeological and paleontological resources in the area.	Less than Significant	None Required	Less than Significant
4.4 Hydrology, Water Quality and Drainage			
4.4-1: Implementation of the proposed project may violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	Less than Significant	None Required	Less than Significant
4.4-2: Implementation of the proposed project may alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site.	Potentially Significant	**HYDRO-1** Consistent with General Plan policies SAF P3.1, P3.3, P3.4, and P4.4, and with City standard conditions of approval for storm drain improvements, numbers 8 and 9, the final design of the project shall be required to adequately direct all flows to the existing detention basin and prohibited from increasing the area subject to flooding downstream. In order to demonstrate compliance with these requirements, the project applicant will be required to prepare a Storm Drain Master Plan (SDMP) prior to issuance of	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		improvement plans for the development which would reduce this impact to less than significant. The SDMP shall provide the necessary calculations to adequately demonstrate that the proposed drainage facilities adequately convey the design runoff from the project and adequately mitigate the impacts of increased runoff. In accordance with the City's Storm Drain Design Standards, the SDMP shall be prepared prior to the approval of the final map/improvement plans and shall include, but is not limited to, the following items: • A topographic map of the drainage shed and adjacent areas as necessary to define the study boundary. The map shall show existing and proposed ground elevations (including preliminary building pads), with drainage sub-shed areas in acres, and the layout of the proposed drainage improvements. • A map showing analysis points, proposed street grades, storm drainage facilities, and overland release paths with required easement locations for overland flow across private property. • Preliminary pipe sizes with hydraulic grade lines, design flows, inverts, and	

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		proposed ground elevations at analysis points. This information shall be provided on the map showing the layout of the proposed drainage facilities. • Summary of the detention basin and pump station including: ○ Additional pumping capacity added with this project. ○ Summary of detention storage capacity. ○ Proposed operations plan. ○ Downstream improvements or maintenance. ○ Proposed alterations required to avoid any increase in peak flows or areas subject to flooding. Such alterations may include, among other measures: ▪ Adjustments to grading plans; ▪ Adjustments to storm water system design; ▪ Adjustments to pump station operations.	
4.4-3: Implementation of the proposed project may substantially alter the existing drainage pattern of the site or area or substantially	Potentially Significant	**HYDRO-2** a. Implement Mitigation Measure HYDRO-1. b. The applicant shall conduct additional study of off-site drainage and flood conditions to demonstrate to the satisfaction of the City Engineer and	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.		Director of Public Works that the project shall not result in an increase in the depth or extent of flooding off-site, consistent with City Standard Conditions of Approval numbers 8 and 9. As part of the Storm Drain Master Plan, the applicant shall conduct a hydraulic analysis of the conveyance facilities downstream of the detention basin to determine the capacity of the downstream conveyance, the extent of the area subject to flooding under pre- and post-development conditions, and to identify the necessary mitigation measures that would reduce flooding to predevelopment levels. If mitigation measures are determined to be necessary based on detailed hydraulic analysis, such measures shall be incorporated into final project improvement plans.	
4.4-4: Implementation of the proposed project may create or contribute to runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or	Potentially Significant	**HYDRO-3** Implement Mitigation Measures HYDRO-1 and HYDRO-2.	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
provide substantial additional sources of polluted runoff**.**			
4.4-5: The proposed project, in addition to other projects in the watershed, could result in the generation of polluted runoff that could violate water quality standards or waste discharge requirements for receiving waters.	Less than Significant	None Required	Less than Significant
4.5 Land Use and Planning			
4.5-1: Implementation of the proposed project may conflict with a regional land use plan, policy or regulation.	Less than Significant	None Required	Less than Significant
4.6 Public Utilities			
4.6-1: The proposed project could exceed the treatment requirements of the applicable Regional Water Quality Control Board.	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.6-2: The proposed project could require or result in the construction of new wastewater facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	Less than Significant	None Required	Less than Significant
4.6-3: The proposed project could result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	Significant	**WW-1** The project applicant shall pay connection fees as determined by the City's Department of Utilities and specified in the City's DIF program. **WW-2** The project applicant shall fund construction of any trunk sewer improvements needed upstream of the point where the Alamo/Fry trunk sewer and the CSP-S trunk sewer are combined under the DIF 54A project, beginning at the proposed project's point of connection.	Less than Significant
4.6-4: The proposed project could be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs.	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
4.6-5: The proposed project could require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities.	Less than Significant	None Required	Less than Significant
4.6-6: The proposed project could contribute to a cumulative increase in the demand for wastewater treatment, which could result in inadequate capacity and require the construction of new or expansion of existing wastewater treatment facilities.	Less than Significant	None Required	Less than Significant
4.6-7: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
could cause significant environmental effects.			
4.6-8: The proposed project could contribute to a cumulative increase in energy demand, which could result in the need for construction of new energy production and/or transmission facilities or expansion of existing facilities.	Less than Significant	None Required	Less than Significant
4.7 Transportation and Circulation			
4.7-1: Implementation of the proposed project would degrade operations at one study intersection.	Significant	**TRAFF-1** At the Leisure Town Road (Jepson Parkway) / Elmira Road intersection (#6), the Project shall install the following improvements or pay in-lieu traffic fees to the City: • Widen the north leg to provide one additional through lane; this includes widening the north leg of the intersection to accommodate the second northbound through receiving lane. The City shall implement these improvements or shall apply the in-lieu fee towards implementation of the Jepson Parkway Improvement Project. At this intersection, the Jepson Parkway Improvement Project will provide:	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		• Northbound approach - two left-turn lanes, one through lane and one shared through-right turn lane • Southbound approach - one left turn lane, two through lanes and one right-turn lane • Eastbound approach - two left-turn lanes, one through lane and one right-turn lane • Westbound approach - one left-turn lane, one through lane and one right-turn lane	
4.7-2: Implementation of the proposed project would increase traffic volumes above the LOS C threshold on two study road segments.	Significant	**TRAFF-2a** The project shall install the following improvements or pay in-lieu traffic fees to the City: • Widen Leisure Town Road (Jepson Parkway) to two lanes in each direction between Marshall Road and Elmira Road and between Elmira Road and Ulatis Road.	Less than Significant
		TRAFF-2b Widen Leisure Town Road (Jepson Parkway) to provide two lanes in the southbound direction between Ulatis Road and Elmira Road.	Significant and Unavoidable
4.7-3: Implementation of the proposed project would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)		Level of Significance After Mitigation
thresholds of significance.				
4.7-4: Implementation of the proposed project, including installation of traffic circles and other traffic calming devices, may delay emergency response or impede movement of emergency vehicles.	Potentially Significant	**TRAFF-3**	Roundabouts and traffic circles shall be designed to accommodate fire trucks and other large vehicles to travel through the intersection at an appropriate speed for emergency response. On-street parking shall be prohibited near the traffic circles to ensure clear passage. All traffic calming devices shall be designed in accordance with City standards and be approved by the City.	Less than Significant
4.7-5: Implementation of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	Potentially Significant	**TRAFF-4**	The project-level site plan shall be submitted for each phase of the project development for review and approval by the City to ensure safe and direct facilities for pedestrians, bicyclists, and transit riders are provided and the design does not conflict with adopted plans, policies, and programs related to such facilities.	Less than Significant
4.7-6: Under Existing plus Approved plus Project conditions, traffic volumes would exceed intersection LOS operations at six	Significant	**TRAFF-5**	The City of Vacaville shall implement the following improvements to mitigate operations at the six impacted intersections. The project shall pay in-lieu traffic fees to the City.	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
intersections.		**TRAFF- 5a** At the Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street (#4) intersection, the City shall implement the following improvements: • Add a through lane on southbound Leisure Town Road to provide one left-turn lane, one through lane and one shared through-right lane on the southbound approach. • Widen the south leg of the intersection to provide a corresponding receiving lane. This mitigation is consistent with the ultimate configuration of Jepson Parkway, but is not part of the Jepson Parkway Road Widening Project which the City is currently implementing. This is a temporary impact until the ultimate Jepson Parkway is constructed. With the mitigation the intersection would operate at LOS B or better during both peak hours.	Significant and Unavoidable
		TRAFF-5b At the Leisure Town Road (Jepson Parkway) / Ulatis Road (#5) intersection, the City shall implement the following improvements: • Install a traffic signal. This mitigation is consistent with the ultimate configuration of Leisure Town Road (Jepson Parkway) which the City is currently implementing. The Jepson Parkway Improvement Project will provide a traffic signal	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		at this location with two through lanes in the northbound and southbound directions. Implementation of the mitigation would improve the intersection operations to LOS B or better in both peak hours.	
		TRAFF-5c At the Leisure Town Road (Jepson Parkway) / Elmira Road (#6) intersection, the City shall implement the following improvements: o Northbound – add a second left-turn lane and a second through lane. • Southbound – add a second through lane to provide one left-turn, two through and one right-turn lane. • Eastbound – add two left-turn lanes in addition to the existing through lane and right-turn lane. • Westbound – add a left-turn lane and a right-turn lane to the existing through lane.	Less than Significant
		TRAFF-5d At the Leisure Town Road (Jepson Parkway) / Marshall Road (#7) intersection, the project shall install a traffic signal and the City shall implement the following improvements: • Northbound – add a second through lane. • Southbound – add a second through lane. This mitigation is consistent with the ultimate configuration of Leisure Town Road (Jepson Parkway) which the City is currently implementing.	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		Implementation of the mitigation would improve the intersection operations to LOS D or better during both peak hours.	
		TRAFF-5e At the Leisure Town Road (Jepson Parkway) / Alamo Drive (#8) intersection, the City shall implement the following improvements: • Northbound – add a second through lane. • Southbound – add a second through lane. This mitigation is consistent with the ultimate configuration of Leisure Town Road (Jepson Parkway) which the City is currently implementing. Implementation of the mitigation would improve the intersection operations to LOS D or better during both peak hours. The Jepson Parkway Improvement Project would also add a southbound right-turn lane and a westbound right-turn lane to provide one left-turn, one through lane and one right-turn lane on the eastbound and westbound approaches.	Less than Significant
		TRAFF-5f At the Elmira Road / Nut Tree Road (#17) intersection, the City shall implement the following improvements: Southbound – restripe the inside southbound through lane to an exclusive left-turn lane, providing two left-turn lanes, one through lane and one shared through-right lane. Implementation of the changes in lane striping would	Significant and Unavoidable

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		improve the intersection operations to LOS D or better during both peak hours. However, the proposed geometrics may not be feasible for operational reasons. This intersection was identified as operating unacceptably in the General Plan EIR.	
4.7-7: Under Cumulative plus Project conditions, intersection operations would exceed LOS at one intersection.	Significant	**TRAFF-6** The City of Vacaville shall implement the following improvements to mitigate operations at the impacted intersection. The project shall pay in-lieu traffic fees to the City. Implementation of the mitigation would improve the intersection operations to LOS D or better during both peak hours. However, the proposed geometrics may not be feasible for operational and safety reasons. Additional right-of-way would not be available to provide additional lanes in a different configuration.	Significant and Unavoidable
4.7-8: Traffic volumes under Existing plus Approved plus Project conditions would be above the LOS C threshold on five study road segments. The project would cause traffic volumes to exceed the LOS C threshold on one of the five segments.	Significant	**TRAFF-7a** Widen Leisure Town Road (Jepson Parkway) to two through lanes in each direction between south of the Vanden Road and Elmira Road. This mitigation is consistent with the ultimate configuration of Leisure Town Road (Jepson Parkway) currently being implemented by the City. The mitigation would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours.	Less than Significant
		TRAFF-7b Widen Leisure Town Road (Jepson Parkway) to provide two lanes in each	Significant and Unavoidable

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		direction between Ulatis Road and Orange Drive. This mitigation is consistent with the ultimate configuration of the Jepson Parkway Concept Plan but is not part of the Jepson Parkway Road Widening Project which the City is currently implementing. The mitigation would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours.	
4.7-9: Traffic volumes under Cumulative plus Project conditions would be above the LOS C threshold on one study road segment.	Significant	**TRAFF-8** The City shall implement the following improvements and the project shall pay in-lieu fees to the City for the acquisition of necessary right-of-way and installation of the improvements: • Widen Leisure Town Road (Jepson Parkway) to two through lanes in each direction south of the Vanden Road/Leisure Town Road intersection. This mitigation is consistent with the ultimate configuration of Leisure Town Road (Jepson Parkway) currently being implemented by the City.	Less than Significant
4.7-10: Implementation of the proposed project under Existing plus Approved plus Project conditions would increase traffic volumes along study freeway	Less than Significant	None Required	Less than Significant

Table 2-1
Summary of Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
segments in the CMP system but would not exceed LOS thresholds of significance.			
4.7-11: Implementation of the proposed project under Cumulative plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	Less than Significant	None Required	Less than Significant

2.8 REFERENCES

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CHAPTER 3
PROJECT DESCRIPTION

3.0 INTRODUCTION

Regis Homes of Sacramento (project applicant) requests approval of various discretionary entitlements in support of the proposed Roberts' Ranch Specific Plan Project (proposed project), the reasonably foreseeable and potentially significant adverse environmental effects of which are evaluated in this Environmental Impact Report (EIR). Consistent with CEQA Guidelines Section 15124, this chapter includes: the location and boundaries of the proposed project as shown on a project location map and on a regional map; a statement of the objectives sought by the proposed project; a general description of the project's environmental characteristics, and supporting public utilities facilities; and a statement briefly describing the intended uses of the EIR, including a list of the agencies that are expected to use the EIR in their decision making, and a list of permits and other approvals required to implement the project.

Information has been provided by the project applicant and City of Vacaville (City) planning staff. The following project description serves as the basis for the environmental analysis contained in this EIR. The City will serve as the lead agency with final authority to approve the proposed project and certify the EIR.

3.1 PROJECT SITE

Location and Surrounding Land Uses

The approximately 248-acre project site is located in northern Solano County adjacent to the southeastern corner of the City of Vacaville approximately four miles from Downtown Vacaville, as shown in Figure 3-1, Regional Location. The project site is located inside of the City of Vacaville's proposed Sphere of Influence and straddles the City's Urban Growth Boundary (UGB), with urban uses located inside of the UGB and non-urban open space uses outside of the UGB.

The project site is bounded by Leisure Town Road on the west, Alamo Drive extension and Fry Road on the South, the Union Pacific Railroad right-of-way on the east, and the approved Brighton Landing project in the City of Vacaville to the north, as shown in Figure 3-2, Project Location.

Adjacent land uses include a single-family residential development directly west of the project site across Leisure Town Road. The recently approved Brighton Landing project currently under construction is located directly north of the project site, with undeveloped land currently primarily in agricultural use to the south across Alamo Drive Ext and Fry Road. The Union Pacific Railroad tracks and undeveloped land in agricultural use is located to the east. The City's existing detention basin is located adjacent to the northeast corner of the project site.

Project Background

The project site is part of the East of Leisure Town Road Growth Area as defined in the City's General Plan. This is one of two New Growth Areas identified in the General Plan for future development. However, the project site is located within unincorporated Solano County and, as part of this project, would be annexed to the City. The East of Leisure Town Road Growth Area is within the City's UGB, which limits the location of urban development within the City until 2028. Therefore, the area east of the project site is currently set aside for continued long term agriculture use, and is protected by a 500-foot buffer zone to minimize any potential incompatibility between agriculture and residential uses included within the proposed project.

Project Site Characteristics

Existing Uses and On-Site Characteristics

The topography of the project site is flat and located approximately 85 feet above mean sea level. The site is currently used for row crops and historically crops gown include alfalfa and tomatoes. There is an existing PG&E easement in the eastern portion of the site for 500 kilovolt (kV) and 230 kV overhead transmission lines that are part of the statewide electrical system. In addition there is a Solano Irrigation District (SID) irrigation canal that traverses the site from east to west. Two vehicle staging areas (parking areas) composed of gravel and compacted dirt are located in the northeast corner of the site with access from Leisure Town Road and near the center of the site. There are no trees or buildings present on the site.

Solano County General Plan and Zoning Designations

The project site is designated Agriculture in the 2008 Solano County General Plan and also zoned A-40, Exclusive Agricultural 40 acres (Solano County 2008).

City of Vacaville General Plan and Zoning Designations

The project site is designated as a future Specific Plan in the City's General Plan and also designated as a growth area as part of the East of Leisure Town Road Growth Area (City of Vacaville 2015). The City's Land Use Designations figure (City of Vacaville 2015, Figure LU-6) designates various portions of the project site Residential Low Density (3.1-5 units/acre), Residential Low-Medium Density (5.1-8.0 units/acre), Schools, Agricultural Buffer, and Public Open Space. The project site does not currently include City of Vacaville zoning because it is located outside of the City limits. The project applicant is requesting the site be pre-zoned Residential Low Density (RL-5 & RL-6), Residential Low Medium Density (RLM-3.6 & RLM-4.5) and Community Facilities (CF) with an Agricultural Buffer overlay zone over portions of the publicly owned lands.

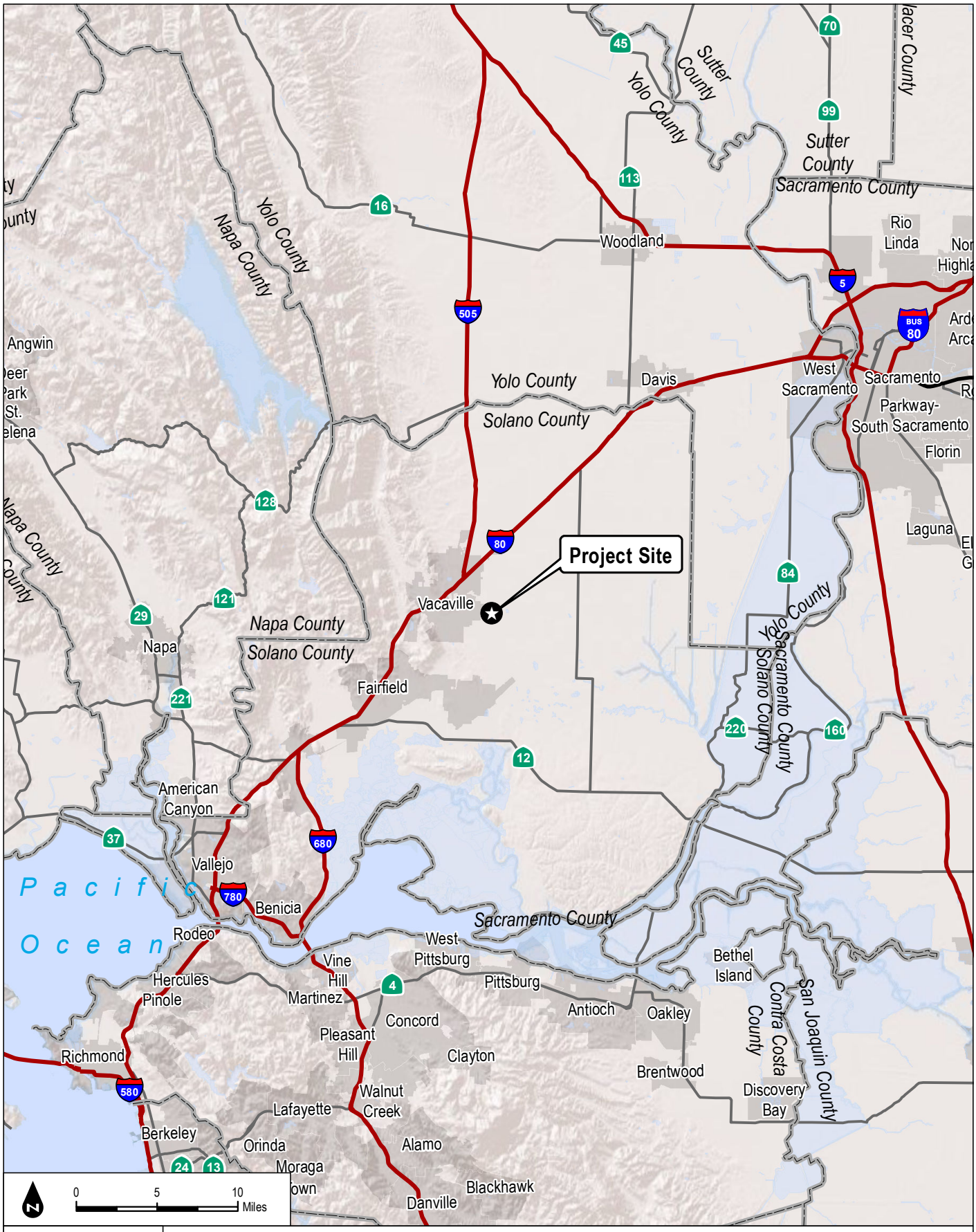

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FIGURE 3-1

Regional Location Map

Roberts' Ranch Specific Plan EIR

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SOURCE: Bing Maps 2016

FIGURE 3-2

Project Location

Roberts' Ranch Specific Plan EIR

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Travis Air Force Base Land Use Compatibility

The project site is located within the Travis Air Force Base Land Use Compatibility Plan (LUCP). The LUCP establishes policies for noise, safety and airspace protection for uses near the airport. The project site is located in Compatibility Zone D, which only places a limitation on the height of structures within this zone and establishes procedures for the evaluation of potential wildlife attracting uses within close proximity to the base facility.

3.2 PROJECT OBJECTIVES

CEQA requires an EIR to include a statement of objectives for the project, including the underlying purpose of the project. These objectives help the lead agency determine the alternatives to evaluate in the EIR (CEQA Guidelines, Section 15124, subd. (a)). The following is a list of objectives for the proposed project:

- Provide for the orderly, well planned, and balanced development of future projects in the East of Leisure Town Road Growth Area, consistent with the City's growth projections and policies, and consistent with the City's envisioned urban form for the East of Leisure Town New Growth Area, as included in the City's General Plan adopted in August 2015.
- Support the City's long-range growth plans for new growth areas by directing growth to areas identified as priority for urban growth in the General Plan and to support the orderly provision of City services to this new growth area.
- Support the City's General Plan policies, including the encouragement of moderate-density housing and a variety of housing designs.
- Support improvements to Leisure Town Road (Jepson Parkway), including planning and funding for development of frontage roadway features and landscaping.
- Provide public benefits such as stroller parks, schools, multi-use trails, dedicated open space and recreational areas, and pedestrian and bike connectivity to enhance the City's existing recreational opportunities.
- Provide unique open spaces designed to provide compatible recreational opportunities adjacent to agricultural buffers and flood control facilities, to create innovative features within a well-planned residential community.
- Provide infrastructure and services that meet City standards and are integrated with existing and planned facilities and connections.
- Create livable residential neighborhoods through the use of high quality building materials and design standards and through high quality pedestrian and bike facilities within the project.

- Support the implementation of sustainability features to encourage efficient use of the project site through building and landscape designs.

3.3 PROPOSED PROJECT

The Roberts' Ranch Specific Plan includes approximately 785 single-family residences with an average density of 3.2 dwelling units/acre (du/ac), parks, 25 acres of open space and trails, and a future 16.5-acre school site, as shown on Figure 3-3, Land Use Plan. The proposed project includes four neighborhoods (or villages) that each contain one or two small "stroller parks" connected by a 10-foot wide multipurpose trail system designed to link all the parks together. Residential densities include Residential Low Density (RL) with lots that range from 5,000 to 10,000 square feet (sf) and Residential Low Medium Density (RLM) with lots that range from 3,600 to 4,500 sf. As shown in Table 3-1, there would be approximately 2.5 acres in stroller parks, and 27 acres in open space and agricultural buffers designated as Open Space (OS) and zoned Community Facilities (CF). A copy of the Roberts' Ranch Specific Plan is included on the City's website: www.cityofvacaville.com/RobertsRanch.

The Specific Plan is designed to complement and connect to the Brighton Landing project located adjacent to the northern boundary of the project site. This includes tying into the Brighton Landing street system to create additional north/south connections, connecting to public utilities sized to accommodate both projects, providing trail connections in the open space area, and adding acreage to the proposed school site in Brighton Landing to ensure that the project accommodates the site requirements of the Vacaville Unified School District.

Table 3-1 provides a breakdown of residences by village or neighborhood.

Table 3-1
Proposed Project Land Use Summary

General Plan Land Use Designation	Proposed Zoning	Acres[1]	Residential Units[1]	Average Density (du/ac)[1]
Neighborhood 1				
RLM	RLM 3.6	12.9	69	5.3
CF (stroller park)	CF	0.6+	NA	NA
RL (frontage zone)	RLM4.5[2]	16.1	59	3.7
	Subtotal	*29.6*	*128*	*4.3*
Neighborhood 2				
RL	RL-6	55.6	210	3.8
CF(stroller park)	CF	1.2+	NA	NA
RL (frontage zone)	RLM 4.5[2]	19.7	75	3.8
	Subtotal	*76.5*	*285*	*3.7*

Table 3-1
Proposed Project Land Use Summary

General Plan Land Use Designation	Proposed Zoning	Acres[1]	Residential Units[1]	Average Density (du/ac)[1]
Neighborhood 3				
RL	RL-6	63	243	3.9
PK (stroller park)	CF	1.1+	NA	NA
RL (frontage zone)	RLM4.5	8.4	29	3.5
	Subtotal	*72.5*	*272*	*3.8*
Neighborhood 4				
RL	RL-5	19.5	100	5.1
SCHOOL- MS	CF	16.5	NA	NA
	Subtotal	*36*	*100*	*2.8*
General Land Uses				
Various (Boundary frontage R.O.W)	CF	5.7	NA	NA
OS (Agricultural Buffer, Open Space, Community Park)	CF	21.2	NA	NA
	Subtotal	*26.9*	*NA*	*NA*
	Project Total	**241.6**	**785**	**3.2**

Notes:
1 All acreage and unit counts are preliminary in nature and may be subject to change.
2 RLM 4.5 zoning is a compatible use with the General Plan Land Use RL.
Source: Roberts' Ranch Specific Plan 2016.

A more detailed description of the various land uses within the Roberts' Ranch Specific Plan is described below.

Residential Uses

The proposed project includes a total of approximately 192 acres designated for residential uses that would support up to 785 units. The RLM units would be located in the northwest portion of the project site with the remainder of the site designated RL. Approximately 70% of the residential units would be designated RL with the remaining 30% designated RLM. Based on the number of residential units the project would accommodate a total of approximately 2,151 residents.[1]

Residential units would comprise a variety of architectural styles reflective of the architectural character represented in Downtown Vacaville and in the American West. The preferred architectural styles include: American Traditional, Farmhouse, Craftsman/Bungalow, European Cottage, California Ranch House, Spanish Colonial, and Contemporary. Please see the City's

[1] Based on the City's persons per household (pph) of 2.74 (City of Vacaville 2015).

website (www.cityofvacaville.com/RobertsRanch) for more specifics on the proposed architectural styles, building colors, and building materials.

Parks, Trails, and Open Space

Approximately 28 acres of parks and open space are proposed along with approximately 26 acres in parkway. The smaller, “stroller parks” are proposed throughout the project site within each of the villages. In addition, a 10-foot-wide multi-purpose trail would be located adjacent to both sides of the north and south and east and west major collector roadways that bisect the plan area within a 30-foot wide parkway. The plan also includes a 10-foot-wide parkway on each side of the minor roadways with a 5-foot-wide sidewalk.

A description of parks, trails and open space is provided below.

Parks

A total of five small parks approximately one half acre in size are proposed throughout the project site. These stroller parks would include entry features, signage, shaded group seating, public art, themed plant collections, special paving, and motion sensing lights. Some of the parks may include play equipment for children aged 2-6 years old and the parks would all include tube steel fencing at street entries to enclose the play areas.

Trails

An off-street, multi-use trail system would be provided in the open space area located in the eastern portion of the project site. The open space trail system would be universally accessible, with a 10 foot wide concrete or asphalt path including aprons of gravel or crushed rock providing a consistent 12 foot wide clearance and all-weather access for public safety and maintenance vehicles. This trail would provide a connection to the Brighton Landing project to the north and the City’s detention basin to the east.

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FIGURE 3-3
Land Use Plan

Roberts' Ranch Specific Plan EIR

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Open Space

Over 20 acres of open space, including the 500-foot agricultural buffer is proposed along the eastern boundary of the plan area. This area is envisioned to include a mix of uses such as hiking, biking, horseback riding and other open space activities, group picnic facilities, dog park, community gardens, environmental education facilities, and observation points that interface with the adjacent detention basin and provide an interpretive experience and environmental art regarding Central Valley ecosystems and history. Programming of open space amenities would be reviewed by City of Vacaville Community Services Commission, and approved by City Council as part of improvement plans. The open space area would also provide a location for a future City well site, located in the southern portion of the area, closer to Fry Road.

Circulation System

The Specific Plan includes a transportation network to serve vehicles, pedestrians, bicyclists, and access to transit. The transportation network would tie into the City's existing roadway network including connections to Leisure Town Road and Fry Road to the south and west, and the approved Brighton Landing roadway network to the north. No roadways are proposed to the east due to the PG&E easement and the railroad tracks. The on-site roadway network would consist of a two-lane divided arterial, major collector – undivided, minor collector, and a series of 2-lane undivided neighborhood serving streets, as shown on Figure 3-4, On-Site Roadway Network. All on-site roads would include sidewalks or a multi-purpose trail to accommodate pedestrians and bicyclists. Bicycle racks would be provided at the school site, at the stroller parks and access to the open space area. Multi-purpose trails are proposed also along Leisure Town Road, Alamo Drive Extension and Fry Road. The proposed project includes dedicating land adjacent to Leisure Town Road to the City for future expansion of this roadway. A series of traffic circles are proposed along the main north/south arterial connecting Fry Road to Brighton Landing, and along the major and minor collector road that provide the primary east/west connection.

The proposed project includes space along the arterial and major collector roads to accommodate future transit stop facilities. In addition, sidewalks and multi-purpose trails would provide safe pedestrian access to future transit stops. At this time the project site is not served by transit, but future locations for transit stops are provided as part of the Specific Plan once transit service is extended to areas east of Leisure Town Road.

The various roadway types are described below.

Major Collectors and Divided Two-Lane Arterials

The major collector and divided arterials would provide the primary circulation north and south and east and west throughout the plan area. The divided two-lane arterials would consist of two

20-foot-wide travel lanes with a 16-foot-wide center median. The undivided major collector would be the same as the divided two-lane arterial except it would not include a center median. A 10-foot-wide multi-purpose trail would be located adjacent to both sides of the roadways within a 30-foot-wide parkway.

Minor Collectors and Residential Roads

The minor collectors are characterized by a 40-foot-wide pavement area with a 10-foot-wide parkway on each side containing a 5-foot-wide sidewalk. The residential roads would consist of 36 feet of pavement area with parking on both sides along with a 10-foot-wide parkway and 4.5-foot-wide sidewalk. Some of these residential roads include separated sidewalks with a landscaped median between the road and the sidewalk.

Public Infrastructure and Services

Water and sewer services would be provided by the City. The proposed project would include new water, sewer, and storm drain infrastructure on site to serve the residential development designed in compliance with City specifications. Currently there are no water, sewer, or storm drain facilities within the project site, only an irrigation canal. The project's on-site water, sewer, and storm drain lines are proposed to be located within the road/driveway rights-of-way within the project site.

The public utilities within the Brighton Landing project have been sized and located to connect with the proposed project in specific areas, as shown in Figures 3-5, 3-6, 3-7, and 3-8.

Water Supply

Existing water lines are located in Leisure Town Road that the project would tie into as well as connecting to water lines within the Brighton Landing project to the north to provide a looped system. The project would install a water main within Fry Road that the project's on-site water system would tie into. This establishes Fry Road up as a looped redundant water supply that connects with the water line in Leisure Town Road.

Residences would be served by a series of 8-inch and 12-inch water lines to be located with the project roadways.

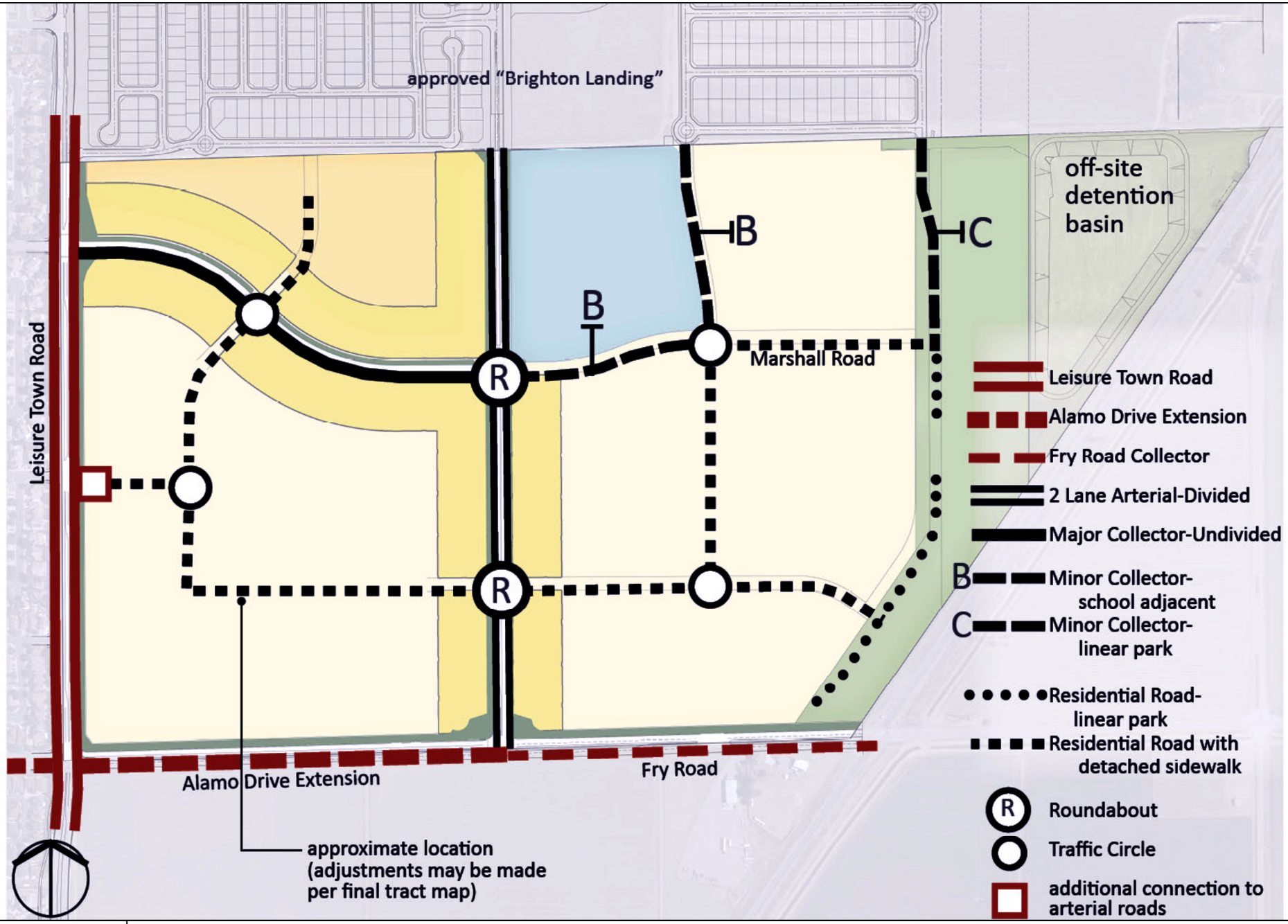

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FIGURE 3-4

On-site Roadway Network

Roberts' Ranch Specific Plan EIR

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FIGURE 3-5

Water Master Utility Plan

Roberts' Ranch Specific Plan EIR

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FIGURE 3-6

Sanitary Sewer Master Utility Plan

Roberts' Ranch Specific Plan EIR

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FIGURE 3-7

Storm Drain Master Utility Plan

Roberts' Ranch Specific Plan EIR

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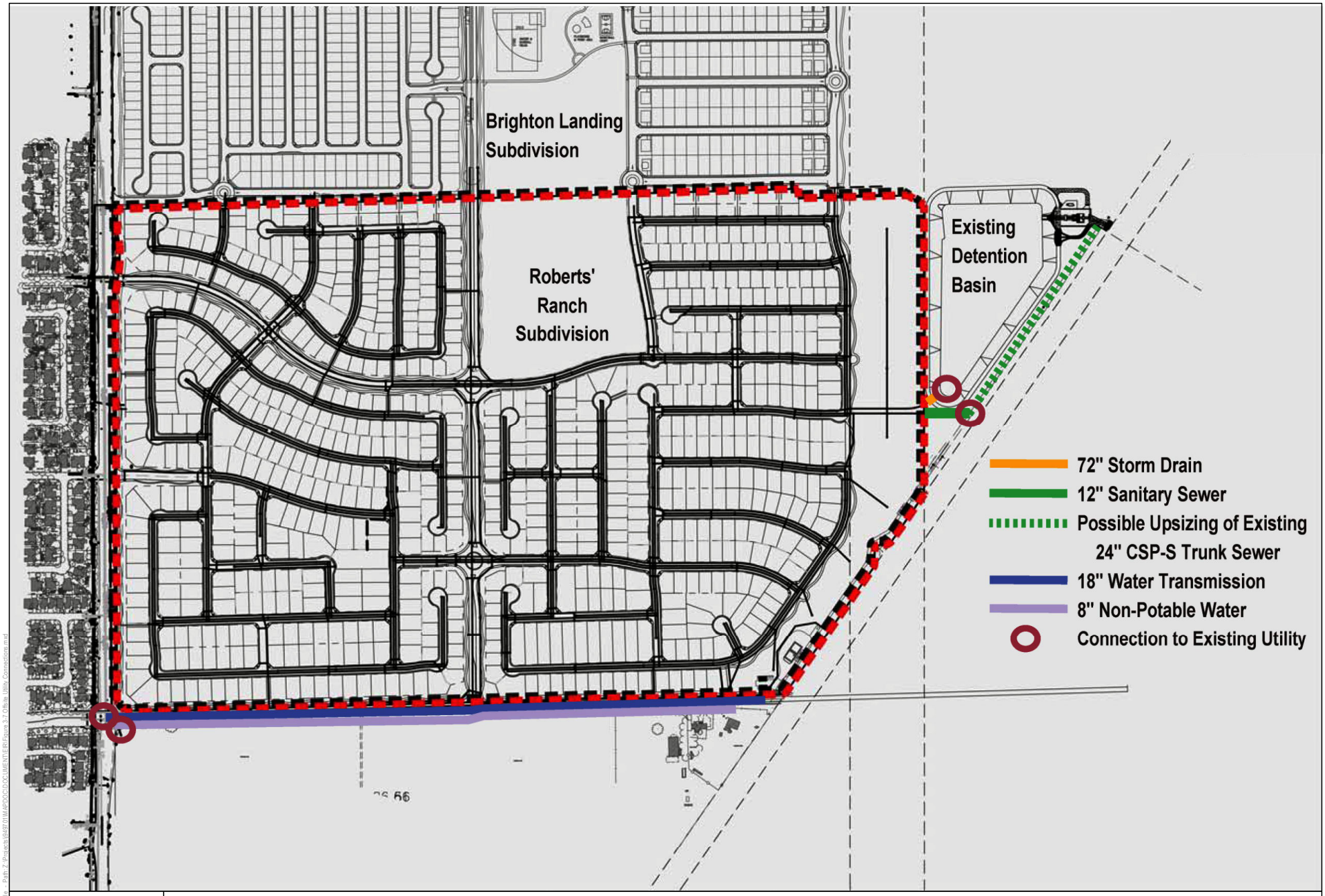

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FIGURE 3-8

Off-site Utility Connections

Roberts' Ranch Specific Plan EIR

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The non-potable or irrigation supply for public areas of Roberts' Ranch is anticipated to be eventually served by a recycled water system. All supply lines, valves, and sprinkler heads are required to be marked as such, and public landscapes signed to indicate the use of recycled water. In general, primary non-potable water mains would be located within Leisure Town Road, Fry Road, the project's major collector road, two-lane arterial road, and Marshall Road from Leisure Town Road to the two-lane arterial, creating a non-potable looped system. This system is expected to interconnect with the system to the north at Leisure Town Road, as well as to Brighton Landing to the north via the two-lane arterial. Until recycled water is available, the project's irrigation water will be provided by the City's potable water system.

Sewer

Existing trunk sewer lines are located adjacent to the Union Pacific Railroad tracks and along Fry Road (UPRR). Sewer from the project would be conveyed to the new, combined Alamo/Fry trunk line / CSP-S trunk line (upsized for increased capacity, also known as project DIF-54), where capacity is available to serve the project. The Brighton Landing Sewer system was designed to convey the on-site sewer flow to the southeast corner of the project site, adjacent to the northeast corner of the proposed project site. Therefore, any sewer flows from the project site, not conveyed to the connection with the existing Alamo / Fry trunk sewer would be conveyed to this location. At this location, sewer lines would either connect to the existing trunk sewer or be combined with the Brighton Landing sewer flows and conveyed east to the Easterly Wastewater Treatment Plant. Site-specific conditions may require that the sewer will extend parallel to the UPRR on the east side of the existing detention basin to a point of connection north of the detention basin, to be determined based on project schedule.

The project would install 8-inch sewer lines within all roadways to service the residences.

Storm Drainage and Stormwater Quality

With the development of the Brighton Landing project, a detention basin was constructed by the Brighton Landing project located adjacent to and east of the PG & E power lines. This regional basin was constructed to serve build-out of both the Brighton Landing and Roberts' Ranch projects (nearly 400 acres+/-). The on-site storm drain pipes connecting to the detention basin would range in size starting at the detention basin and gradually decrease in size as the storm drain system extends west to the upper ends of the system.

Discharge from the basin is through use of a public pump station that discharges into the Frost Spill, a small drainage way paralleling the railroad tracks that conveys storm water north to Old Alamo Creek. The pump station has been constructed by the Brighton Landing project. The final high flow pumps completing the ultimate build-out of the pump station would be installed by the

project. This pump station improvement would provide the capacity to accommodate post development flows from both the Brighton Landing and Roberts' Ranch developments.

As required by the Regional Water Quality Control Board the proposed project would prepare a Stormwater Pollution Prevention Plan (SWPPP) that addresses water quality along with identifying Best Management Practices (BMPs) designed to implement and maintain procedures outlined in the SWPPP. Policies 7.5.1a through 7.5.1c contained in the Specific Plan address implementation during both project construction and project operation, including Source Control BMPs, Treatment Control BMPs, and Post-Construction BMPs (see the City's website for more information www.cityofvacaville.com/RobertsRanch). Sediment and other particulates would be controlled using the detention basin as a volume based water quality device.

Solid Waste Disposal

Most residents and businesses in the City of Vacaville are served by Recology Vacaville Solano for solid waste collection and disposal. Recyclable material generated by the project would be taken to the Recology Vallejo facility located in Vallejo. Unrecyclable solid waste is taken to the Hay Road Landfill located in unincorporated Solano County.

Police and Fire Services

The project site would be served by the Vacaville Police Department once annexed to the city, from the main police station located in downtown Vacaville and the recently completed fire station in the Southtown project (Station 75, Vanden and Cogburn Circle). Prior to completion of this new station the project applicant is required to prepare and file with the City of Vacaville fire department an Emergency Access and Evacuation Plan for each phase of the project. Emergency secondary access would be available in all phases of project development to address the requirements of the fire department.

Schools

The proposed project site is located within the Vacaville Unified School District. To provide for a future school, the project includes 16.5 acres set aside for an intermediate school to complement the proposed K-6 school proposed as part of the Brighton Landing project. The school district is currently preparing a master plan to address school needs in the area east of Leisure Town Road. If the district accepts the site for a future school it is anticipated the district would purchase the site.

Landscaping and Exterior Improvements

The proposed project includes a number of public features including trail markers, decorative masonry walls, enhanced paving, and signage to allow wayfinding throughout the project site. The specific plan includes a detailed description of design standards and guidelines for these features and is available for review on the City's website: www.cityofvacaville.com/RobertsRanch. In addition, the proposed traffic circles would provide elements for decorative planting and built elements to create an area of visual interest.

Landscaping

Landscaping would be water efficient and drought tolerant and would conform to the City's Water Efficient Landscape Regulations. All landscape areas would use sub-surface irrigation, low-flow nozzles, and emitters and be equipped with weather sensitive irrigation controllers. Large expanses of turf and fast growing trees and shrubs are discouraged. Plants would be climate adapted, such as herbaceous shrubs, succulents, and ornamental grasses, and would be grouped according to hydrozones, characterized by similar water needs and sun exposure. Trees are proposed along all roadways and within the adjacent parkways.

Walls/Fences

Walls and fences proposed throughout the project include 6-foot-high decorative masonry walls in areas where public land is adjacent to private land; 6-foot-high wood fences where private yards are adjacent to public roads; other more open style fencing is proposed in areas where residential yards front onto stroller parks, for example.

Lighting

The proposed project includes street lights along all roadways and with the stroller parks and open space area. Lights in the parks and at the entrance to the open space would be low level lighting such as bollards. Standard streets lights would be located along residential streets and the adjacent sidewalk/trail areas. All lighting would be shielded to prevent light spillover onto adjacent residences. No lighting is proposed in the open space area.

Natural Gas, Electricity, Cable, and Telephone

The project also includes natural gas, electrical, cable television, and telephone to serve the project site. Gas and electric would be provided by PG&E. Telephone service would be provided by SBC and cable services would be provided by Comcast. All new utilities would be installed underground, per the City's Municipal Code and the existing overhead PG&E lines would be installed underground, if feasible.

Sustainable Project Features

The proposed project includes a variety of sustainable features including the following:

- Ensure bike trails connect with the Citywide Bikeway Plan.
- Provide convenient pedestrian access to (future) transit stops.
- Use existing drainage corridors where possible and incorporate existing corridors into the project's overall grading and drainage design.
- Where possible and consistent with City standards, minimize the amount of water run-off through the use of open swales, rain gardens, permeable paving, and other similar methods.
- Limit the use of landscaped turf areas and use drought-tolerant and native species with drip irrigation systems in public landscape areas.
- Consider placing large deciduous trees next to buildings to provide cooling in the summer and additional heat from the sun in the winter.
- Use of roof integrated solar panels and large roof overhangs to create shade.
- Development of rain gardens and use of cisterns to capture rainwater.
- Use of recycle water for irrigation.
- Energy-efficient appliances, consistent with state and local laws.
- Consider solar orientation in architectural design and use landscaping, prevailing winds, shade, and sun screens to minimize solar heat in the summer and maximize solar heat gain in the winter.
- Shaded courtyards and outdoor rooms are encouraged to promote air flow within buildings and reduce the need for air-conditioning.

Off-Site Improvements

Potential off-site improvements are limited to utility and infrastructure extensions needed to connect to existing facilities, as shown in Figure 3-7. The project would provide a drainage connection to the existing Brighton Landing detention basin, located adjacent to the site. The sewer main connection to the City's trunk sewer may require an off-site extension of the main, between the detention basin and the UPRR to an existing point of connection, unless the City completes a planned extension of the trunk sewer south to a point closer to the Roberts' Ranch project site first. Off-site roadway improvements are not anticipated as part of the project. Public improvements are more fully described in the sections above.

Construction Details, Phasing, and Timeline

If approved, project construction is anticipated to commence in Spring/Summer 2018. The project is proposed to be developed in phases, as shown on the illustrative phasing plan included as Figure 3-9. Development would be phased starting in the south going north, with the second phase starting within the eastern portion of the site. The last phase is proposed in the western portion of the site. Land not under construction would remain actively farmed until it is cleared for development. For each phase of construction site clearing, grading, and trenching for utilities would begin first followed by construction of the roadways and residences. The project would be built-out consistent with market demands over an estimated 10 years. This plan is also subject to City revision over time. Grading would balance the soils on site and would not require the export or import of soils. Construction staging and parking for construction workers would be provided on-site.

3.4 DISCRETIONARY ACTIONS AND USE OF THIS EIR

As part of the approval process, the City of Vacaville City Council would be required to exercise their independent review and discretion in determining whether to certify the EIR as adequate under CEQA and approve the project. The project approvals required from the City for this project include the following:

- Adopt the Roberts' Ranch Specific Plan;
- (Pre) Zone the project site, including approval for annexation;
- Tentative subdivision map creating the subdivision of land;
- Adopt the Development Agreement; and
- Planned Development, Park Design Review approval, and subsequent residential design review approvals for the project.

Responsible and Trustee Agencies

The EIR prepared for the proposed project would be used by responsible agencies and trustee agencies that may have some approval authority over the proposed project (i.e., to issue a permit). The project applicant would obtain all permits, as required by law. The following agencies have been identified as having potential discretionary authority over approval of certain project elements, or alternatively, may serve in a ministerial capacity:

- California Department of Fish and Wildlife;
- Solano County;
- Central Valley Regional Water Quality Control Board;

- Solano County Local Area Formation Commission;
- Yolo-Solano Air Quality Management District;
- Solano County Airport Land Use Commission land use compatibility determination; and
- Solano Irrigation District.

3.5 REFERENCES

City of Vacaville. 2015. *City of Vacaville General Plan.* Adopted August 11, 2015. Resolution 2015-074.

City of Vacaville. 2015. *Roberts Ranch Specific Plan*. October 31, 2016.

Solano County. 2008. *Solano County General Plan.* Adopted August 5, 2008. Accessed September 14, 2016. http://www.co.solano.ca.us/depts/rm/planning/general_plan.asp.

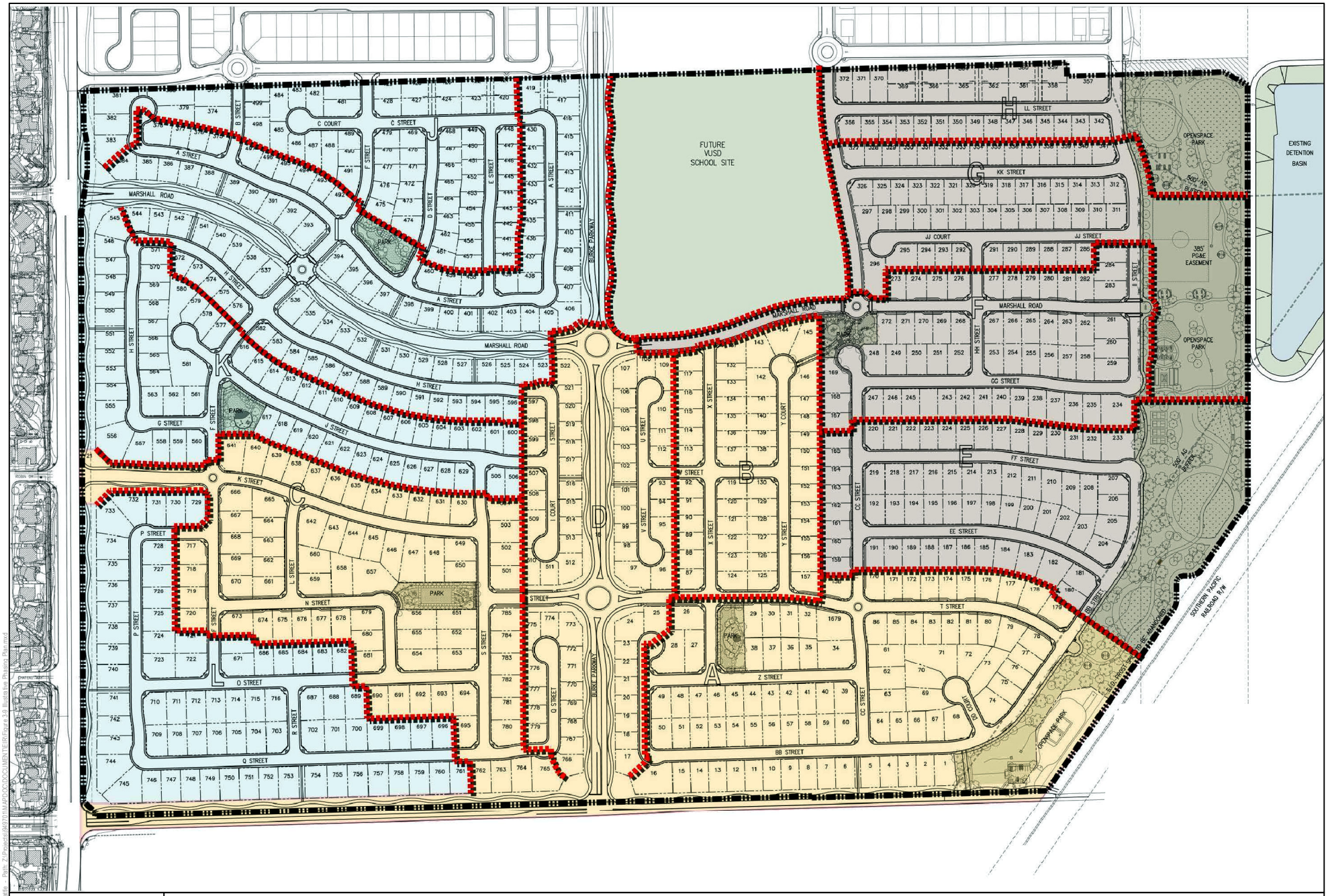

FIGURE 3-9

Illustrative Phasing Plan

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Roberts' Ranch Specific Plan EIR

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CHAPTER 4
ENVIRONMENTAL ANALYSIS

4.0 INTRODUCTION

Scope of the EIR Analysis

This chapter of the Draft Environmental Impact Report (EIR) discusses the environmental and regulatory setting, impacts, and mitigation measures for each of the following technical issue areas (Sections 4.1 through 4.7):

4.1 Air Quality
4.2 Biological Resources
4.3 Cultural Resources
4.4 Hydrology, Drainage, and Water Quality
4.5 Land Use and Planning
4.6 Public Utilities
4.7 Transportation and Circulation.

Environmental Setting

According to subdivision (a) of Section 15125 of the California Environmental Quality Act (CEQA) Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project as they exist at the time when the Notice of Preparation (NOP) is published. This “environmental setting” will normally constitute the “baseline condition” against which project-related impacts are compared. Therefore, the baseline conditions for this EIR, unless noted otherwise, are based on conditions that existed in November 2015, when the NOP was published. The CEQA Guidelines recognize that the data for establishing an environmental baseline cannot be rigid. Because physical environmental conditions may vary over a range of time, the use of environmental baselines that differ from the date of the NOP is reasonable and appropriate in certain circumstances when doing so results in a more accurate or conservative environmental analysis.

Section Format

Each section begins with a description of the project’s **environmental setting** and **regulatory setting** as it pertains to a particular issue.

The regulatory setting provides a summary of applicable federal, state, and local regulations, plans, policies, and laws that are relevant to each issue area. The regulatory setting description in each section is followed by a discussion of project-level **impacts**. The project-specific impacts discussion is followed by an analysis of the **cumulative impacts** of the

project. This section addresses what the project's incremental contribution to cumulatively significant impacts would be and identifies mitigation measures if required. The impact portion of each section includes an impact table or box, prefaced by a number for ease of identification that includes an impact statement followed by a list of applicable policies or regulations. An explanation of each impact and an analysis of its significance follow each impact statement. All **mitigation measures** are identified at the end of each impact discussion. The degree to which the identified mitigation measure(s) would reduce the impact is also described. Compliance with applicable laws, policies, and City regulations is assumed and will be identified in the impact analysis. In many cases, compliance with applicable laws, policies, or regulations would reduce the significance of an impact.

An example of an impact statement is shown below.

4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. This would be a potentially significant impact.

A discussion of potential impacts of the proposed project is presented in paragraph form. The project-specific impacts associated with construction and operation of the project are evaluated and compared to the threshold of significance for the particular impact. The analysis discusses the applicable local, state, and federal laws and regulations that would reduce impacts, and assumes that the project would comply with applicable laws, ordinances, and regulations, and that the project applicant would obtain all necessary permits and comply with all required conditions of those permits. In many instances, the actions that are necessary to reduce a project impact are already required by existing laws or requirements. The impact analysis concludes with a determination of the impact's significance in **bold type** (e.g., **significant impact/significant and unavoidable impact/potentially significant impact/less-than-significant impact/results in no impact)**.

Mitigation Measures

Following each impact analysis is a discussion of the applicable mitigation measures identified to reduce the significance of an impact, if required.

In Chapter 4, this section includes a statement indicating whether the mitigation measure will reduce the impact to a less-than-significant level. A discussion of how the mitigation would reduce the impact is included before the mitigation measure.

Mitigation measures, if applicable, are numbered and presented in the following format.

BIO-1: Statement of what, if any, mitigation measures are required.

Note that CEQA Guidelines, Section 15370, defines mitigation as:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree of magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

In addition, provided there is a "reasonable plan for mitigation" and contributions are "sufficiently tied to the actual mitigation" of the project's impacts, a commitment to contribute a fair share to such a program discharges an agency's mitigation duty under CEQA (*Save Our Peninsula Com. v. Monterey County Bd. of Supervisors,* (2001) 87 Cal.App.4th 99, 141); see also CEQA Guidelines, Section 15130, subd. (a)(3) ([recognizing that a project's contribution to a cumulative impact may be less than cumulatively considerable where "the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact"]). See also *Anderson First Coalition v. City of Anderson,* (2005) 130 Cal.App.4th 1173).

Cumulative Analysis

An analysis of cumulative impacts follows the evaluation of project impacts under existing conditions in each section in Chapter 4. As defined in CEQA Guidelines, Section 15355, cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project together with other past, present, and reasonably foreseeable projects causing related impacts. An introductory statement that defines the cumulative analysis methodology and the cumulative context being analyzed for respective sections (e.g., buildout of the City's General Plan, development within the Sacramento Valley Air Basin) is included under the "Cumulative Analysis" discussion. In some instances, a project-specific impact may be considered less than significant, but would be considered potentially significant in combination with other development within the surrounding area. Or, in some instances, a potentially significant impact could result on a project level, but would not result in a cumulatively considerable impact. The cumulative impacts analysis is presented in the same format as the impacts section, shown above.

Terminology Used in the EIR

This Draft EIR uses the following terminology to describe environmental effects of the proposed project:

- **Standards of Significance:** A set of criteria used by the lead agency to determine at what level or "threshold" an impact would be considered significant. Standards of significance used in this EIR include those set forth in CEQA Guidelines Section 15065 (Mandatory Findings of Significance) and those derived from questions set forth in Appendix G to the CEQA Guidelines; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals and policies identified in the City of Vacaville General Plan. In fashioning criteria based on these sources, City staff have also relied on their own professional judgment and experience in some instances. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, state, and local regulations and ordinances.
- **Less-than-Significant Impact:** A project impact is considered less than significant when it does not reach the standard of significance, indicating that there would be no substantial change in the environment. No mitigation is required for less-than-significant impacts.
- **Potentially Significant Impact:** A potentially significant impact is an environmental effect that could cause a substantial adverse change in the environment; however, additional information is needed regarding the extent of the impact to make the determination of significance. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact.
- **Significant Impact:** A project impact is considered significant if it results in a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects in the context of specified significance criteria. When available, potentially feasible mitigation measures and/or project alternatives are identified to reduce these effects to the environment.
- **Significant and Unavoidable Impact:** A project impact is considered significant and unavoidable if it results in a substantial adverse change in the physical conditions of the environment and there are no potentially feasible mitigation measures and/or project alternatives available to reduce these effects to less than significant.
- **Cumulative Impacts:** According to CEQA, "cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). CEQA requires that cumulative impacts be discussed when the "project's incremental effect is cumulatively considerable" (CEQA Guidelines, Section 15130 (a)).

4.1 AIR QUALITY

4.1.1 Introduction

This section describes the project's impacts on air quality and the project's contribution to regional air quality emissions, identifies associated regulatory requirements, and evaluates potential impacts and identifies mitigation measures required (if any) during implementation of the Roberts' Ranch Specific Plan Project (proposed project).

A number of comments regarding air quality were received from the Yolo-Solano Air Quality Management District (YSAQMD) in response to the Notice of Preparation (NOP), which included recommendations for the air quality assessment approach to discuss whether the project design incorporates features that could reduce vehicle trips and support the use of clean technology vehicles, ensuring on-street bike lanes are included in the project circulation design, and that the environmental analysis include an assessment of potential toxic air contaminants (TACs) and odor exposure and impacts. All of the air quality concerns raised during the NOP process are addressed in this section. A copy of the NOP and letters received in response to it are included in Appendix A. The air quality model outputs are included in Appendix C.

The background information and impact analysis presented in this section is based on proposed project plans, the California Emissions Estimator Model (CalEEMod) (used to estimate project emissions), the *City of Vacaville General Plan* (City of Vacaville 2015a) and *City of Vacaville General Plan and Energy and Conservation Action Strategy Final EIR* (City of Vacaville 2014), and the YSAQMD *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007). A copy of the Roberts' Ranch Specific Plan is available on the City's website at http://www.ci.vacaville.ca.us/index.aspx?page=874.

4.1.2 Environmental Setting

Ambient air quality is generally affected by climatological conditions, the topography of the air basin, the type and amounts of pollutants emitted, and, for some pollutants, sunlight. The proposed project site is located the within Sacramento Valley Air Basin (SVAB). Topographical and climatic factors in the SVAB create the potential for high concentrations of regional and local air pollutants. This section describes relevant characteristics of the air basin, types of air pollutants, health effects, and existing air quality levels.

The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, Yolo, and portions of Solano and Placer counties. The SVAB extends from south of Sacramento to north of Redding and is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The San Joaquin Valley Air Basin is located to the south.

Climate and Topography

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the valley. During the year the temperature may range from 20 to 115 degrees Fahrenheit (°F) with summer highs usually in the 90s and winter lows occasionally below freezing. The high average summer temperatures, combined with very low relative humidity, produces hot, dry summers that contribute to ozone (O_3) buildup. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

Weather patterns throughout the SVAB are affected by geography. Mountain ranges tend to buffer the basin from the marine weather systems that originate over the Pacific. However, the Carquinez Strait creates a breach in the Coast Range on the west of this basin, which exposes the midsection of the SVAB to marine weather. This marine influence moderates climatic extremes, such as the cooling that sea breezes provide in summer evenings. These breezes also help to move pollutants out of the valley. During about half of the days from July to September, however, a phenomenon called the “Schultz Eddy” prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. This effect exacerbates the pollution levels in the area and increases the likelihood of violating federal or state standards. The effect normally dissipates around noon when the delta sea breeze arrives.

The mountains surrounding the valley can also contribute to elevated pollutant concentrations during periods of surface of elevated surface inversions. These inversions are most common in late summer and fall. Surface inversions are formed when the air close to the surface cools more rapidly than the warm layer of air above it. Elevated inversions occur when a layer of cool air is suspended between warm air layers above and below it. Both situations result in air stagnation. Air pollutants accumulate under and within inversions, subjecting people in the region to elevated pollution levels and associated health concerns. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog, and pollutants near the ground.

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort.

Pollutants of concern include O_3, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10}), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$), and lead. These pollutants, as well as TACs, are discussed in the following text.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors, such as reactive organic gases (ROG) and nitrogen oxides (NO_x). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric ozone) and at the Earth's surface (tropospheric ozone).

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to high O_3 at levels can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x plays a major role, together with ROG, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections.

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project

[1] The descriptions of each of the criteria air pollutants and associated health effects are based on the EPA's Criteria Air Pollutants (EPA 2016a) and the CARB Glossary of Air Pollutant Terms (CARB 2016a).

location, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and ROG. Coarse particulate matter (PM_{10}) is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the

respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive are smokers, people who cannot breathe well through their noses, and exercising athletes (because many breathe through their mouths).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Reactive Organic Gases. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as ROG (also referred to as volatile organic compounds). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROG result from the formation of O_3 and its related health effects. High levels of ROG in the atmosphere can interfere with oxygen intake by reducing the amount

of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROG as a group.

Non-Criteria Air Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Sacramento Valley Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, the U.S. Environmental Protection Agency (EPA) classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the National Ambient Air Quality Standards (NAAQS) have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that

achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on California Ambient Air Quality Standards (CAAQS) rather than the NAAQS. Table 4.1-1 depicts the current attainment status of the proposed project site with respect to the NAAQS and CAAQS.

Table 4.1-1
Sacramento Valley Air Basin Attainment Classification

Pollutant	Averaging Time	Designation/Classification
Federal Standards		
O_3	8 hours	Nonattainment/Severe-15
NO_2	1 hour; annual arithmetic mean	Unclassifiable/attainment
CO	1 hour; 8 hours	Unclassifiable/attainment
SO_2	24 hours; annual arithmetic mean	Unclassifiable/attainment
PM_{10}	24 hours	Unclassifiable/attainment
$PM_{2.5}$	24 hours; annual arithmetic mean 24 hours	Unclassifiable/Attainment (1997 NAAQS) Nonattainment/Moderate (2006 NAAQS)
Lead	Quarter; 3-month average	Unclassifiable/attainment
State Standards		
O3	1 hour; 8 hours	Nonattainment
NO_2	1 hour; annual arithmetic mean	Attainment
CO	1 hour; 8 hours	Attainment
SO_2	1 hour; 24 hours	Attainment
PM_{10}	24 hours; annual arithmetic mean	Nonattainment
$PM_{2.5}$	Annual arithmetic mean	Attainment
Lead[a]	30-day average	Attainment
SO_4	24 hours	Attainment
H_2S	1 hour	Unclassified
Vinyl chloride[a]	24 hours	No designation
Visibility-reducing particles	8 hours (10:00 a.m.–6:00 p.m.)	Unclassified

Sources: EPA 2016b (federal); CARB 2016b (state).
Notes: CO = carbon monoxide; H2S = hydrogen sulfide; NO2 = nitrogen dioxide; O3 = ozone; PM10 = coarse particulate matter; PM2.5 = fine particulate matter; SO2 = sulfur dioxide; SO4 = sulfates
[a] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined.

In summary, the SVAB is designated as a nonattainment area for federal and state O_3 standards, as well as the federal $PM_{2.5}$ and state PM_{10} standards. The SVAB is designated as an attainment area for federal and state CO standards, federal and state NO_2 standards, and federal and state SO_2 standards (CARB 2016b; EPA 2016b).

Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. The proposed project site's local ambient air quality is monitored by the YSAQMD. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2013 to 2015 are presented in Table 4.1-2. The Ulatis Drive monitoring station, located at 2012 Ulatis Drive, Vacaville, California 95687, is the nearest air quality monitoring station to the project site, located approximately 1.2 miles to the northwest. The data collected at this station are considered representative of the air quality experienced in the project vicinity. Air quality data for O_3 from the Ulatis Drive monitoring station are provided in Table 4.1-2. PM_{10} data from the station located at 650 Merchant Street, Vacaville, California 95688 (approximately 3.3 miles northwest of the project site) and $PM_{2.5}$, NO_2, and CO data from the station located at 304 Tuolumne Street, Vallejo, California 94590 (approximately 23 miles southwest of the project site) are also provided in Table 4.1-2. The number of days exceeding the ambient air quality standards is also shown in Table 4.1-2.

Table 4.1-2
Local Ambient Air Quality Data

Concentration or Exceedances	Ambient Air Quality Standard	2013	2014	2015
Ozone (O_3) *(Vacaville Ulatis Drive Monitoring Station)*				
Maximum 1-hour concentration (ppm)	0.09 ppm (state)	0.084	0.089	0.085
Number of days exceeding state standard (days)		*0*	*0*	*0*
Maximum 8-hour concentration (ppm)	0.070 ppm (state)	0.073	0.072	0.071
	0.070 ppm (federal)	0.072	0.072	0.070
Number of days exceeding state standard (days)		*2*	*1*	*1*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Nitrogen Dioxide (NO_2) *(Vallejo Tuolumne Street Monitoring Station)*				
Maximum 1-hour concentration (ppm)	0.18 ppm (state)	0.49	0.50	0.44
	0.100 ppm (federal)	0.494	0.501	0.443
Number of days exceeding state standard (days)		*0*	*0*	*0*
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Annual concentration (ppm)	0.030 ppm (state)	0.009	0.008	0.008
	0.053 ppm (federal)	—	—	—

Table 4.1-2
Local Ambient Air Quality Data

Concentration or Exceedances	Ambient Air Quality Standard	2013	2014	2015
Carbon Monoxide (CO) (Vallejo Tuolumne Street Monitoring Station)				
Maximum 1-hour concentration (ppm)	20 ppm (state)	—	—	—
	35 ppm (federal)	2.8	2.5	2.4
Number of days exceeding state standard (days)		—	—	—
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Maximum 8-hour concentration (ppm)	9.0 ppm (state)	—	—	—
	9 ppm (federal)	2.3	2.1	1.9
Number of days exceeding state standard (days)		—	—	—
Number of days exceeding federal standard (days)		*0*	*0*	*0*
Coarse Particulate Matter (PM_{10}) (Vacaville Merchant Street Monitoring Station)				
Maximum 24-hour concentration ($\mu g/m^3$)	50 $\mu g/m^3$ (state)	—	—	—
	150 $\mu g/m^3$ (federal)	35	28	41
Number of days exceeding state standard (days)[a]		—	—	—
Number of days exceeding federal standard (days)[a]		*0.0 (0)*	*0.0 (0)*	*0.0 (0)*
Fine Particulate Matter ($PM_{2.5}$) (Vallejo Tuolumne Street Monitoring Station)				
Maximum 24-hour concentration ($\mu g/m^3$)	35 $\mu g/m^3$ (federal)	42.6	39.6	41.4
Number of days exceeding federal standard (days)[a]		*6.0 (6)*	*1.1 (1)*	*3.0 (3)*
Annual concentration ($\mu g/m^3$)	12 $\mu g/m^3$ (state)	11.3	10.0	ND
	12.0 $\mu g/m^3$ (federal)	9.9	9.9	9.6

Sources: CARB 2016c; EPA 2016c.
Notes: — = not available; μg/m3 = micrograms per cubic meter; ND = insufficient data available to determine the value; ppm = parts per million
Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.
Exceedances of federal and state standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air

pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). Adjacent sensitive receptors to the proposed project include a single-family residential development directly west of the project site across Leisure Town Road and the recently approved Brighton Landing project currently under construction directly north of the project site. In addition, the proposed project would result in the development of residences and a school site, which would be considered sensitive receptors.

4.1.3 Regulatory Setting

Federal Regulations

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting NAAQS for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State Regulations

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 4.1-3.

Table 4.1-3
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m^3)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 μg/m^3)	0.070 ppm (137 μg/m^3)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m^3)	0.100 ppm (188 μg/m^3)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	
CO	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m^3)	0.075 ppm (196 μg/m^3)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m^3)
	24 hours	0.04 ppm (105 μg/m^3)	0.14 ppm (for certain areas)[g]	—

Table 4.1-3
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary[c,d]*	*Secondary[c,e]*
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 μg/m^3	150 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m^3	—	
$PM_{2.5}$[i]	24 hours	—	35 μg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m^3	12.0 μg/m^3	15.0 μg/m^3
Lead[j,k]	30-day Average	1.5 μg/m^3	—	—
	Calendar Quarter	—	1.5 μg/m^3 (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m^3	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m^3)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m^3)	—	—
Sulfates	24- hours	25 μg/m^3	—	—
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016d.

Notes: μg/m^3 = micrograms per cubic meter; CO = carbon monoxide; mg/m^3= milligrams per cubic meter; NO_2 = nitrogen dioxide; O_3 = ozone; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; ppm = parts per million by volume; SO_2 = sulfur dioxide

a California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] On October 1, 2015, the EPA Administrator signed the notice for the final rule to revise the primary and secondary NAAQS for O_3. The EPA is revising the levels of both standards from 0.075 ppm to 0.070 ppm and retaining their indicators (O_3), forms (fourth-highest daily maximum, averaged across 3 consecutive years) and averaging times (8 hours). The EPA is in the process of submitting the rule for publication in the Federal Register. The final rule will be effective 60 days after the date of publication in the Federal Register. The lowered national 8-hour standards are reflected in the table.

[g] To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[h] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. The Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. “High-priority” facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions of diesel particulate matter (DPM) from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel powered

equipment. Several Airborne Toxic Control Measures (ATCMs) that reduce diesel emissions include In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

Despite these reduction efforts, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. In April 2005, the CARB published the *Air Quality and Land Use Handbook: a Community Health Perspective*. This handbook is intended to give guidance to local governments in the siting of sensitive land uses near sources of air pollution. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities such as ports, rail yards and distribution centers. Specifically, the document focuses on risks from emissions of DPM, a known carcinogen, and establishes recommended siting distances of sensitive receptors. The CARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary the CARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level (CARB 2005).

Local Regulations

Yolo-Solano Air Quality Management District

The YSAQMD is the primary local agency responsible for protecting human health and property from the harmful effects of air pollution for all of Yolo County and northeastern Solano County. The YSAQMD develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The YSAQMD's air quality management plans include control measures and strategies to be implemented to attain state and federal ambient air quality standards within the jurisdiction. The YSAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment. Applicable YSAQMD attainment plans include:

- ***Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions):*** The 8-Hour Ozone Attainment and Reasonable Further Program Plan (2013 Ozone Plan) describes measures to be implemented by the air districts in the Sacramento Federal Nonattainment Area (SFNA) to achieve the 1997 O_3 NAAQS. The 2013 Ozone Plan shows that the region continues to meet federal progress requirements and demonstrates that the region will meet the 1997 O_3 NAAQS by 2018.

The 2013 Ozone Plan updates the emissions inventory, provides photochemical modeling results, updates the reasonable further progress and attainment demonstrations, revises adoption dates for control measures, and sets new motor vehicle emission budgets for transportation conformity purposes. The 2013 Ozone Plan also includes a VMT offset demonstration that showed the emissions reduction from transportation control measures are sufficient to offset the emissions increase due to VMT growth (YSAQMD et al. 2013a).

- ***$PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request for Sacramento $PM_{2.5}$ Nonattainment Area:*** On May 9, 2012, CARB submitted a request that EPA find the Sacramento region in attainment for the 2006 24-hour PM2.5 NAAQS. On August 14, 2013, the EPA officially determined that the SFNA had attained the 24-hour $PM_{2.5}$ NAAQS by the attainment deadline. On October 24, 2013, the YSAQMD, Sacramento Metropolitan Air Quality Management District, El Dorado County Air Quality Management District, and the Placer County Air Pollution Control District approved the $PM_{2.5}$ maintenance plan and request for redesignation for the 2006 $PM_{2.5}$ NAAQS (YSAQMD et al. 2013b) to meet the EPA redesignation requirements.
- ***Triennial Assessment and Plan Update:*** This plan is intended to comply with the requirements of the California Clean Air Act as related to bringing the region into compliance with the CAAQS for O_3. The YSAQMD has prepared several triennial progress reports that build upon the 1992 Triennial Plan. The *Triennial Assessment and Plan Update* (YSAQMD 2013) is the most recent report. The triennial progress report describes historical trends in air quality, includes updated emissions inventories, and identifies feasible control measures the YSAQMD will study or adopt over the triennial period. The YSAQMD has also published a *Draft Triennial Assessment and Plan Update* (YSAQMD 2016a), which has not yet been adopted.

In addition, the YSAQMD has several rules that relate to the proposed project, which are summarized below.

- **Rule 2.3 – Ringelmann Chart**: Prohibits individuals from discharging into the atmosphere from any source of emissions whatsoever any air contaminant whose opacity exceeds certain specified limits.
- **Rule 2.5 – Nuisance**: To protect the public health, Rule 2.5 prohibits any person from discharging such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public.
- **Rule 2.14 – Architectural Coatings**: Sets ROG content limits for coatings that are supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the YSAQMD.

- **Rule 2.28 – Cutback and Emulsified Asphalts:** Asphalt paving operations that may be associated with implementation of the project would be subject to Rule 2.28. This rule applies to the manufacture, storage, and use of cutback asphalt and emulsified asphalt for paving and maintenance operations.
- **Rule 2.40 – Wood Burning Appliances**: This rule establishes which types of wood burning appliances can be sold, supplied, and installed in new or existing development.
- **Rule 3.1 – General Permit Requirements**: Requires any project that includes the use of certain equipment capable of releasing emissions to the atmosphere to obtain an Authority to Construct and Permit to Operate from the YSAQMD.

The YSAQMD issued its *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007) to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. The analysis herein uses this YSAQMD guidance document to determine the proposed project's significance with respect to air pollutant emissions.

City of Vacaville General Plan

As discussed in the City of Vacaville General Plan, policies pertaining to improving air quality applicable to the project are listed below (City of Vacaville 2015):

Policy COS-P12.3 Encourage project designs that protect and improve air quality and minimize direct and indirect air pollutant emissions by including components that reduce vehicle trips and promote energy efficiency.

Policy COS-P12.4 Require that development projects implement best management practices (BMPs) to reduce air pollutant emissions associated with the construction and operation of the project.

Policy COS-P12.5 Require dust control measures as a condition of approval for subdivision maps, site plans, and all grading permits.

Policy COS-P12.6 Consistent with the YSAQMD's standards, require that any fireplaces in new and significantly renovated residential projects, or commercial projects are pellet-fueled heaters, EPA Phase II-certified wood burning heaters, or gas fireplaces.

Policy COS-P12.10 Encourage the use of roadway materials that minimize particulate emissions.

4.1.4 Impacts

Methods of Analysis

Project-related air quality impacts fall into two categories: short-term impacts due to construction and long-term impacts due to project operation. First, during project construction (short-term), the proposed project would result in an increase in emissions primarily due to off-road construction equipment, on-road vehicles, architectural coating and asphalt off-gassing, and fugitive dust from earth moving. Under operations (long-term), the proposed project would result in an increase in emissions due to motor vehicle trips and on-site stationary sources such as certain commercial uses. Other sources include minor area sources such as landscaping and use of consumer products.

The proposed project's short-term construction-related and long-term operational emissions were estimated using the CalEEMod software (version 2013.2.2), a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers Trip Generation Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data was available, such data were input into the model (e.g., construction phases, timing, equipment, and estimated daily project trips). All project modeling results are included in Appendix C.

Issues Addressed in the Modified Initial Study

The proposed project is consistent with the City's current General Plan and the population and employment growth assumptions incorporated in the Sacramento Regional 8-Hour Ozone Attainment Plan and Reasonable Further Progress Plan. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. This is addressed in the Modified Initial Study included in Appendix B. The proposed project would also not create objectionable odors affecting a substantial number of people. As a general matter, the types of land use developments that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities, and transfer stations. Although the proposed project would be located approximately 1-mile east of the Easterly Waste Water Treatment Plant and adjacent to a detention basin, no odor complaints have been received for these sources within the last 3 years (YSAQMD 2016b) and therefore the proposed project would not be located in an area where existing odors are a concern. The proposed project would also not introduce a new source of odors. Therefore, impacts related to odors would be less than significant and are addressed in the Modified Initial Study.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation. The YSAQMD further defines the thresholds of significance as follows:
  - Generation of ROG or NO_x emissions for construction or operations in excess of 10 tons per year; or
  - Generation of PM_{10} emissions for construction or operations in excess of 80 pounds per day.
  - The YSAQMD does not have a board adopted threshold for $PM_{2.5}$ emissions, the YSAQMD recommends using an adopted $PM_{2.5}$ threshold from another jurisdiction in the nonattainment area (Jones 2016). As such, the Sacramento Metropolitan Air Quality Management District (SMAQMD) threshold of 82 pounds per day of $PM_{2.5}$ emissions has been applied to this analysis during construction and operations.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for O_3 precursors). The YSAQMD further defines the threshold of significance as follows:
  - Emissions would be considered cumulatively considerable if they are individually significant;
  - CO impacts are also cumulatively considerable when an exceedance of CO air quality standards results from project CO emissions combined with and CO emissions from other planned projects.
- Expose sensitive receptors to substantial pollutant concentrations.

Impacts and Mitigation Measures

4.1-1: Construction of the proposed project could result in emissions of ROG, NO_x, or $PM_{10/2.5}$ at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. This would be a potentially significant impact.

Construction of the proposed project would result in a temporary addition of pollutants to the local air shed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling building materials and from construction workers travelling to and from the site. Construction emissions can vary substantially

from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, an increment of day-to-day variability exists. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM_{10} and $PM_{2.5}$ concentrations may be adversely affected on a temporary and intermittent basis. In addition, fugitive dust generated by construction would include not only PM_{10} and $PM_{2.5}$ but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

Pollutant emissions associated with construction activity were quantified using CalEEMod. Default values provided by the program were used where detailed project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, haul trucks, vendor trucks, and worker vehicles—is contained in the CalEEMod outputs, provided in Appendix C.

It is anticipated that construction of the proposed project would occur over 3 phases for a period of 10-years, from approximately June 2018 through May 2028. The analysis contained herein is based on the following assumptions in Table 4.1-4.

Table 4.1-4
Estimated Construction Schedule

Activity	Start Date	End Date	Total Construction Days
Phase 1			
Site Preparation	2018/06/01	2018/07/06	26
Grading/Trenching	2018/07/07	2018/10/15	71
Building Construction	2018/10/16	2021/07/14	717
Paving	2021/07/15	2021/09/20	48
Architectural Coatings	2021/09/21	2021/11/25	48
Phase 2			
Site Preparation	2021/11/26	2021/12/24	21
Grading/Trenching	2021/12/25	2022/03/09	53
Building Construction	2022/03/10	2024/03/20	530
Paving	2024/03/21	2024/05/13	38
Architectural Coatings	2024/05/14	2024/07/04	38
Phase 3			
Site Preparation	2024/07/05	2024/08/16	31
Grading/Trenching	2024/08/17	2024/12/05	79
Building Construction	2024/12/06	2027/12/15	789
Paving	2027/12/16	2028/03/02	56
Architectural Coatings	2028/03/03	2028/05/19	56

Source: See Appendix C for detailed results.
Notes: Types of activities under each phase are based on the CalEEMod defaults and the land uses proposed. Total duration of construction is from June 2018 through May 2028 (10 years), with the duration of each phase of construction apportioned based on the number of residential dwelling units to be developed in the phase (based on the tentative map for the proposed project).

CalEEMod was used to quantify construction ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions from off-road equipment, fugitive dust, on-road worker vehicle emissions, and vendor delivery trips. Predicted unmitigated daily and annual construction emissions for each phase of project development are presented in Table 4.1-5 and compared to the applicable YSAQMD threshold.

Table 4.1-5
Estimated Daily and Annual Construction Emissions

Year	ROG	NO_x	PM_{10}	$PM_{2.5}$
Daily Emissions (Pounds Per Day)				
2018	5.8	63.9	20.7	12.2
2019	4.4	30.1	5.6	2.5
2020	4.1	27.1	5.5	2.3
2021	133.2	48.3	20.0	11.6
2022	6.0	42.1	11.1	5.5
2023	5.7	28.6	11.0	3.6
2024	137.6	35.6	19.5	11.1
2025	3.1	18.5	5.3	1.8
2026	3.0	18.4	5.3	1.8
2027	3.0	18.3	5.3	1.8
2028	126.6	8.5	0.8	0.4
Maximum Daily	*137.6*	*63.9*	*20.7*	*12.2*
Pollutant Threshold	*NA*	*NA*	*80*	*82*
Threshold Exceeded?	**NA**	**NA**	**No**	**No**
Annual Emissions (Tons Per Year)				
2018	0.4	3.8	0.9	0.5
2019	0.6	3.9	0.7	0.3
2020	0.5	3.5	0.7	0.3
2021	3.5	2.5	0.8	0.4
2022	0.7	4.2	1.4	0.5
2023	0.7	3.6	1.4	0.5
2024	3.0	3.0	1.1	0.5
2025	0.4	2.4	0.7	0.2
2026	0.4	2.4	0.7	0.2
2027	0.4	2.3	0.6	0.2
2028	3.6	0.2	0.0	0.0
Maximum Annual	*3.6*	*4.2*	*1.4*	*0.5*
Pollutant Threshold	*10*	*10*	*NA*	*NA*
Threshold Exceeded?	**No**	**No**	**NA**	**NA**

Source: See Appendix C for detailed results.
Notes: Construction emissions were modeled with CalEEMod and do not reflect any mitigation measures. The maximum daily emissions of ROG, NO_x, and PM_{10} are estimated to occur during the winter season. For years where multiple phase development would occur (i.e., 2021 and 2024), the CalEEMod daily emissions were compared and the maximum selected (since the phase construction would not occur on the

same day), whereas the annual emissions for the phases were summed together (since the construction would occur in the same year). YSAQMD has adopted annual construction thresholds for ROG and NO_x, as well as a daily threshold for PM_{10}.
The SMAQMD threshold for daily $PM_{2.5}$ emissions was also applied to this analysis.
ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

As shown in Table 4.1-5, daily construction emissions of PM_{10} and $PM_{2.5}$ and annual emissions of ROG and NO_x would not exceed the YSAQMD applicable significance thresholds during any construction year. However, there could still be nuisance issues from localized fugitive dust and this could be considered a **potentially significant impact**.

Mitigation Measures

The YSAQMD recommends implementation of Best Management Practices (BMPs) during construction, even for projects that do not exceed the PM_{10} threshold. Implementation of BMPS specified in Mitigation Measure AQ-1 during construction would ensure that emissions of fugitive dust would be minimized as recommended by the YSAQMD and that the impact would be less than significant.

AQ-1 The applicant shall implement Best Management Practices and shall submit a construction dust control plan for the project that includes the following conditions:

- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Ensure haul trucks maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Apply non-toxic binders (e.g. latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.

4.1-2: Operation of the proposed project would result in emissions of ROG, NOx, or $PM_{10/2.5}$ at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. This would be a significant and unavoidable impact.

Following the completion of construction activities, the proposed project would generate criteria pollutant emissions from vehicular traffic, area sources (consumer products, architectural coatings, landscaping equipment), and energy sources (natural gas appliances, space and water heating). The emissions associated with on-road mobile sources include running and

starting exhaust emissions, evaporative emissions, brake and tire wear, and fugitive dust entrainment. Default trip generation rates and trip lengths included in CalEEMod for each analyzed land use for the project were adjusted to match the overall weekday daily trips (7,743 trips) and total average daily vehicle miles traveled (VMT) length data (12.41 miles per trip, for a total of 92,721-weekday daily VMT) provided by Kittelson and Associates (see Section 4.7, Transportation and Circulation). Area sources include gasoline-powered landscape maintenance equipment, consumer products, and architectural coatings for the maintenance of buildings. Emissions from energy sources include natural gas combustion for appliances and space and water heating. Notably, the year 2025 was selected in CalEEMod to conservatively approximate buildout of the project in the year 2028, since 2028 is not an option in the current version of CalEEMod.

CalEEMod default values for energy consumption for each land use were applied for the project analysis, which account for 2008 Title 24 standards. Title 24 of the California Code of Regulations serves to enhance and regulate California's building standards. The most recent amendments to Title 24, Part 6, referred to as the 2016 standards, will become effective on January 1, 2017. The previous amendments were referred to as the 2013 standards and are currently effective. Buildings constructed in accordance with the 2013 standards will use 25% less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 standards. Single family residential buildings constructed in compliance with the 2016 standards will use approximately 28% less energy than the 2013 standards (CEC 2015). For the purposes of estimating project-generated energy emissions, a mitigation measure was applied to assume a 46% reduction from the 2008 standards (the basis for the default energy usage factors in CalEEMod) to reflect the benefits of compliance with the 2016 standards.

CalEEMod was used to estimate unmitigated daily and annual emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ from the operational sources, with emissions depicted in Table 4.1-6.

Table 4.1-6
Estimated Daily and Annual Operational Emissions - Unmitigated

Source	ROG	NO_x	PM_{10}	$PM_{2.5}$
Daily Emissions (Pounds Per Day)				
Project Buildout - Summer				
Area	104.7	3.0	22.8	22.8
Energy	0.5	4.3	0.4	0.3
Mobile	34.0	98.6	78.0	22.3
Total Summer	**139.2**	**105.9**	**101.2**	**45.4**
Project Buildout – Winter				
Area	104.7	3.0	22.8	22.8
Energy	0.5	4.3	0.4	0.3

Table 4.1-6
Estimated Daily and Annual Operational Emissions - Unmitigated

Source	ROG	NO_x	PM_{10}	$PM_{2.5}$
Mobile	35.2	112.0	78.0	22.3
Total Winter	**140.4**	**119.3**	**101.2**	**45.4**
Maximum Daily	*140.4*	*119.3*	*101.2*	*45.4*
Pollutant Threshold	*NA*	*NA*	*80*	*82*
Threshold Exceeded?	**NA**	**NA**	**Yes**	**No**
Annual Emissions (Tons Per Year)				
Area	16.8	0.2	1.0	1.0
Energy	0.1	0.8	0.0	0.0
Mobile	5.6	18.2	13.0	3.7
Maximum Annual	*22.5*	*19.2*	*14.0*	*4.7*
Pollutant Threshold	*10*	*10*	*NA*	*NA*
Threshold Exceeded?	**Yes**	**Yes**	**NA**	**NA**

Source: See Appendix C for detailed results.
Notes: Emissions were modeled with CalEEMod and are based on the "Mitigated" CalEEMod outputs in order to incorporate the 2016 Title 24 standards (i.e., approximately a 46% reduction versus 2008 Title 24 for single family residential), 20% indoor and outdoor water conservation per CalGreen, and 75% waste diversion pursuant to AB 341 even though compliance with these standards would not be considered actual mitigation. YSAQMD has adopted annual thresholds for ROG and NO_x, as well as a daily threshold for PM_{10}.
The SMAQMD threshold for daily $PM_{2.5}$ emissions was also applied to this analysis.
ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

As shown in Table 4.1-6, $PM_{2.5}$ emissions would be less than the applied threshold, whereas ROG, NO_x, and PM_{10} emissions would substantially exceed the YSAQMD thresholds of significance. Therefore, buildout of the proposed project would have a **potentially significant** effect on regional air quality. Notably, as described in the Roberts' Ranch Specific Plan (available on the City's website, www.cityofvacaville.com/RobertsRanch), although there are no current transit lines that extend to the area, adequate space is provided within the arterial and major collector street sections to accommodate future transit stop facilities. In addition, adequate sidewalks and multipurpose trails and traffic calming measures in high pedestrian areas and adjacent neighborhoods provide safe and easy pedestrian routes to the transit stops. These trails and sidewalks are planned to be integrated in the project design to provide connectivity to community parks, open spaces, and school. Shade is also provided along pedestrian routes for comfortable use. These measures would reduce motor vehicle trips and VMT, however, the traffic modeling did not account for them in order to provide a conservative analysis.

Mitigation Measures

As noted above, several of these measures have been included in the Specific Plan for the project, including transit facilities, traffic calming measures, and pedestrian and bicycle paths. These have been included as mitigation in order to ensure implementation of motor vehicle trip

reduction strategies through the environmental review process for the project. In addition, prohibiting wood burning hearths in residences would reduce PM_{10} production. As shown in Table 4.1-7, daily PM_{10} emissions would be reduced below the YSAQMD threshold. However, annual emissions of ROG and NO_x would still exceed the YSAQMD thresholds after mitigation and would result in a significant and unavoidable impact.

Overall, mitigation would be required since estimated emissions would exceed YSAQMD thresholds of significance for regional air quality. Table 4.1-7 presents emissions after incorporation of Mitigation Measure AQ-2.

Table 4.1-7
Estimated Daily and Annual Operational Emissions - Mitigated

Source	ROG	NO_x	PM_{10}	$PM_{2.5}$
Daily Emissions (Pounds Per Day)				
Project Buildout - Summer				
Area	89.8	0.8	0.7	0.7
Energy	0.5	4.3	0.3	0.3
Mobile	33.2	94.5	74.1	21.2
Total Summer	**123.5**	**99.6**	**75.1**	**22.2**
Project Buildout – Winter				
Area	89.8	0.7	0.7	0.7
Energy	0.5	4.3	0.3	0.3
Mobile	34.4	107.4	74.1	21.2
Total Winter	**124.7**	**112.4**	**75.1**	**22.2**
Maximum Daily	*124.7*	*112.4*	*75.1*	*22.2*
Pollutant Threshold	*NA*	*NA*	*80*	*82*
Threshold Exceeded?	**NA**	**NA**	**No**	**No**
Annual Emissions (Tons Per Year)				
Area	16.1	0.1	0.0	0.0
Energy	0.1	0.8	0.1	0.1
Mobile	5.5	17.5	12.3	3.5
Maximum Annual	*21.7*	*18.4*	*12.4*	*3.6*
Pollutant Threshold	*10*	*10*	*NA*	*NA*
Threshold Exceeded?	**Yes**	**Yes**	**NA**	**NA**

Source: See Appendix C for detailed results.
Notes: Emissions were modeled with CalEEMod and are based on the "Mitigated" CalEEMod outputs in order to incorporate the 2016 Title 24 standards (i.e., approximately a 46% reduction versus 2008 Title 24 for single family residential), 20% indoor and outdoor water conservation per CalGreen, and 75% waste diversion pursuant to AB 341 even though compliance with these standards would not be considered actual mitigation. Additionally, the CalEEMod measures "Only Natural Gas Hearth", "Improve Pedestrian Network – Project Site and Connecting Off-Site", and "Provide Traffic Calming Measures – 50% Roadways and 50% Intersections" were selected in the model to account for Mitigation Measure 4.1-2. YSAQMD has adopted annual thresholds for ROG and NO_x, as well as a daily threshold for PM_{10}. The SMAQMD threshold for daily $PM_{2.5}$ emissions was also applied to this analysis.
ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

AQ-2 **Operational Emission Reduction Measures**. The applicant shall incorporate the following measures to reduce emissions associated with vehicle trip generation and area sources from the proposed project:

- Equip all residential garages, as well as parking lots at parks, with infrastructure to install electric vehicle charging outlets and equipment.
- Provide transit facilities (e.g., bus bulbs/turnouts, benches, shelters).
- Provide bicycle lanes and/or paths, connected to the existing community-wide network.
- Where feasible, provide sidewalks and/or paths, connected to adjacent land uses, transit stops, and the existing community-wide trail network.
- Traffic calming devices such as bulb-outs and pedestrian refuges shall be implemented on residential streets in areas of high pedestrian activity and adjacent to neighborhoods.
- The Roberts' Ranch Specific Plan shall be modified to include bicycle parking standards as follows:
    - For residential development, one, sheltered, secure bicycle parking space per dwelling unit shall be required. Garages, storage sheds, utility rooms, or similar areas that can be secured from unauthorized access and are sheltered from sun and rain would satisfy this requirement without the addition of special improvements or racks. Additional convenience bicycle parking may be provided with exterior racks but does not count toward the sheltered bicycle parking requirement.
    - New parking areas created to serve nonresidential uses should provide one bicycle parking space for every 20 vehicle parking spaces, with a minimum of four bicycle spaces.
    - For all school developments, secured bicycle parking shall be provided at a minimum rate of 10% of the student capacity plus 3% of the maximum number of employees.
- All wood burning devices shall be prohibited in residential units. Only natural gas fueled hearths shall be permitted.
- During the Design Review process for each home design application, the City shall confirm compliance with measures incorporated into the City's Energy & Conservation Action Strategy (ECAS), through use of a checklist identifying the residential design measures feasible for residential structures.

ROG and NO_x are precursors to O_3, for which the SVAB is designated as nonattainment with respect to the NAAQS and CAAQS. Thus, existing O_3 levels in the SVAB are at unhealthy levels during certain periods. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROG and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SVAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the precursor emissions would occur because exceedances of the O_3 AAQS tend to occur in the summer and early fall on warm, windless, sunny days. Given these various factors, it is difficult to predict the magnitude of health effects from the proposed project's exceedance of significance criteria for regional ROG and NO_x emissions. The increase in emissions associated with the project represents a fraction of total regional emissions (125 new pounds per day ROG and 112 pounds per day NO_x compared to 8 tons per day ROG and 12 tons per day NO_x in the Solano County portion of the SVAB in 2012) (CARB 2014). Table 4.1-2 shows that the most stringent applicable O_3 standards have been exceeded at the Ulatis Drive monitoring station in Vacaville between 2013 and 2015. The project's ROG and NO_x increases could contribute to air quality violations in the SVAB region by contributing to more days of O_3 exceedance or result in Air Quality Index value levels that are unhealthy for sensitive groups and other populations.

4.1-3: The proposed project would not result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm). This would be a less-than-significant impact.

Motor vehicles are the primary source of CO in the SVAB. The YSAQMD *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007) provides screening criteria to determine whether air quality modeling to evaluate CO concentrations is necessary. In regards to screening for CO impacts, if either the following criteria is true of any intersection affected by the project traffic, then the project would have the potential to create a violation of the CO standard:

- A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F); or
- A traffic study for the project indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.

Based on the traffic analysis prepared for the project, the proposed project would pass the screening criteria and would not generate traffic volumes that necessitate CO modeling.

Therefore, the project would not generate traffic volumes that could cause CO hotspots at local intersections and would not adversely affect sensitive receptors. This impact would be **less than significant**.

Mitigation Measures

None required.

4.1-4: The proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations. This would be a less-than-significant impact.

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. Adjacent sensitive receptors to the proposed project include a single-family residential development directly west of the project site across Leisure Town Road and the recently approved Brighton Landing project currently under construction directly north of the project site. In addition, the project would result in the development and siting of new sensitive residential receptors in the area.

TACs are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The YSAQMD recommends an incremental cancer risk threshold of 10 in 1 million for stationary sources. YSAQMD does not have a recommended threshold for mobile source emissions. “Incremental cancer risk” is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period would contract cancer based on the use of standard Office of Environmental Health Hazard Assessment (OEHHA) risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. The YSAQMD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.[2] TACs that would potentially be emitted during construction activities associated with project development would be DPM.

DPM emissions would be emitted from heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to CARB ATCMs (described in the Environmental Setting) to reduce DPM emissions. According to the OEHHA, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with the project. Since the proposed project involves phased construction activities in

[2] Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various non-carcinogens from the project to published reference exposure levels that can cause adverse health effects.

several areas across the site, the project would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of any proximate individual sensitive receptor to TACs. Due to the relatively short period of exposure at any individual sensitive receptor and minimal particulate emissions generated on-site, TACs generated during construction would not be expected to result in concentrations causing significant health risks.

In regards to operations, the proposed project does not include stationary sources that would emit air pollutants or TACs, such as commercial uses that could generate emissions, large boilers, emergency generators, or manufacturing facilities or result in a substantial increase in diesel vehicles (i.e., delivery trucks). Project operations would not result in TAC generation from on-site sources during long-term operations and would not result in significant health risk at nearby sensitive receptors.

In regards to land use compatibility of locating new sensitive receptors in the area, the Yolo-Solano *Handbook for Assessing and Mitigating Air Quality Impacts* identifies screening distances for the siting of new sensitive receptors, consistent with the CARB guidelines as previously discussed. The proposed project would not locate sensitive uses within the following distances:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day;
- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet); or
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

Leisure Town Road and Alamo Drive are adjacent to the western border of the site but neither roadway has volumes of 50,000 or more vehicles per day (see Section 4.7, Transportation and Circulation, of this Draft EIR). The nearest residential uses proposed as part of the project are located more than 300 feet from the Union Pacific rail line. The closest railyards are located in Richmond (35 miles away) and Roseville (45 miles away). There are no ports, refineries, dry cleaning operations or large gas stations located in the vicinity of the proposed project. There are no known sources of existing substantial TACs proximate to the site that would result in land use compatibility impacts for new sensitive receptors. The City evaluates these conditions for land use compatibility and has adopted land use planning criteria for setbacks to protect sensitive receptors from existing agricultural operations or other land uses that might affect future residents of the project. These criteria are evaluated through the development review process.

In summary, the potential to expose existing and proposed sensitive receptors to substantial levels of TACs during short-term construction and long-term operations would be a **less-than-significant impact**.

Mitigation Measures

None required.

4.1.5 Cumulative Impacts

The cumulative context of an air pollutant is dependent on the specific pollutant being considered. O_3 precursors are a regional pollutant; therefore, the cumulative context would be existing and future development within the entire SVAB. This means that O_3 precursors generated in one location do not necessarily have O_3 impacts in that area. Instead, precursors from across the region can combine in the upper atmosphere and be transported by winds to various portions of the SVAB. Consequently, all O_3 precursors generated throughout the SVAB are part of the cumulative context.

The geographic scope of the area for the proposed project cumulative analysis includes the City of Vacaville and surrounding areas within the SFNA for O_3. The SFNA includes the counties of Sacramento, Yolo, Solano (partial), Sutter (partial), Placer (except Lake Tahoe Air Basin), and El Dorado (except Lake Tahoe Air Basin). The YSAQMD establishes emissions thresholds for regional emissions for projects within its jurisdiction.

4.1-5 The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors). This would be a significant and unavoidable impact.

The SVAB is in nonattainment for O_3 and particulate matter. Due to its nonattainment status for the federal and state O_3 standards, the geographic scope of the area for the proposed project cumulative analysis includes the City of Vacaville and surrounding areas within the SFNA for O_3. Ongoing development and operation of new land uses would generate additional emissions of O_3 precursors and particulate matter, which may adversely affect the ability of the region to achieve attainment with the applicable air quality standards and would result in a cumulatively significant impact.

According to the YSAQMD *Handbook for Assessing and Mitigating Air Quality Impacts*, projects that would individually exceed the YSAQMD thresholds (annual ROG and NO_x thresholds, or daily PM_{10} thresholds) would also be considered cumulatively considerable

and significant. As discussed in Impact 4.1-1, the proposed project's construction emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ would not be considerable and the project's contribution to the cumulative impact would be less than significant. However, as discussed in Impact 4.1-2, the proposed project's unmitigated ROG, NO_x, and PM_{10} emissions would exceed the applicable YSAQMD thresholds. With implementation of Mitigation Measure AQ-2, daily emissions of PM_{10} would be reduced to a less-than-significant level, whereas annual ROG and NO_x would remain significant. Therefore, the proposed project's emissions of O_3 precursors would be considerable and the project's contribution to the cumulative impact would be **significant and unavoidable**.

Mitigation Measures

There is no mitigation available with currently feasible technology to reduce the cumulative regional air quality impact the project's emissions of O_3 precursors to a less-than-significant level. Therefore, the impact would remain significant and unavoidable.

AQ-3 Implement Mitigation Measure AQ-2.

4.1.6 References

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4.2 BIOLOGICAL RESOURCES

4.2.1 Introduction

This section evaluates the potential effects on biological resources associated with development and operation of the Roberts' Ranch Specific Plan Project (proposed project). This section describes the biological resources present within the project site; identifies special-status plant and wildlife species known to occur or potentially occur within the project site; outlines applicable federal, state, and regional regulations pertaining to protection of plant and wildlife species; and identifies potential project-specific and cumulative impacts on biological resources and measures to minimize these impacts. This section also addresses potential impacts to biological resources associated with proposed off-site improvements.

A comment letter was received from the U.S. Army Corps of Engineers in response to the Notice of Preparation (NOP) requesting a wetland delineation be prepared for the project site to determine if any jurisdictional waters of the U.S. would be impacted by the project. An Aquatic Resources Delineation was prepared for the project site and is included in Appendix D. In addition, a copy of the NOP and comments received is included in Appendix A.

Resources referenced to prepare this section include the Aquatic Resources Delineation, prepared by Madrone Ecological Consulting (Madrone 2016a), a Biological Resources Assessment, prepared by Madrone Ecological Consulting (Madrone 2016b), the City of Vacaville General Plan (City of Vacaville 2015), the Solano County General Plan (Solano County 2008), and the Travis Air Force Base Land Use Compatibility Plan (Solano County 2015). Copies of the biological reports are included in Appendix D.

4.2.2 Environmental Setting

This section describes the existing conditions in the project site and also identifies the resources that could be affected by the proposed project.

Existing Site Conditions and Habitat

Solano County is located within the Bay Area/Delta bioregion of California. This bioregion is one of the most populated in California, encompassing the San Francisco Bay area and the Sacramento-San Joaquin River Delta. The project site is located within the western valley geography of the bioregion, just east of the Central Coast Mountain range that descends into the San Francisco Bay area.

The project site has historically been used for agriculture, which has resulted in the elimination of any natural communities that originally occurred at this location. Currently, the project site is used for irrigated row crops, as described below. The project site is surrounded by residential development to

the west and agricultural land to the north, east and south. The Union Pacific Railroad (UPRR) tracks are oriented northeast to southwest along the southeastern boundary of the project site.

Agricultural Lands

The majority of the project site is characterized by previously graded agricultural lands currently used for the commercial production of tomatoes (*Solanum lycopersicum*) (Madrone 2016b). Other than row crops, the site is largely denuded of vegetation except for ruderal areas along the periphery of the site. These ruderal areas support non-native, ruderal plant species such as black mustard (*Brassica nigra*), medusa-head (*Elymus caput-medusae*), soft chess (*Bromus hordeaceus*), wild radish (*Raphanus sativus*), English plantain (*Plantago lanceolate*), milk thistle (*Silybum marianum*), and prickly lettuce (*Lactuca serriola*). There are no trees present on the site.

Hydrology

Though the majority of the project site is located in the *Ulatis Creek Watershed* (HUC 1802016305), the southwest corner is located in the *Cache Slough Watershed* (HUC 1802016306). The entire project site is located in the Lower Sacramento Sub-Basin (HUC 18020163) (Madrone 2016a).

Several irrigation ditches crisscross the project site and convey irrigation water to crops on site. The site's largest water feature is the Frost Canal, which enters the west side of the site under Leisure Town Road and exits to the northeast. The Frost Canal is a tributary to the navigable Sacramento River by way of Ulatis Creek and Cache Slough, respectively. Additionally, several seasonal ditches are located within the agricultural fields and channel irrigation runoff to the system of maintained irrigation ditches. These features mostly lack significant vegetation; however, what vegetation was present consisted of nonnative tall flat-sedge (*Cyperus eragrostis*), smartweed (*Persicaria* spp.), and barnyard grass (*Echinochloa crus-galli*) (Madrone 2016a).

Topography and Soils

The project site is generally flat due to past levelling and grading. The general topography on site gently slopes down to the east to facilitate drainage for flood irrigation of row crops. The elevation of the project site ranges from 79 to 87 feet above mean sea level (amsl).

According to the Natural Resources Conservation Service (NRCS) Soil Survey Database (NRCS 2012), six soil mapping units listed and described below, occur within the project site (Figure 4.2-1). Each of these soil types are described in further detail, below (Madrone 2016a).

- Brentwood clay loam, 0%–2% slopes (BrA) – This soil is well-drained, associated with alluvial fans, and derived from sedimentary rock. The erosion hazard is slight and runoff is very slow. Included in this unit are small areas of Yolo silty clay loam and Rincon clay loam.

- Capay silty clay loam (Ca) - This soil is moderately well drained and created from sedimentary rocks and is located on basin rims. Included in this map unit are small areas of Yolo silty clay loam, Rincon clay loam, and Brentwood clay loam.
- Capay clay (Cc) – This unit is moderately well drained, associated with basin rims, and is formed in alluvium derived from sedimentary rocks. The erosion hazard is slight and surface runoff is very slow. Inclusions found within this unit include Clear Lake clay, Omni silty clay, and Pescadero clay loam.
- Rincon clay loam, 0%–2% slopes (RoA) - This soil is well-drained, associated with alluvial fans, and derived from sedimentary rock that is formed in alluvium. The erosion hazard is slight and runoff is slow. Included in this unit are small areas of Brentwood clay loam and Capay silty clay loam.
- San Ysidro sandy loam, 0%–2% slopes (SeA) – This soil is moderately well derived from sedimentary alluvium. It is usually associated with terraces, and common inclusions include San Ysidro sandy loam, thick surface and Antioch loam.
- San Ysidro sandy loam, thick surface, 0%–2% slope (SfA) - This unit is moderately well drained and also derived in alluvium from sedimentary rock. It is characterized as having slow runoff. Inclusions include Antioch loam and San Ysidro sandy loam.

Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large areas or patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small areas or patches of land that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that essentially function as ‘stepping stones’ for wildlife dispersal.

Wildlife corridors in the vicinity of the project site include the Pacific Flyway, a common route of bird migration that extends along the west coast of North America from Alaska to South America, and from the Eastern Pacific to the Great Basin. The project site is surrounded by active agricultural lands, residential development, paved roads, and the UPRR. Thus, the project site itself does not provide suitable components of a wildlife corridor.

Critical Habitat

Critical habitat for California tiger salamander, Delta green ground beetle, vernal pool tadpole shrimp, vernal pool fairy shrimp, Central Valley spring-run chinook salmon, Contra Costa goldfields, Delta Smelt, Conservancy fairy shrimp, soft Bird’s-beak, Suisun thistle, and Central Valley steelhead has been designated by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) within 10 miles of the project site (Figure 4.2-2;

USFWS 2016). Several vernal pool core recovery areas have been established north and south of the project area. However, none of these critical habitat units or core recovery areas are located within or directly adjacent to the project site. Suitable habitat for these various species, including essential habitat elements of critical habitat, does not occur within the project site.

Special-Status Plant and Wildlife Species

For the purpose of this environmental impact report (EIR), special-status plant and animal species are defined as those species that fall into one or more of the following categories:

- Officially listed or proposed for listing under the state and/or federal Endangered Species Acts.
- State or federal candidate for possible listing.
- Species meeting the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines.
- Protected under the Federal Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.
- Species considered by the CDFW to be a “Species of Special Concern.”

The potential occurrence of special-status plant and animal species on the project site was initially evaluated by developing a list of special-status species that are known to or have the potential to occur in the project vicinity. This list was primarily derived from a review of the California Natural Diversity Database (CDFW 2016), the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2016), and the USFWS lists of federal endangered and threatened species (USFWS 2016) for all or some combination of the following U.S. Geological Survey 7.5-minute quadrangles: Elmira, Mount Vaca, Allendale, Dixon, Fairfield North, Dozier, Birds Landing, Denverton, and Fairfield South (Madrone 2016b).

The potential for the occurrence of species identified in the literature and database searches was then evaluated based on the habitat requirements of each species relative to the observed existing conditions, and the results of previous habitat assessments and surveys for plants and animals conducted on February 12, 2016; April 12, 2016; and May 11, 2016 by Madrone Ecological Consulting, Inc. (Madrone 2016b). Other sources used included existing biological literature of the region identified by the CDFW or the USFWS. Only those species with potential to occur within the project site based on available habitat, species geographic or elevation range, or soils, are discussed further in this document and are shown in Table 4.2-1. For a full list of species identified during the literature and database review, please refer to Appendix D

Table 4.2-1
Species with the Potential to Occur within the Project Site

Species Name (Scientific Common)	Status (Federal/ State/Other)	Habitat Requirements	Potential to Occur
Plants			
California macrophylla Round-leaved filaree	None/None/1B.2	Clay soils in cismontane woodland and valley and foothill grassland, from 50 feet to 4,000 feet with vertic clay soils. Occasionally grows on serpentine soils.	**Low potential to occur**. Although clay soils are present on-site, the area has been farmed continuously since at least the 1970s.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	None/None/1B.1	Terraces, swales, floodplains, grasslands, and disturbed sites, from zero feet to 755 feet.	**Low potential to occur**. The site contains the associated habitat type, though the area has been farmed continuously since at least the 1970s.
Stuckenia filiformis Slender-leaved pondweed	None/None/2B.2	Marshes, swamps, and shallow clear water of lakes and drainage channels from 984 feet to 7,054 feet.	**Low potential to occur**. The irrigation ditches are seasonally maintained features and are not likely to provide suitable habitat for this species.
Invertebrates			
*Hydrochara ricksecker*i Ricksecker's water scavenger beetle	None/None/S2?	Ponds, lakes, streams, rivers, vernal pools, and other freshwater features.	**Low.** Marginally suitable habitat for this species is present in the irrigation ditches on-site.
Birds			
Asio flammeus Short-eared owl	None/SSC/None	Typically found in open areas with few trees such as grassland, prairies, dunes, meadows, and croplands	**High potential to occur**. Agricultural lands throughout the site represent suitable foraging habitat for this species.
Athene cunicularia Burrowing owl	BCC/SSC/None	Nests in abandoned ground squirrel burrows associated with open grassland habitats.	**Present**. This species was observed on-sire utilizing an active burrow.

Table 4.2-1
Species with the Potential to Occur within the Project Site

Species Name (Scientific Common)	Status (Federal/ State/Other)	Habitat Requirements	Potential to Occur
Buteo swainsoni Swainson's hawk	BCC/CT/None	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pastures, and grassland near large riparian corridors.	**Present**. Swainson's hawks were observed foraging the site; however, the site lacks trees large enough for nesting. No active nests were observed in the immediately surrounding areas.
Chadadrius montanus Mountain plover	BCC/SSC/None	Short grass plains, low rolling hills, freshly plowed agricultural fields, and newly sprouting grain fields. Often associated with short vegetation and bare ground.	**Moderate potential to occur**. Agricultural fields on-site represent suitable winter foraging habitat. The species is known locally to occasionally forage this type of habitat.
Circus cyaneus Northern harrier	None/SSC/None	Nests in emergent wetland/marsh, open grasslands, or savannah habitats. Forages in open areas such as marshes, agricultural fields, and grasslands.	**Present**. Northern harriers were observed foraging the site; however, no suitable nesting habitat or nests are present.
Elanus leucurus White-tailed kite	None/CFP/None	Open grasslands, fields, and meadows are used for foraging. Isolated trees in close proximity to foraging habitat are used for perching and nesting.	**Present**. White-tailed kites were observed foraging the sites; however, the site lacks trees large enough for nesting. No active nests were observed in the immediate surrounding areas.
Lanius ludovicianus Loggerhead shrike	BCC/SSC/None	Occurs in open areas with sparse trees, shrubs, and other perches.	**High potential to occur**. Agricultural lands throughout the project site provides suitable foraging habitat for this species.

Source: CDFW 2016, CNPS 2016, Madrone 2016b, USFWS 2016
Status Codes:
BCC – Federal Bird of Conservation Concern
SSC - CDFW Species of Concern
CT - CDFW Threatened

CFP - CDFW Fully Protected
CRPR - California Rare Plant Rank
CRPR 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere
CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
CRPR 3: Plants About Which More Information is Needed - A Review List
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)"

Special-Status Plants

Round-Leaved Filaree (*California macrophylla*)

Round-leaved filaree (*California macrophylla*) is categorized by CNPS as a rank 1B.2 species, meaning it is rare, threatened, or endangered in California and elsewhere. Round-leaved filaree has been documented in open sites such as woodland, grassland and scrub habitats with vertic clay soils, though it occasionally is found on serpentine soils. This species generally blooms from March through May at elevations ranging from 50 to over 4,000 feet amsl (CNPS 2016).

The CNDDB literature records an occurrence in 1886 of this species in very close proximity to the project site (CDFW 2016). The site supports clay soils with potential to provide suitable habitat; however, the site is highly disturbed due to continuous farming activities since at least the 1970s. This species was not observed within the project site during site surveys, which were conducted at a time when this species would be evident and identifiable (Madrone 2016b). Thus, there is low potential for occurrence for round-leaved filaree within the project site.

Condgon's Tarplant (*Centromadia parryi* ssp. *congdonii*)

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) is categorized by CNPS as a rank 1B.1 species, meaning it is rare, threatened, or endangered in California and elsewhere. Congdon's tarplant is associated with alkaline soils on terraces, swales, floodplains, grasslands, and disturbed sites. This species generally blooms from May through November at elevations ranging from zero to 755 feet amsl (CNPS 2016).

Congdon's tarplant is sometimes associated with the type of disturbed areas present within the project site. The closest CNDDB occurrence is 9 miles to the south (CDFW 2016). This species was not observed within the project site during site surveys, which were conducted at a time when this species would be evident and identifiable (Madrone 2016b). Therefore, there is a low potential for occurrence of this species at the project site due to the continuous agricultural history of the site.

Slender-Leaved Pondweed (*Stuckenia filiformis* ssp. *alpina*)

Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*) is categorized by CNPS as a rank 2B.2 species, meaning it is rare, threatened, or endangered in California, but more common elsewhere. Slender-leaved pondweed is strongly associated with open waters in freshwater marshes, swamps, shallow lakes, ponds, and drainage channels. This species generally blooms from May through July at elevations ranging from 985 to over 7,000 feet amsl (CNPS 2016).

Some of the irrigation ditches provide suitable habitat for slender-leaved pondweed, but most are highly maintained irrigation features heavily used to support farming activities in the area. The nearest CNDDB occurrence is over 8 miles to the southwest (CDFW 2016). Although this species was discussed as having low potential to occur at the project site in the biological assessment performed by Madrone Ecological Services (Madrone 2016b), the project site is outside the elevation range at which this species generally occurs. Additionally, this species was not observed within the project site during the site surveys that were conducted when this species would be evident and identifiable (Madrone 2016b). This species is not expected to occur within the project site.

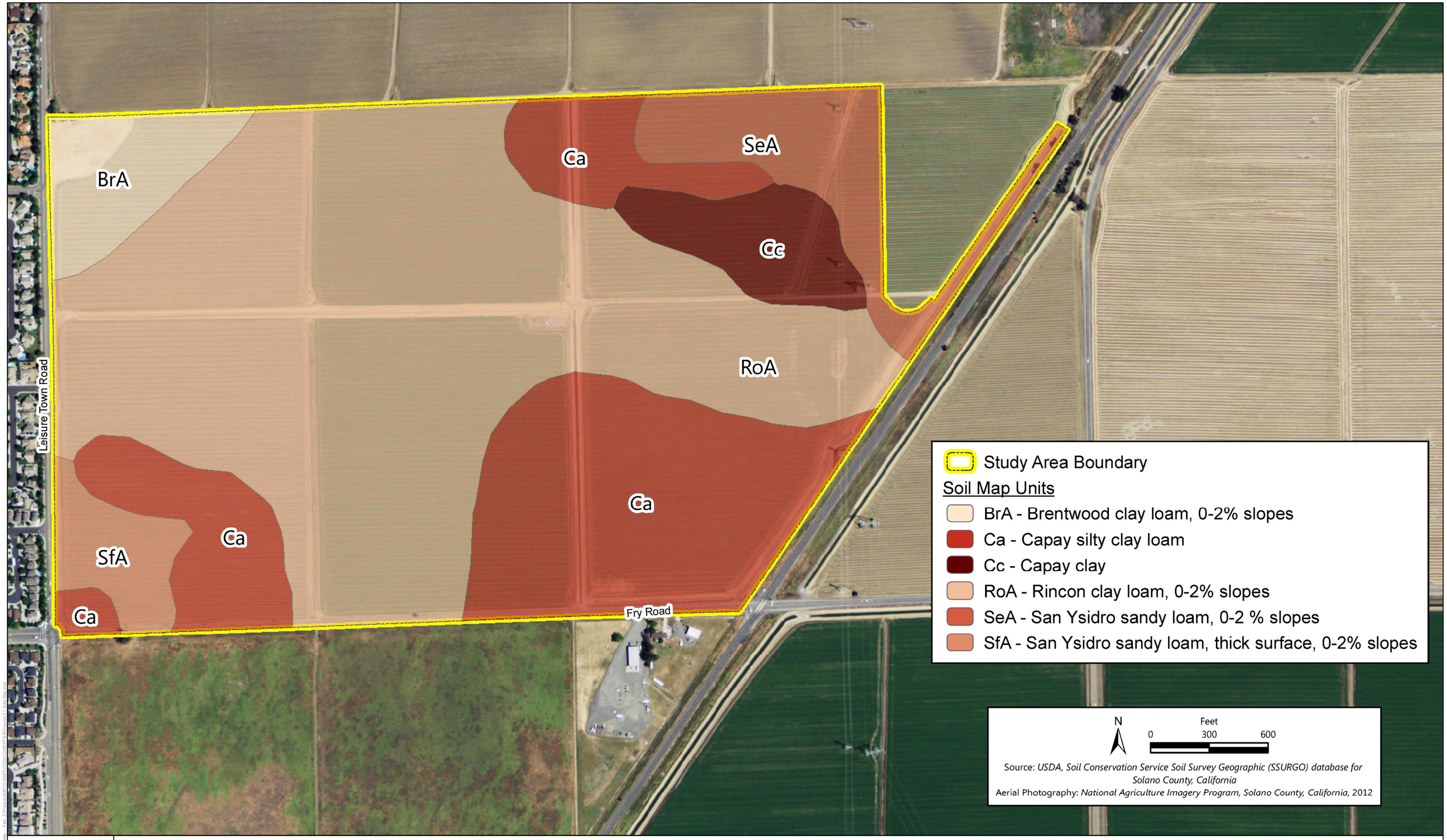
Special-Status Wildlife

Ricksecker's Water Scavenger Beetle (*Hydrochara ricksecker*i)

Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i) is an invertebrate species that has a State Ranking of S2?[1], meaning it is classified as imperiled in California because of rarity due to very restricted range, very few remaining population, steep declines, or other factors making it very vulnerable to extinction from the state. The ecology of this aquatic beetle is poorly understood, though other members of this family (Hydrophilidae) are scavengers with predaceous larva. The CNDDB describes the species as primarily present in vernal pools and seasonal wetlands, although it has also been observed in open waters such as lakes and reservoirs (Madrone 2016b).

The irrigation ditches within the project site provide what may be considered suitable habitat for this poorly understood species (Madrone 2016b). The closest CNDDB occurrence is approximately 3.5 miles to the south in a seasonal wetland that parallels a railroad right-of-way (CDFW 2016). However, there is low potential for this species to occur within the project site due to the highly maintained nature of these aquatic features.

[1] A question mark in conjunction with the ranking classification represents a rank qualifier, denoting an inexact or uncertain numeric rank. In this case, little is known about the range, distribution, and biology of this species.



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SOURCE: USDA; NAIP, 2012

FIGURE 4.2-1
Soil Map

Roberts' Ranch Specific Plan EIR

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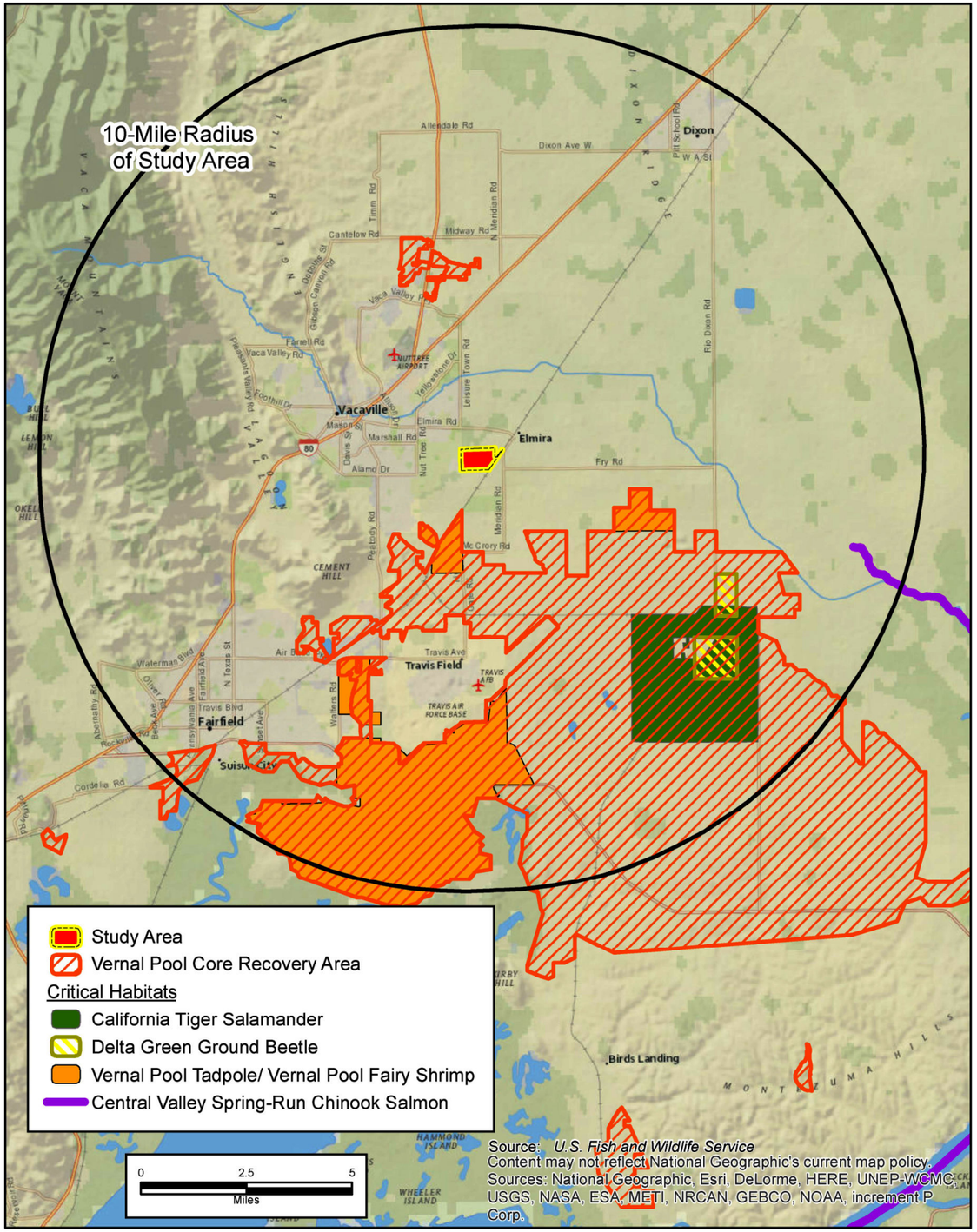

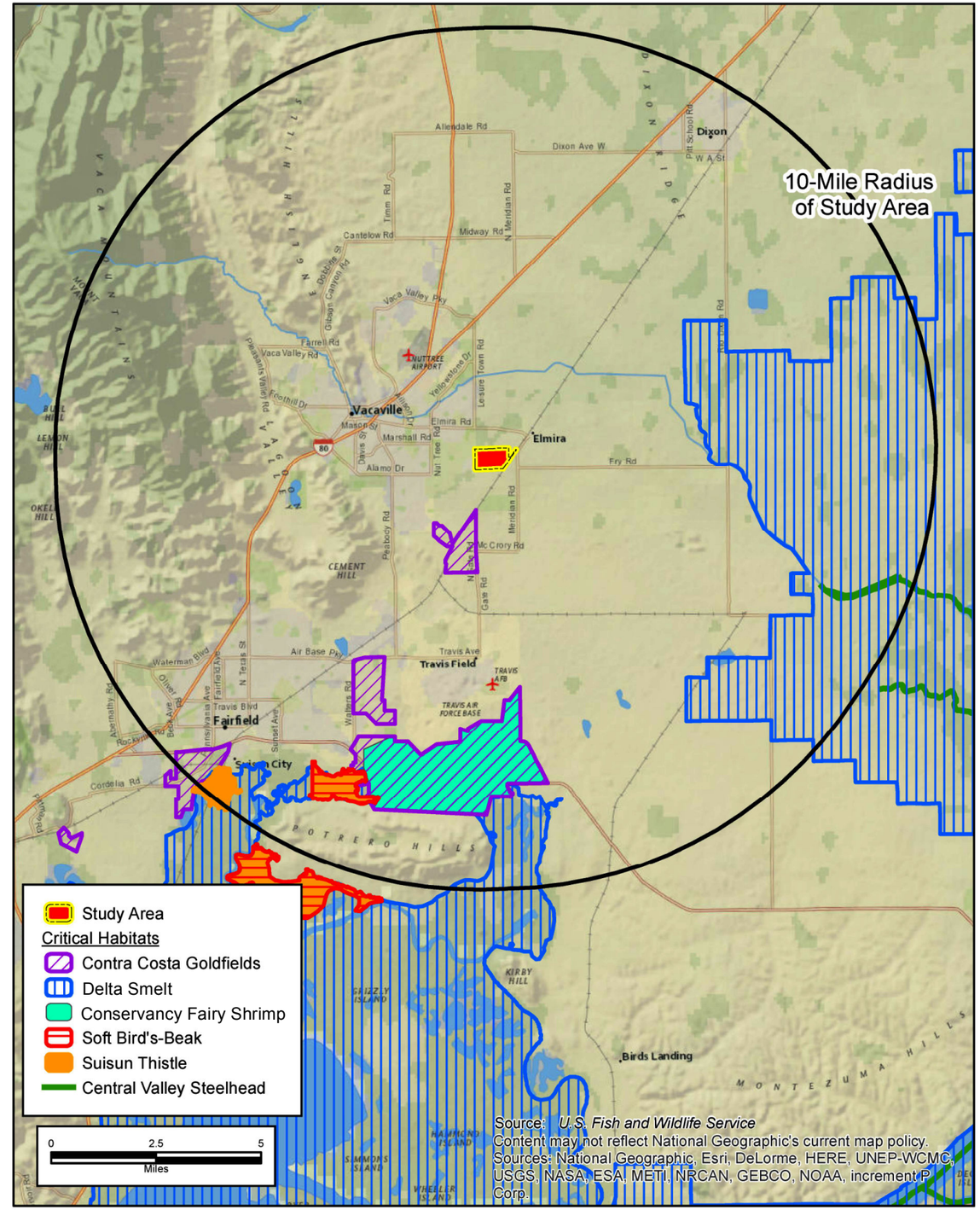

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FIGURE 4.2-2

Critical Habitat and Vernal Pool Core Recovery Areas

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Short-Eared owl (*Asio flammeus*)

Short-eared owl (*Asio flammeus*) is a raptor species designated as a species of special concern by the CDFW. This raptor requires sufficient vegetative cover for its ground nests and is strongly associated with open areas including grasslands, prairies, dunes, meadows, and agricultural lands where it forages for small mammals and birds (Madrone 2016b). In the project vicinity, this species is known only from one resident population located at the Grizzly Island Wildlife Area, located approximately 20 miles south of the project site (Shuford and Gardali 2008).

The agricultural lands within the project site provide suitable foraging habitat for short-eared owl. However, the ongoing agricultural practices preclude suitability of nesting habitat for this species within the project site. The closest CNDDB occurrence is over 20 miles south in coastal marsh and grassland habitats of the Grizzly Island Wildlife Area (CDFW 2016). This species was not observed during field surveys (Madrone 2016b). There is a moderate potential for this species to use the project site for foraging and no potential for this species to nest within the project site.

Burrowing Owl (*Athene cunicularia*)

Burrowing owl (*Athene cunicularia*) is a raptor species designated as a species of special concern by the CDFW. These owls typically inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use man-made structures such as culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (CDFW 2012). The breeding season extends from February 1 through August 31 (CBOC 1993, CDFW 2012).

A burrowing owl was observed during field surveys occupying a burrow located in the bank of one of the irrigation ditches (Madrone 2016b). The location of the active burrow is shown in Figure 4.2-3. This species has been observed within the project site.

Swainson’s Hawk (*Buteo swainsoni*)

Swainson's hawk (*Buteo swainsoni*) is a raptor species listed as threatened by CDFW. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents (Shuford and Gardali 2008). The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter (Shuford and Gardali 2008).

Swainson’s hawks were observed using the project site for foraging during field surveys; however, no nests or suitably sized trees are located within the project site (Madrone 2016b). No Swainson’s hawk nests were observed within the immediate vicinity of the project site. The

CNDDB records two occurrence within 0.5 mile of the project site. The closest nest was documented in 2011, approximately 0.4 mile to the northeast in Elmira between A Street and Lewis Road (CDFW 2016). There is a high potential for this species to use the project site for foraging, but no potential for this species to use the project site for nesting.

Mountain Plover (*Charadrius montanus*)

The mountain plover (*Charadrius montanus*) is a bird species categorized by CDFW as a species of special concern. This ground nester is considered a shorebird, but it prefers to live in drier areas away from water. It breeds in the Great Basin and migrates to California in the winter where its life cycle is poorly understood. It forages in California grasslands, pastures, and farmlands for insects, which make up the majority of its diet.

Mountain plovers are known locally to forage in the type of agricultural lands present within the project site. There is a moderate rather than a high potential for occurrence due to declining populations and its status as a wintering species in California rather than a year-round resident (Madrone 2016b). The closest CNDDB occurrence is approximately 9 miles southeast of the project site (CDFW 2016). This species was not observed on site during field surveys (Madrone 2016b). There is moderate potential for this species to use the project site for foraging, but no potential for this species to use the project site for nesting.

Northern Harrier (*Circus cyaneus*)

The northern harrier (*Circus cyaneus*) is a raptor species considered to be a species of special concern by the CDFW. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California (Shuford and Gardali 2008). The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands (Shuford and Gardali 2008).

A pair of northern harriers were observed using the project site for foraging during field surveys; however, no nests are located within the project site, which is currently planted in tomatoes. No northern harrier nests were observed within the immediate vicinity of the project site (Madrone 2016b). Due to the regular maintenance and farming practices and lack of wetland habitat, the project site does not provide suitable nesting substrates for this species. There is high potential for this species to use the project site for foraging and no potential for this species to use the project site for nesting.

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FIGURE 4.2-3

Biological and Wetland Resources

Roberts' Ranch Specific Plan EIR

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White-Tailed Kite (*Elanus leucurus*)

White-tailed kite (*Elanus leucurus*) is a raptor species that is a CDFW fully protected species. This species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands (Shuford and Gardali 2008). White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range (Shuford and Gardali 2008).

White-tailed kites were observed using the project site for foraging during field surveys; however, no nests or suitably sized trees are located within the project site. No white-tailed kite nests were observed within the immediate vicinity of the project site (Madrone 2016b). There is a high potential for this species to use the project site for foraging and no potential for this species to use the project site for nesting.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike (*Lanius ludovicianus*) is a bird species that is a CDFW species of special concern. Loggerhead shrikes nest in small trees and shrubs in woodland and savannah vegetation communities, and forage in open habitats including agricultural lands throughout California (Shuford and Gardali 2008). They require tall perches such as shrubs, trees, or fences for hunting, territorial advertisement, and pair maintenance. The nesting season ranges from March through June. Loggerhead shrike is a year-round resident in much of California.

The agricultural lands within the project site provide suitable foraging habitat for loggerhead shrike; however, the project site does not provide suitable nesting habitat for this species. This species was not observed on site during field surveys (Madrone 2016b). There is a high potential for this species to use the project site for foraging and no potential for this species to use the project site for nesting.

4.2.3 Regulatory Setting

Federal Regulations

Federal Endangered Species Act

The federal Endangered Species Act (FESA) (16 U.S.C. 1533) gives joint authority to list a species as threatened or endangered to the Secretary of the Interior (represented by the USFWS) and the Secretary of Commerce (represented by the National Marine Fisheries Service (NMFS)). FESA prohibits the “take” of endangered or threatened fish, wildlife, or plant species or adverse modifications to critical habitat, in areas under federal jurisdiction. Under

the Act "take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The USFWS and NMFS have interpreted the definition of "harm" to include significant habitat modification that could result in the take of a species.

Either an incidental take permit under Section 10(a) or an incidental take statement under Section 7 is required if an activity would result in the take of a federally listed species. Section 7 applies when a project includes federal funding or approvals, which not apply to the proposed project. Section 7 requires the reviewing agency to determine whether any federally listed species, or species proposed for listing, may be present on the project site and if the project is likely to affect the species. Additionally, the reviewing agency must determine if a proposed project is likely to jeopardize the existence of a listed species or a proposed listed species, or result in destruction or adverse modification of proposed or designated critical habitat for such species. FESA requires the federal government to designate "critical habitat" for any listed species, which is defined as specific areas within the geographical area occupied by the species at the time of listing if they contain physical or biological features essential to the species conservation, and those features that may require special management considerations or protection. Additionally, it includes specific areas outside the geographical area occupied by the species if the regulatory agency determines that the area itself is essential for conservation.

USFWS and/or NMFS must authorize projects where a federally listed species is present and likely to be affected by an existing or proposed project. Generally, terrestrial and freshwater fish species are under the jurisdiction of USFWS, while marine and anadromous fish species are under the jurisdiction of NMFS. Project authorization may involve a letter of concurrence that the project is not likely to adversely affect a listed species, or a Biological Opinion that describes what measures must be undertaken to minimize the likelihood of an incidental take. Projects determined by USFWS and NMFS to jeopardize the continued existence of a species cannot be approved under a Biological Opinion. Take that is incidental to the lawful operation of a project is permitted under Section 10(a) through approval of a habitat conservation plan (HCP), where a federal agency is not authorizing, funding, or carrying out the project.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) regulates and prohibits taking, killing, possessing, harming, or trading in migratory birds. The Act addresses whole birds, parts of birds, and bird nests and eggs. In the United States, the USFWS enforces this international treaty for the conservation and management of bird species that migrate through one or more countries.

Clean Water Act

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of waters of the United States (as defined in the Code of Federal Regulations: 33 CFR 328.3[a]). Section 401 of the Act (33 U.S.C. 1341) prohibits the discharge of any pollutant into waters of the United States. Project applicants for a federal license or permit to conduct activities including, but not limited to, the creation or operation of facilities, which may result in discharge into waters of the United States, must obtain certification that the project would not violate applicable effluent limitations and water quality standards. Section 404 of the Act (33 U.S.C. 1344) requires a federal license or permit from the U.S. Army Corps of Engineers prior to the discharge of dredge or fill material into waters of the United States, unless activity is exempt from Section 404 permit requirements. Permit applicants must demonstrate that they have attempted to avoid or minimize impacts on the resource; however, if no further minimization of impacts is possible, the applicant is required to mitigate remaining impacts on all federally regulated waters of the United States. In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards are responsible for the protection of water quality.

State Regulations

California Endangered Species Act

The California Endangered Species Act (CESA) and Section 2081 of the California Department of Fish and Game Code identifies measures to ensure state-listed species and their habitats are conserved, protected, restored, and enhanced. The Act requires permits from the CDFW for activities that could result in the take of a state-listed threatened or endangered species. “Take” is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86). Section 2080 of the Fish and Game Code prohibits the take of state-listed plants and animals unless otherwise permitted under Sections 2080.1, 2081, and 2835. Section 20814(b) affords CDFW the authority to issue permits for incidental take for otherwise lawful activities. To authorize an incidental take, the impacts of the take must be minimized and fully mitigated. Issuance of incidental take permits may not jeopardize the continued existence of a state-listed species. For species listed as threatened or endangered under FESA, CDFW may rely on a federal incidental take statement or permit to authorize an incidental take under CESA.

The California Fish and Game Commission maintains a list of threatened and endangered species (Fish and Game Code Section 2070). The California Fish and Game Commission maintains two additional lists: a Candidate species list, which identifies species under review for addition to either the endangered or threatened species list, and a Species of Special Concern

list, which serves as a watch list based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value.

California Fully Protected Species and Species of Special Concern

The classification of "fully protected" was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. California Fish and Game Code sections (fish at Section 5515, amphibians and reptiles at Section 5050, birds at Section 3511, and mammals at Section 4700) dealing with "fully protected" species state that these species may not be taken or possessed at any time, and no provisions in this code or any other law shall be construed to authorize permits for the take of fully protected species. Species of Special Concern are broadly defined as animals not listed under the FESA or CESA, but which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing, or they historically occurred in low numbers and known threats to their persistence currently exist. This classification intends to elicit special consideration for these animals by the CDFW, land managers, consulting biologists, and others. Additionally, this classification intends to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them.

California Fish and Game Code Section 3503

Birds of prey are protected in California under the Fish and Game Code Section 3503.5 (1992). Under Section 3503.5, it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (diurnal birds of prey) or Strigiformes (owls) or to take, possess, or destroy any nest or egg of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." The CDFW considers disturbance during breeding season that results in the incidental loss of fertile eggs or nestlings or otherwise leads to nest abandonment a "taking".

California Native Plant Protection Act

The California Native Plant Protection Act (California Fish and Game Code Sections 1900–1913) and the Natural Communities Conservation Planning Act provide guidance on the preservation of plant resources. Vascular plants that have no designated status or protection under state or federal endangered species legislation, but are listed as rare or endangered by the CNPS, are defined as follows:

1. California Rare Plant Rank (CRPR) 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
2. CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
3. CRPR 2A: Plants presumed extirpated in California, but common elsewhere

4. CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
5. CRPR: Plants about which more information is needed – a review list
6. CRPR 4: Plants of limited distribution – a watch list

Generally, plants with CRPR 1A, 1B, 2A or 2B, and 3 are considered to meet the criteria for endangered, threatened, or rare species as outlined by Section 15380 of the CEQA Guidelines. Additionally, plants listed as CRPR 1A, 1B, or 2 also meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code.

California Fish and Game Code Sections 1600–1616

Under Sections 1600–1616 of the California Fish and Game Code, CDFW regulates activities that would substantially alter the flow, bed, channel, or bank of streams and lakes. Such activities require a 1602 Lake and Streambed Alteration Agreement from CDFW. The California Code of Regulations defines a stream as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). The term “stream” includes rivers, creeks, ephemeral streams, dry washes, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Removal of riparian vegetation also requires a Section 1602 Lake and Stream Alteration Agreement from CDFW.

State Water Resources Control Board

The SWRCB administers Section 401 of the Clean Water Act, which requires that an applicant for a Section 404 permit first obtain a certification, or waiver thereof, that the project will not violate applicable state water quality standards. The SWRCB delegates authority to either grant certification or waive the requirement for certification to nine regional boards, including, in Solano County the Central Valley Regional Water Quality Control Board. The SWRCB protects all waters of the state, but has special responsibility for isolated wetlands and headwaters. These water bodies have high resources value but are vulnerable to filling and may lack regulation by other programs. Projects that require a U.S. Army Corps of Engineers permit, or fall under other federal jurisdiction, and have the potential to impact waters of the state are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to waters of the state, the water boards have the option to regulate such activities under the Porter-Cologne Act authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

California Environmental Quality Act

Although federal and state statutes protect threatened and endangered species, Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after definitions in FESA and the section of the California Fish and Wildlife Code dealing with rare or endangered plants and animals. CEQA Guidelines Section 15380(b) requires public agencies to determine whether projects would result in significant effects on species not listed by either the USFWS or CDFW (i.e., candidate species). Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Local Regulations

City of Vacaville General Plan

The City of Vacaville General Plan Conservation and Open Space Element provides guidance for new development and focuses on the protection of natural areas, including riparian corridors, which provide habitat and cover for wildlife and vegetation. The City provides specific protection for biological resources, as described in the following policies (City of Vacaville 2015).

Policy COS-P1.5 Require new development proposals to provide baseline assessments prepared by qualified biologists. The assessment shall contain sufficient detail to characterize the resources on, and adjacent to, the development site. The assessment shall also identify the presence of important and sensitive resources, such as wetlands, riparian habitats, and rare, threatened, or endangered species affected by the development.

Policy COS-P1.6 Require that new development minimize the disturbance of natural habitats and vegetation. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.

Policy COS-P1.7 Encourage new development to incorporate native vegetation into landscape plans.

Policy COS-P1.8 Prohibit the use of invasive, non-native species, as identified by the State or County Department of Agriculture or other authoritative sources, in landscaping on public property or in common areas in private developments.

Policy COS-P1.9 Require that new development include provisions to protect and preserve wetland habitats that meet one of the following conditions:

- The wetlands contribute to the habitat quality and value of reserve/preserve lands established or expected to be established in perpetuity for conservation purposes.
- The wetlands are contiguous to riparian or stream corridors, or other permanently protected lands.
- The wetlands are located within or contiguous to other high value natural areas.

Policy COS-P1.10 Where avoidance of wetlands is not practicable or does not contribute to long-term conservation of the resources, require new development to provide for off-site mitigation that results in no net loss of wetland acreage and functional value within the watersheds draining to the Delta or Suisun Marsh.

Policy COS-P1.12 Until the Solano Habitat Conservation Plan (HCP) is adopted, comply with all of the Avoidance, Minimization, and Mitigation Measures listed in the Draft Solano HCP (see Appendix A for a list of the Avoidance and Minimization Measures that are applicable to Vacaville). In addition, require that development projects provide copies of required permits, or verifiable statements that permits are not required, from the California Department of Fish and Wildlife (2081 Individual Take Permit) and US Fish and Wildlife Service (Section 7 Take Authorization) prior to receiving grading permits or other approvals that would permit land disturbing activities and conversion of habitats or impacts to protected species. In cases where environmental review indicates that such permits may not be required, the Community Development Director may establish time limits of not less than 45 days from the submission of an adequate request for concurrence response from an agency. If the agency has not responded, or requested a time extension of no more than 90 days to complete their assessment, within the established time frame, applicable grading permits or other authorizations may be provided, subject to other City requirements and review. However, the City's issuance of grading permits or other authorizations does not absolve the applicant's obligations to comply with all other State and federal laws and regulations.

City of Vacaville Municipal Code

The City of Vacaville's Tree Preservation Ordinance is included in Chapter 14.09.131 of the City's Municipal Code. The ordinance states that "[f]or the purposes of this chapter, tree means any live woody plant having one or more well defined perennial stems with an aggregate circumference of

31 inches or more, when measured at 4-1/2 feet above ground level." Per the Tree Ordinance, "[p]rior to cutting down, removing, or destroying one or more trees on any property in the City, the property owner or the owner's authorized representative shall submit an application for a tree removal permit." The project site is located within the planned City's Sphere of Influence and would be annexed by the City upon the finalization and approval of the Roberts' Ranch Specific Plan.

Travis Air Force Base Land Use Compatibility Plan

The Travis Air Force Base Airport Land Use Compatibility Plan (ALUCP) provides policies and guidance designed to ensure that future land uses surrounding the Air Force Base remain consistent and compatible with the airport facility safety and uses. The project site is within land use compatibility Zone D, which is an area subject to frequent aircraft overflight (ESA 2015). Residential and other development is consistent with guidelines presented for Zone D, with some restrictions for building height and wildlife attractants such as open water that may attract waterfowl. Further, the project site is within the "outer perimeter" area for bird strike hazard. New or expanded land use involving discretionary review that has the potential to attract the movement of wildlife and cause bird strikes are required to prepare a Wildlife Hazard Assessment, and the potential for new projects to attract wildlife must be reviewed as part of the environmental review process required by CEQA.

Draft Solano Multispecies Habitat Conservation Plan (Final Administrative Draft, 2012)

The Solano Multispecies Habitat Conservation Plan: Final Administrative Draft (Solano HCP) has been prepared to establish a framework for complying with state and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure (Solano County Water Agency 2012). The purpose of the Solano HCP is to reduce conflicts between listed species and economic development, agriculture, and other land use activities to promote conservation of biological diversity and, to the maximum extent practicable, contribute to the recovery of plant and animal species addressed in the Solano HCP. The latest draft of the Solano HCP was prepared in 2012, and until it is adopted, the recommendations and requirements are preliminary (Solano County Water Agency 2012).

The project site is currently within irrigated agricultural lands and is also within Zone 1 – Urban Development of the Solano HCP. Zone 1 includes all ground or habitat-disturbing projects and activities needed to accommodate urban growth including the construction and maintenance of public and private facilities, consistent with local general plans and local, state, and federal laws. This category includes, but is not limited to, the construction, maintenance, and operation of new commercial, residential, institutional, and industrial uses and associated infrastructure and

facilities (i.e., roads, utilities, stormwater control measures, parks, golf courses) (Solano County Water Agency 2012).

4.2.4 Impacts

Methods of Analysis

CEQA requires that projects analyze the potential impacts on special-status plant and animal species, as well as on sensitive habitats, wildlife corridors, and waters of the United States. Impacts on wildlife species that are not considered special-status under CEQA are generally not considered significant unless impacts are associated with the species' migration routes or movements, or the species are considered locally important. In the area surrounding the project site, other common species (e.g., skunk, raccoon, and possum) would not be considered special-status species; however, impacts on their movements and migration routes would be considered significant under CEQA. Regardless of status, all nesting native bird species are protected from harm under the state Fish and Game Code and the federal MBTA.

The following sources were reviewed in the process of evaluating potential project impacts including the proposed Roberts' Ranch Specific Plan (City of Vacaville 2015 available on the City's website at http://www.cityovacaville.com/RobertsRanch); Aquatic Resources Delineation, prepared by Madrone Ecological Consulting (Madrone 2016a – Appendix D); Biological Resources Assessment, prepared by Madrone Ecological Consulting (Madrone 2016b – Appendix D); and relevant Federal, State, and local regulations and plans as they relate to sensitive biological resources.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans (including the current Draft of the Solano HCP), policies, regulations, or by the CDFW or USFWS.
- Result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Result in a substantial adverse effect on federally regulated wetlands or waters as defined by Section 404 of the Clean Water Act and/or State protected wetlands as

defined by the Porter-Cologne Water Quality Control Act through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources.

Direct impacts refer to the permanent loss of on-site habitat and the plant and wildlife species that it contains. All biological resources within the direct permanent impact area are considered 100% lost.

Indirect impacts refer to off-site and on-site "edge effects" that are short-term (i.e., not permanent) as a result of project construction or long-term (i.e., permanent) due to the design of the project and the effects it may have to adjacent resources. Examples of "edge effects" include dust, noise, and general human presence that may temporarily disrupt species and habitat vitality and construction-related soil erosion and runoff.

Impacts and Mitigation Measures

4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. This would be a potentially significant impact.

Special-Status Plants

The project site provides marginally suitable habitat for special-status plants including round-leaved filaree, Congdon's tarplant, and pondweed, because the habitat on site is highly disturbed due to agricultural uses and these species were not observed during the site survey. The site surveys were conducted during a time when these special-status plants would be evident and identifiable (Madrone 2016b). Thus, it is not likely these plant species occur on the project site and any impacts to special-status plant species anticipated to occur as a result of the proposed project would be **less than significant**.

Special-Status Wildlife

Irrigation canals within the project site provide moderately suitable habitat for Ricksecker's water scavenger beetle. The remainder of the site provides suitable nesting and foraging habitat for

short-eared owl and burrowing owl, as well as suitable foraging habitat for Swainson's hawk, Northern harrier, white-tailed kite, loggerhead shrike, and mountain plover. Potential impacts to these species and their habitat are discussed below.

Ricksecker's Water Scavenger Beetle

The irrigation canals and Frost Canal provide moderately suitable habitat for this species; however, these aquatic habitats are managed for agricultural practices and were dry at the time of the site survey (Madrone 2016b). Because of this species rarity and the lack of reliable inundation in on-site aquatic features, it is highly unlikely this species is present on the project site. There would be **no impact** to Ricksecker's water scavenger beetle as a result of project activities.

Short-Eared Owl

The agricultural fields that comprise the project site provide potentially suitable foraging habitat for this species; however, agricultural activities would interfere with nesting activities and it is highly unlikely this species uses this site for nesting. Approximately 248 acres of agricultural land that currently provides foraging habitat for this species would be converted to other land uses, thereby reducing the available foraging habitat for this species. Approximately 13.5[2] acres of the project site would be left in undeveloped open space that may provide foraging opportunities for this species; however, the removal of the remaining approximately 234.5 acres of available foraging habitat constitutes a **potentially significant impact** to this species.

Burrowing Owl

An active burrowing owl burrow was observed within the project site during site surveys (Madrone 2016b). Construction activities such as grading and operation of heavy equipment, could result in the abandonment or failure of active burrows either through direct destruction of burrows or through indirect effects from noise and vibration associated with construction equipment. This is considered a **potentially significant impact**.

The project site is within an area designated by the Solano County Water Agency's draft HCP as an Irrigated Agriculture Conservation Area (Solano County Water Agency 2012). The 248-acre project site currently provides foraging habitat for this species and would be converted to other land uses, thereby reducing the available foraging habitat for burrowing owl. As noted previously, approximately 13.5 acres of the project site would be converted to open space that provides nesting and foraging opportunities for this species; however, the removal of the remaining approximately 234.5 acres of available nesting and foraging habitat constitutes a **potentially significant impact** to this species.

[2] This includes the agricultural buffer and areas of passive open space.

Swainson's Hawk

Although there are no trees within the project site that would provide suitable nesting habitat for Swainson's hawk, a nest has been documented approximately 0.5 mile northeast of the project site near the town of Elmira (CDFW 2016). Swainson's hawks could be significantly impacted by the loss of suitable foraging habitat. Additionally, noise, light, and other activities associated with construction could result in nest failure if active nests are present within 0.5 mile of the project site at the time of construction.

The proposed project would result in the conversion of approximately 248 acres of agricultural land to residential development. Approximately 13.5 acres of this would be left in open space that provides foraging habitat for raptors. However, the project, if approved, would result in the total removal of approximately 234.5 acres of the available foraging habitat for Swainson's hawk in the region. The removal of this foraging habitat is considered a **potentially significant impact**.

Northern Harrier, White-Tailed Kite, Loggerhead Shrike, and Mountain Plover

Although there is no suitable breeding habitat for northern harrier, white-tailed kite, loggerhead shrike, or mountain plover within the project site, the project's agricultural lands provide suitable foraging habitat for these species. The removal of approximately 234.5 acres of available foraging habitat is considered a **potentially significant impact**.

Mitigation Measures

The following mitigation measures would reduce the potential for impacts on special-status species by ensuring the species are identified and protected during project construction activities and any breeding, nesting or foraging habitat replaced and preserved in perpetuity to ensure the survival of the species. Compliance with these mitigation measures would reduce project impacts to less than significant.

Short-Eared Owl

BIO-1 Impacts from construction-related noise may occur to avian wildlife if construction occurs during the breeding season (i.e., February 1–August 31 for most bird species; and January 1–August 31 for raptors). Protection of general bird species shall be accomplished by either scheduling construction between July 15 and February 1 or if construction must occur during the nesting season (February 1–July 15), a one-time biological survey for nesting bird species shall be conducted. The biological survey shall be conducted by a qualified biologist to identify the presence of nesting birds no more than 72 hours prior to the commencement of work. If any active nests are detected, the area shall be

flagged and mapped on construction plans along with a minimum 25-foot buffer with up to a 300-foot maximum buffer for raptors, as determined by the qualified biologist. These areas shall be avoided until the nesting cycle is complete or it is determined that the nest has failed.

Burrowing Owl

BIO-2 Burrowing owls could be significantly impacted by both the loss of suitable nesting and foraging habitat, as well as direct destruction of burrows, eggs, nestlings, and nesting owls. Mitigation Measures BIO-2 through BIO-3 correspond to Avoidance and Minimization Measures BO 1 through BO 4 in the Solano HCP (Solano County Water Agency 2012) and recommendations detailed in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

a. Within 14 days prior to the anticipated start of construction, a qualified biologist approved by the CDFW shall conduct preconstruction surveys within the project site to identify burrowing owls or their nesting areas for burrowing owl. This survey shall follow survey protocols outlined in the most current draft of the Solano HCP and as developed by the Burrowing Owl Consortium (Solano County Water Agency 2012; CDFW 2012). If no active burrows or burrowing owls are observed, no further mitigation is required. If a lapse in construction of 15 days or longer occurs during the nesting season, additional preconstruction surveys shall be repeated before work may resume.

b. If burrowing owls or active burrows are identified within the project site during the preconstruction surveys, the following measures shall be implemented:

    1. During the non-breeding season for burrowing owls (September 1 through January 31), exclusion zones shall be established around any active burrows identified during the preconstruction survey. The exclusion zone shall be no less than 160 feet in radius centered on the active burrow. With approval from CDFW, burrowing owls shall be passively evicted and relocated from the burrows using one-way doors. The one-way doors shall be left in place for a minimum of 48 hours and shall be monitored daily to ensure proper function. Upon the end of the 48-hour period, the burrows shall be excavated with the use of hand tools and refilled to discourage reoccupation.

    2. During the breeding season (February 1 through August 31), a qualified biologist familiar with the biology and behavior of this species shall establish exclusion zones of at least 250 feet in radius centered on any active burrow identified during the preconstruction survey. No

construction activities shall occur within the exclusion zone as long as the burrow is active and young are present. Once the breeding season is over and young have fledged, passive relocation of active burrows may proceed as described in measure b.1, above.

3. The buffer widths may be reduced in consultation with CDFW and with the following measures:

   - A site specific plan shall be prepared that documents and described how the nesting or wintering owls would not be adversely affected by construction activities;
   - Monitoring shall occur by a qualified biologist approved by CDFW. All monitoring shall be conducted for a sufficient time, for a minimum of 10 consecutive days following initiation of construction and it is shown the owls do not exhibit adverse reactions to construction activities;
   - Burrows are not in danger of collapse due to equipment traffic; and
   - Monitoring is continued at least once a week through the nesting/wintering cycle at the site and no change in behavior by owls is observed; biological monitoring reports shall be submitted to CDFW.

BIO-3 Mitigation for the permanent loss of burrowing owl foraging habitat for urban development or other permanent facilities shall be provided at a 1:1 land/area ratio. The final acreage for mitigation calculations shall be determined based on final design of the open space areas within the project site. This measure may be accomplished in conjunction with Swainson's hawk Mitigation BIO-4, below, provided the following additional measures are implemented.

- At least 5 acres of mitigation area shall be permanently taken out of agricultural production, either on the project site or in another suitable location, to provide suitable nesting habitat and cover for burrowing owls.
- At least four artificial burrow complexes (three multi-entrance burrows per complex) shall be installed within the habitat set aside for burrowing owls.
- Vegetation within the owl habitat shall maintain an average effective vegetation height less than or equal to 6 inches from February 1 to April 15, when owls typically select mates and nest burrows. In addition, tree and shrub canopy cover shall be limited to the edges of the set aside area and shall not be within 200 feet of the artificial burrows.
- Burrowing owl habitat mitigation areas shall be subject to deed restrictions that would limit future urban development.

- An Open Space Maintenance Plan shall be prepared and implemented to insure open space lands within the project site and mitigation lands are maintained, to the extent feasible, to be compatible for use by burrowing owl.
- Adequate funding shall be provided to manage the owl mitigation area, including maintenance of the artificial burrows and grass height, in perpetuity.

Swainson's Hawk

BIO-4 This Mitigation Measure is consistent with Avoidance and Minimization Measures SH-1 through SH-5 in the Solano HCP (Solano County Water Agency 2012).

a. If construction occurs during the nesting season for Swainson's hawk (March 1 through August 31), a qualified biologist approved by the CDFW shall conduct preconstruction surveys no more than 15 days prior to construction to identify nesting Swainson's hawk within 0.25 mile of the project site. If a lapse in project-related construction activities of 15 days or longer occurs, additional preconstruction surveys shall be conducted prior to reinitiating work.

b. If an active Swainson's hawk nest is identified within 0.25 mile of the project site, an exclusion buffer shall be established in consultation with the biologist and CDFW. No construction work such as grading, earthmoving, or any operation of construction equipment shall occur within the buffer zone except as provided below in mitigation measure BIO-5 and in consultation with CDFW. Construction may commence normally in the buffer zone if the nest becomes inactive (e.g. the young have fully fledged), as determined by the qualified biologist.

BIO-5 The project applicant shall mitigate for the loss of Swainson's hawk irrigated foraging habitat by preserving a minimum of 1:1 land/area ratio of similar habitat. The final acreage for mitigation calculations shall be determined based on final design of the open space areas within the project site. The preservation of the mitigation area shall be accomplished through purchase of credits from a bank approved by the CDFW to provide such credits, such as the Elsie Gridley Mitigation Bank or the Burke Ranch Conservation Bank (CDFW 2016) or through preservation of irrigated agricultural lands protected in perpetuity by a conservation easement. Such an easement shall include provisions that provide for agricultural uses that are compatible with Swainson's hawk foraging needs. Agricultural foraging habitats shall consist of alfalfa, tomatoes, other annual vegetable row crops, and grain. The mitigation area shall not include crop types and land uses incompatible with Swainson's hawk foraging. The following additional restrictions and prohibited uses, at a minimum, shall also be noted as forbidden within the conservation easement:

- Commercial feedlots, which are defined as any open or enclosed area where domestic livestock are grouped together for intensive feeding purposes.
- Horticultural specialties, including sod, nursery stock, ornamental shrubs, ornamental trees, Christmas trees, or flowers.
- Commercial greenhouses or plant nurseries.
- Commercial aquaculture of aquatic plants, animals, and their byproducts.
- Planting orchards or vineyards for the production of fruits, nuts, or berries except in designated farmstead areas.
- Cultivation of perennial vegetable crops such as artichokes and asparagus, as well as annual crops such as cotton or rice.
- Construction, reconstruction, or placement of any building, billboard or sign, antennas, towers, and facilities for generation of electrical power, or any other structure or improvement of any kind, except as may be specifically permitted in site-specific management plan. Acreage occupied by any such existing facilities may not be counted toward mitigation requirements.

The City shall consult with CDFW prior to approving the site, conservation easement, and conservation easement holder.

Northern Harrier, White-Tailed Kite, Loggerhead Shrike, and Mountain Plover

BIO-6 Impacts from construction-related noise may occur to avian wildlife if construction occurs during the breeding season (i.e., February 1–August 31 for most bird species; and January 1–August 31 for raptors). Protection of general bird species shall be accomplished by either scheduling construction between July 15 and February 1, or if construction must occur during the nesting season (February 1–July 15). A one-time biological survey for nesting bird species shall be conducted by a qualified biologist in all suitable habitat for the presence of nesting birds 72 hours prior to the commencement of work. If any active nests are detected, the area shall be flagged and mapped on construction plans along with a minimum 25-foot buffer up to a 300-foot maximum for raptors, as determined by the qualified biologist. These areas shall be avoided until the nesting cycle is complete, or it is determined that the nest has failed.

4.2-2: Implementation of the proposed project could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS. There would be no impact.

Due to the highly disturbed nature of the project site, and the current agricultural usage, no riparian habitat or other sensitive natural communities occur within the project site. The agricultural ditches and canals within the project site are regularly maintained and vegetation is largely absent. Thus, there would be **no impact** to riparian habitat or other sensitive natural communities.

Mitigation Measures

None required.

4.2-3: Implementation of the proposed project may result in placement of fill into potential jurisdictional waters of the U.S and State. This would be a potentially significant impact.

A total of 1.726 acres of potential jurisdictional irrigation ditches have been mapped within the project site (Madrone 2016a). The project proposes converting Frost Canal to a pipe that would continue to convey irrigation water under the project site. Because Frost Canal is considered an irrigation ditch, construction activities associated with it, including the conversion of the ditch into a pipe, may be exempt from permitting under Section 404(f)(1) of the Clean Water Act. However, this does not exempt this water feature from potential permitting required by the Regional Water Quality Control Board or the California Department of Fish and Wildlife. Conversion of these aquatic features to a developed environment would constitute a **potentially significant impact** to potential waters of the State.

Mitigation Measures

The following mitigation measure would reduce potential impacts to less than significant by requiring the loss of aquatic habitat be replaced at a 1:1 ratio.

BIO-7 To mitigate for the loss of potentially jurisdictional waters of the United States and/or waters of the State, the project applicant shall create, preserve, or restore an equivalent amount of jurisdictional waters not exempt from Sections 404 or 401 of the Clean Water Act. Actual mitigation acreage requirements shall be adjusted in conjunction with the U.S. Army Corps of Engineers and the Regional Water Quality Control Board. Mitigation may be accomplished by either of the following:

a. Creation of similar habitat either on- or off-site at an appropriate mitigation site; or

b. Purchase of the appropriate number of credits at an agency-approved off-site wetland mitigation bank. The Elsie Gridley Mitigation Bank services in Solano County has been approved by the USFWS to provide wetland mitigation credits (ACOE 2016).

4.2-4: Implementation of the proposed project may interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. There would be a less-than-significant impact.

As described previously, the agricultural lands that comprise the project site, in conjunction with existing residential development to the east and north, reduce the site's suitability as a wildlife movement corridor. The on-site canals that bisect the project site do not provide suitable migratory habitat for fish species. The project site is within the Pacific Flyway; however, because there is no suitable aquatic habitat or foraging habitat for waterfowl within the project site, it is unlikely that migrating birds would use the site as a stopover. The availability of additional agricultural lands in the project vicinity and the proximity to the project site of the Sacramento-San Joaquin River Delta provide more suitable foraging and resting habitat for migratory birds. Therefore, the conversion of approximately 234.5 acres of agricultural lands would constitute a **less-than-significant impact** to the movement of resident or migratory fish or wildlife species.

Mitigation Measures

None required.

4.2-5: Implementation of the proposed project could conflict with applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, including the Solano County Water Agency's draft HCP adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources. This would be a significant impact.

The Roberts' Ranch Specific Plan has been designed to be consistent with the City's General Plan (City of Vacaville 2015). Although the Solano HCP is still in draft form and has not yet been finalized or adopted, the City's General Plan mandates that the measures covered in the most current draft of the Solano HCP shall be used (City of Vacaville 2015). Thus, the draft Solano HCP is treated in this document as an accepted plan for the purposes of analyzing and mitigating potential impacts. Conversion of approximately 234.5 acres of irrigated agricultural lands to a residential development would not be compatible with the draft Solano HCP goal for conservation of such lands for foraging and nesting habitat for covered species. Further, the project site is within areas designated as an Irrigated Agriculture Conservation Area for both Swainson's hawk and burrowing owl. Removal of this land would be considered a **significant impact.**

As described previously, the project site is within land use compatibility Zone D of the Travis Air Force Base Land Use Compatibility Plan (ESA 2015). No new water features are proposed as part of the project. There are no new attractants to birds that may potentially cause bird strike

hazard for planes associated with Travis Air Force Base. Additionally, no buildings or structures are proposed to be 200 feet tall or greater. Thus, the proposed project would be consistent with the Travis Air Force Base Land Use Consistency Plan and there would be **no impact**. Please see Section 4.4, Land Use and Planning for more information pertaining to computability with the Travis Air Force Base Land Use Consistency Plan.

Mitigation Measures

Compliance with Mitigation Measures BIO-4 and BIO-5 would ensure impacts to the loss of land designated Irrigated Agriculture Conservation Area would be reduced to less than significant.

BIO-8 Implement Mitigation Measures BIO-4 and BIO-5.

4.2.5 Cumulative Impacts

When considered independently, impacts from an individual project may not be significant; however, the combined effects of several projects may be significant when considered collectively. Cumulative impacts associated with the Roberts' Ranch Specific Plan have been analyzed a Vacaville-centered regional context with other past, current and reasonably foreseeable development projects. The City of Vacaville is currently managing several development projects within several miles of the proposed project. These include the Brighton Landing Specific Plan Project (City of Vacaville 2012), the Vanden Meadows Specific Plan Project (City of Vacaville 2013), and the Jepson Parkway Project (Caltrans 2011). Potential cumulative impacts to biological resources from cumulatively considered regional projects are discussed below.

4.2-6: The proposed project could contribute to cumulative impacts to special-status species in the region due to removal of foraging and breeding habitat. This would be a potentially significant impact.

The proposed project would result in the conversion of approximately 234.5 acres of low quality foraging habitat for Swainson's hawk, burrowing owl, and other raptors. In conjunction with other urban development projects in the City of Vacaville and surrounding municipalities, a large amount of historic foraging and nesting habitat for special-status raptors and birds has been removed from the region. The Solano HCP anticipated conversion of approximately 14,000 acres of current habitat over the next 30 years, including agricultural lands to urban uses and loss of wetlands. The Roberts' Ranch Specific Plan area is located within the area identified for future development. Additionally, the implementation of the proposed mitigation measures for this project and other development projects in the region would result in preservation or restoration of similar habitat in perpetuity. Thus, cumulative impacts would be **less than significant** with project mitigation incorporated.

Mitigation Measures

Compliance with Mitigation Measures BIO-4, BIO-5, and BIO-7 would ensure impacts to the loss of foraging and breeding habitat for special-status species would be reduced to less than significant.

BIO-9 Implement Mitigation Measures BIO-4, BIO-5, and BIO-7.

4.2.6 References

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4.3 CULTURAL RESOURCES

4.3.1 Introduction

This section evaluates the potential effects on cultural resources associated with development and operation of the Roberts' Ranch Specific Plan project (proposed project). The potential for prehistoric and historical resources to be damaged as a result of development of the proposed project is described and applicable federal, state, and regional regulations pertaining to the protection of cultural resources are identified and potential project-specific and cumulative impacts on cultural resources are evaluated and measures included to minimize impacts.

One comment letter was received in response to the Notice of Preparation (NOP) from the Yocha Dehe Wintun Nation Cultural Resources Department stating that the project is within the aboriginal territories of the Yocha Dehe Wintun Nation and requesting additional information on the proposed project including the most recent Cultural Resources Study. A copy of the Cultural Constraints Memorandum was sent to the representative from the Yocha Dehe Cultural Resources Department. A copy of the NOP and comments received in response to the NOP is included in Appendix A.

Resources referenced to prepare this section include the Cultural Constraints Memorandum prepared by Dudek in 2016 and the City of Vacaville General Plan (City of Vacaville 2015). A copy of the Cultural Constraints Memorandum is included in Appendix E.

4.3.2 Environmental Setting

This section describes the historical and cultural background of the region, the existing conditions on the project site, and identifies the resources that could be affected by the proposed project.

Prehistory Background

The Sacramento Valley may have been inhabited by humans as early as 10,000 years ago. The archaeological remains from this period are rare but have been found in and around the Central Valley, although none have been identified in Solano County. Early remains were grouped into the Farmington Complex, which is characterized by core tools and percussion flakes, and named due to the belief that the economy at the time was based on exploitation of large game (City of Vacaville 2012).

Three general patterns of resource use have been identified for the period between 4500 years before present (B.P.) and the arrival of the European Americans in California. The Windmiller Pattern (4500 B.P.-2500 B.P.) was characterized by a mixed economy that relied on game,

fishing and plant foods. Numerous projectile points, fishing hooks, spears and a wide range of animal remains are contained in the archaeological record during this period. The Augustine Pattern (1500 B.P.) persisted into the ethnographic period and exhibits further development of ceremonial and social organization, including social stratification. Subsistence patterns in the Augustine Pattern reflect those of the Patwin people and the evidence of shaped mortars and pestles indicate a stronger emphasis on the use of the acorn (City of Vacaville 2012).

Ethnology

Native Californians likely settled in Vacaville between 12,000 and 6,000 years ago. The Patwin people resided in the area west of the Sacramento River to the crest of the Coast Ranges. Patwin lands include all of present-day Vacaville with the village of Ululato located in present-day downtown Vacaville along the Ulatis Creek. The Patwin people were a typical hunter-gathering group and exhibited basic social and political units. Patwin social organization was based on familial ties and divided into three main groups: the paternal family, the family social group, and the household. Generally, a tribelet headman would reside in the major village where ceremonial events were held (City of Vacaville 2012).

Patwin culture was drastically altered following the Hispanic exploration and settlement of the Bay Area in the late 18th century and the establishment of the Catholic missions. Patwin people were baptized at several missions between 1815 and 1832 and after 1834, following the secularization of the missions, native peoples were frequently moved to ranchos and worked as manual laborers (City of Vacaville 2012).

Remnants of inhabited semi-permanent villages of the Patwin have been found in the hills around Vacaville. Dozens of prehistoric archaeological resources in the Vacaville area, including habitation sites, burial sites, and isolated tools have been identified (City of Vacaville 2015).

History

Manuel Vaca and Juan Felipe Pena arrived in the vicinity of the project site in 1842 and established temporary homes near the center of Lagoon Valley and Laguna Creek. Vaca's permanent adobe home was constructed within a year near present-day Cherry Road and Pena's permanent small adobe home was constructed approximately 0.33 mile southwest. Both of these homes are identified as historic resources within the City and are listed in the National Register of Historic Places (City of Vacaville 2015). In 1845, Vaca and Pena were issued a land grant for a 44,000-acre site west of the proposed project site. Beginning in 1849, parcels of this land were sold to those interested in establishing ranches in the area.

The town of Vacaville was established in 1851 and by the end of that year had a population of 580. During the mid to late 19th century, livestock and wheat production were the principal

economic products in the county and by the 1890s fruit production was the primary economic product. The town of Vacaville was formally incorporated in 1892 (City of Vacaville 2015).

Records Search

A records search was conducted by Dudek through the Northwestern Information Center (NWIC) of the California Historical Resources Information Center (CHRIS). No cultural resources have been identified within the project site, but eight resources have been recorded within a 1-mile radius (Appendix E). These resources are detailed below in Table 4.3-1. Additional sources consulted at the NWIC included the National Register of Historic Places, Office of Historic Preservation (OHP) Archaeological Determinations of Eligibility (ADOE), OHP Historic Property Directory (HPD), and historical maps. No properties relating to these sources were identified within the project area. The Native American Heritage Commission (NAHC) performed a Sacred Lands File search, which failed to identify any Native American cultural resources in the area (Appendix E).

Table 4.3-1
Resources Identified by NWIC Records Search

Primary Number	Trinomial	Age	Within Project Area	Description
P-48-000178	CA-SOL-383	Historic	No	Highway/Road
P-48-000149	—	Prehistoric	No	Isolated Flake
P-48-000546	—	Historic	No	Water Tower
P-48-000549	—	Historic	No	Southern Pacific Railroad
P-48-000745	—	Historic	No	Single Residence Property
P-48-000974	CA-SOL-488	Historic	No	Farmstead
P-48-001025	—	Historic	No	Vaca Valley Railroad
P-48-001026	—	Historic	No	Elmira Depot

Source: Appendix E

Previous Research

The NWIC report indicates that 35 cultural resource studies have been conducted within a 1-mile radius of the project area, five of which include small areas within, and larger areas immediately adjacent to the Roberts' Ranch Specific Plan area. The majority of the project site has not been subject to previous investigation noted by studies on file at the NWIC. Studies previously conducted near the project site are S-005164 and S-004980, which are summarized in Table 4.3-2 and described in more detail below.

Table 4.3-2
Previous Cultural Resource Studies

Report ID	Year	Author	Title
S-005164	1981	David Chavez	Vacaville Southeast Sector Environmental Impact Report (letter report)
S-044980	2013	Neal Kaptain	Cultural Resources Study for the Brighton Landing Project, Vacaville, Solano County, California

Source: Appendix E

S-005164

This report, prepared by David Chavez, presents the results of an archaeological field reconnaissance survey conducted as part of the 1981 Vacaville Southeast Sector Environmental Study. The study area was composed of two components: the 275-acre David E. Bohannon Company development site and a broader 1,080-acre area affected by the proposed development. A reconnaissance-level pedestrian survey was conducted for the project site and no cultural resources were identified. However, the study noted that the Roberts' Ranch project site is of moderate archaeological sensitivity and recommended more intensive and comprehensive cultural field investigations be conducted (Appendix E).

S-044980

This study was prepared by Neal Kaptain of LSA Associates and documents the results of a cultural resources survey that was conducted as part of the Brighton Landing Specific Plan project in 2013. The Brighton Landing project site is located immediately north and slightly overlaps the proposed project site. The archaeological survey for the Brighton Landing project covered a small portion of the northeast corner of the Roberts' Ranch Specific Plan area. Two possible prehistoric chert flakes and a concentration of basalt flakes were identified in disturbed sediments near the Union Pacific Railroad tracks during a site visit with Yocha Dehe Wintun National tribal representatives. It is possible that the recorded location of these flakes is near the area that could be disturbed by off-site sewer construction related to the project. However, there is no record of any lithic flakes being formally recorded and no cultural materials were noted during Dudek's pedestrian level survey and there is no record of any of the lithic flakes having been formally recorded as part of the LSA Associates survey (see Appendix E). Given the disturbed context relative to the train tracks there is a high likelihood that these flakes were mechanical fractures and were later determined to be non-cultural. The results of the study suggest that the Brighton Landing project area is located within an environment that is conducive to prehistoric habitation and use and is considered to have a high sensitivity for buried prehistoric cultural deposits. The EIR completed for the Brighton Landing project

recommended that should archaeological material be encountered during project-related disturbances, work would cease in the area and any potential resource be evaluated by a qualified archaeologist for eligibility to be listed on the California Register of Historic Resources (CRHR) and local register (Appendix E).

Archaeological Survey

A pedestrian level survey of the entire 248-acre project site was conducted by Dudek on March 10, 2016. The survey included examination of ground surfaces for prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions, features indicative of the current or former presence of structures or buildings (e.g., standing exterior walls, post holes, foundations) and historic artifacts (e.g., metal, glass, ceramics, building materials). Ground disturbances such as burrows, cut banks, and drainages were also visually inspected for exposed subsurface materials. There are no buildings present on the project site.

All fieldwork was documented using field notes, digital photography, a Global Positioning System (GPS) receiver with sub-meter accuracy, iPad technology with close-scale field maps, and aerial photographs. Location-specific photographs were taking using an Apple 3rd Generation iPad equipped with 8 MP resolution and georeferenced PDF maps of the project site. Accuracy of this device ranged between 3 and 10 meters.

The pedestrian level cultural survey did not identify any cultural resources on the project site. The project site is located within disturbed and undeveloped agricultural lands. Most of the project site consists of plowed, agricultural fields. There are several dirt roads that run west-east along the southern boundary of the project area and a dirt road that bisects the project area (north-south). Ground visibility was good (80%–100%) and all surface soils within the project site appear to have been disturbed by continuous agricultural activities.

Paleontological Background

Paleontological resources include fossil remains, as well as fossil localities and rock or soil formations that have produced fossil material. Fossils are the remains or traces of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in: (1) documenting the presence and evolutionary history of particular groups of now extinct organisms, (2) reconstructing the environments in which these organisms lived, and (3) determining the relative ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments that formed these strata and in their subsequent deformation.

The City lies within a transition zone between the Sacramento Valley to the east and the Coast Range to the west and is comprised of a variety of rock types dating from various geologic periods. Certain formations in these rock types may contain fossils that are paleontologically significant (City of Vacaville 2015). The project site is underlain by Holocene and Pliestocene Alluvium soils (Solano County 2008, Figure 4.7-1). Holocene alluvial deposits generally contain vertebrate and invertebrate fossils of extant modern taxa, which are generally not considered paleontologically significant. Pleistocene alluvial deposits generally contain fossils from the Rancholabrean land mammal age from which many taxa are now extinct and these deposits are considered highly sensitive for paleontological resources (Solano County 2008). However, according to a study completed for the CPV Vaca Station project, the project site does not contain any rock formations and is not located in an area of the County known to contain paleontological resources (CPV Vacaville LLC 2008, Figure 5.8-1).

4.3.3 Regulatory Setting

Cultural resources are defined as buildings, sites, structures, or objects each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. Several laws and regulations at the state level govern archaeological and historic resources deemed to have scientific, historic, or cultural value. The pertinent regulatory framework, as it applies to the proposed project, is summarized below.

Federal Regulations

National Historical Preservation Act

The National Historic Preservation Act of 1996 established the National Register of Historic Places (NRHP) as the official federal list of cultural resources that have been nominated by state offices for their historical significance at the local, state, or national level. Properties listed or eligible for listing in the NRHP must meet certain criteria for historical significance and possess integrity of form, location, and setting. Under Section 106, federal agencies are required to consider the effects of their actions, or those they fund or permit, on properties that are listed or may be eligible for listing. The regulations in 36 CFR 60.4 describe the criteria to evaluate cultural resources for inclusion in the NRHP. Properties may be listed in the NRHP if they possess integrity of location, design, setting, materials, workmanship, feeling, and association. No historic properties, buildings or resources eligible for listing in the NRHP are known to exist on the project site.

The Department of the Interior has set for Standards and Guidelines for Archaeology and Historic Preservation. These standards and guidelines are not regulatory and do not set or interpret agency policy. A project that follows the standards and guidelines generally shall be

considered mitigated to a less-than-significant level, according to Section 15064.5(b)(3) of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.).

State Regulations

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is established through California Public Resources Code (PRC) Section 5042.1. Any identified cultural resources must therefore be evaluated against the CRHR criteria. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP. In order to be determined eligible for listing in the CRHR, a property must be significant at the local, state, or national level under one or more of the following four significance criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States.
2. It is associated with the lives of persons important to the nation or to California's past.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic value.
4. It has yielded, or may be likely to yield, information important to prehistory or history of the state and the nation.

In addition to meeting one or more of the above criteria, a significant property must also retain integrity. Properties eligible for listing in the CRHR must retain enough of their historic character to convey the reason(s) for their significance. Integrity is judged in relation to location, design, setting, materials, workmanship, feeling, and association. Properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

No historic properties or resources eligible for listing in the CRHR are known to exist on the project site.

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to PRC Section 21084.1, a "project that may

cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." PRC 21083.2 requires agencies to determine whether proposed projects would have effects on "unique archaeological resources."

"Historical resource" is a term of art with a defined statutory meaning (see PRC 21084.1 and CEQA Guidelines, Sections 15064.5(a) and 15064.5(b)). The term embraces any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC 5024.1 and 14 CCR 4850). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources (PRC 21084.1 and CEQA Guidelines, Section 15064.5(a)(3)). In general, a historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

A. Is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, education, social, political, or cultural annals of California; and

B. Meets any of the following criteria:

    1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

    2. Is associated with the lives of persons important in our past;

    3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

    4. Has yielded, or may be likely to yield, information important in prehistory or history (CEQA Guidelines, Section 15064.5(a)(3)).

These factors are known as “Criteria 1, 2, 3, and 4” and parallel Criteria A, B, C, and D under the National Historic Preservation Act. The fact that a resource is not listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (PRC 21084.1 and CEQA Guidelines, Section 15064.5(a)(4)).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described above, and “unique archaeological resources.” Under CEQA, an archaeological resource is considered “unique” if it:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special or particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC 21083.2(g)).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an EIR must be prepared and mitigation measures and alternatives must be considered. A “substantial adverse change” in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA Guidelines Section 15064.5(b)(1)).

The CEQA Guidelines (Section 15064.5(c)) also provide specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC 21083.2.

CEQA Guidelines, Section 15064.5(e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as identified in a timely manner by the Native American Heritage Commission. Section 15064.5 of the CEQA Guidelines directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Senate Bill 18

Senate Bill 18 (SB 18; Government Code sections 65352.3, 65352.4) requires that, prior to the adoption or amendment of a general plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction. The project does not require an amendment to the City's General Plan.

Assembly Bill 52

Assembly Bill 52 (AB 52) went into effect July 1, 2015, and requires lead agencies to consult with all California Native American tribes that have requested formal consultation at the onset of a project, or when a NOP is released. AB 52 also establishes a new class of resources to be evaluated – Tribal Cultural Resources.

A comment letter was received from the Yoca Dehe Wintun Nation on December 14, 2015, in response to the City's inquiry regarding consultation under AB 52. The letter identified that the project site was within the aboriginal territories of the Yocha Dehe Wintun Nation and requested a copy of the most current Cultural Resources Study for the project site. The City provided a copy of the requested Cultural Resources Study to the Yoca Dehe Wintun Nation in July 2016. The City received a response on August 17, 2016 stating that, based on the provided information, Yocha Dehe Wintun Nation is not aware of any known cultural resources near the project site and a cultural monitor would not be needed.

Health and Safety Code Section 7050.5

Health and Safety Code section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains. PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the California Native American Heritage Commission (NAHC) within 24 hours. The NAHC will notify the Most Likely Descendant. With the permission of the landowner, the Most Likely Descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the Most Likely Descendant by the NAHC. The Most Likely Descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

Paleontological Resources

Consideration of paleontological resources is required by CEQA. Other state requirements for paleontological resource management are found in PRC Chapter 1.7, Section 5097.5, Archaeological, Paleontological, and Historical Sites. This statute specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute does not apply to the proposed project because none of the property includes public lands.

No state or local agencies have specific jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site.

Local Regulations

Vacaville General Plan

The City of Vacaville General Plan Conservation and Open Space (COS) Element provides guidance for new development and focuses on the protection and enhancement of historic, archaeological, and paleontological resources. The following policies from the City's COS Element are applicable to the proposed project:

Policy COS P6.2 Require that a records search of California Historical Resources Information System be conducted and reviewed by a cultural resources professional for proposed development areas to determine whether the site contains known prehistoric or historical cultural resources and the potential for as-yet-undiscovered cultural resources.

Policy COS P6.3 Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation.

Policy COS P6.4 Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.

Policy COS P6.5 Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development project has

sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted.

Policy COS P6.6 Treat human remains discovered during implementation of public and private projects within the city with respect and dignity.

4.3.4 Impacts

Methods of Analysis

A formal records search was conducted for the project site by Dudek through the NWIC (see Appendix E). In addition, research consisted of a literature search of the following databases: NAHC Sacred Lands File, NRHP, OHP, ADOE, and OHP HPD. In addition, historical maps were reviewed and an archaeological survey of the project site was conducted. This research was used to identify locations of other resources that may exist or have existed within the project area. The records search prepared for the proposed project included a 1-mile radius around the project site.

Issues Addressed in the Modified Initial Study

As discussed in the Modified Initial Study (see Appendix B), there are no structures located on the project site; therefore, impacts associated with removal of historically significant properties and/or the loss of historic integrity of such resources are not addressed further in this EIR. The project site does not contain any rock formations and is not located in an area of the City designated as sensitive for paleontological resources. The Modified Initial Study determined that with implementation of General Plan policies and compliance with federal and state regulations regarding paleontological resource this impact would be less than significant. Therefore, it is not evaluated further in this EIR.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5; or
- Disturb any human remains, including those interred outside of formal cemeteries.

Impacts and Mitigation Measures

4.3-1: Implementation of the proposed project may cause a substantial adverse change in the significance of an archaeological resource. This would be a potentially significant impact.

As discussed in the Environmental Setting above, the formal records search prepared for the project did not identify any recorded archaeological resources on the project site. Previous cultural resource studies have identified eight cultural resources within 1-mile of the project site, with three previous studies that included portions of the project site. One study noted that while no cultural resources were identified on the project site, the site was designated as an area of moderate archaeological sensitivity (Appendix E). The cultural resources study prepared for the Brighton Landing Specific Plan project identified two potential prehistoric chert flakes and a concentration of basalt flakes in the disturbed sediments near the Southern Pacific Railroad tracks in the northeast corner of the Brighton Landing project site. However, there is no record of any lithic flakes being formally recorded and no cultural material was noted during Dudek's pedestrian survey (see Appendix E). The project site's topographic suitability, proximity to Alamo Creek, and the results of the previous technical studies identifying cultural resources in the vicinity suggest that there is some potential for project construction to encounter yet-identified subsurface archaeological resources.

The City's General Plan contains policies to reduce impacts to cultural resources. For example, General Plan Policy COS P6.4 requires in the event grading or excavation of a project site reveals cultural resources, including archaeological or paleontological resources, construction activities stop immediately and implementation of appropriate mitigation occur. General Plan Policy COS P6.5 requires preservation or adequate documentation of archaeological or paleontological resources and identifies avoidance and preservation as the primary mitigation measure when previously unidentified subsurface resources are discovered on a project site. This measure also requires consultation with appropriate organizations and individuals (i.e., descendants and/or stakeholder groups) as warranted if any resources are present on the project site. Compliance with these policies would help to minimize potential impacts to any known or unknown archaeological or paleontological resources.

However, since ground-disturbing activities associated with construction of the proposed project have the potential to encounter or disturb previously unidentified subsurface archaeological resources, this impact would be **potentially significant**.

Mitigation Measures

Implementation of Mitigation Measure CUL-1 would require the project applicant comply with specific procedures in the event of an inadvertent discovery of a resource during project

construction. The procedures require work to stop in the event a resource is discovered, consultation be initiated with an archaeologist to determine the appropriate course of action, and Native American representatives be consulted for their input and concerns. Compliance with these measures would ensure that the project's potential impacts to previously unidentified subsurface resources are mitigated to a less-than-significant level.

CUL-1 If deposits of prehistoric or historical archaeological materials are encountered during construction activities, all work within 25 feet of the discovery shall be redirected until an archaeologist is contracted to assess the finds, consult with agencies and descendant communities (as appropriate), and make recommendations for the treatment of the discovery. If preservation in place is not feasible, the archaeologist shall evaluate the deposit for its eligibility for listing in the California Register of Historical Resources. If the deposit is not eligible, mitigation is not necessary. If the deposit is eligible, mitigation shall include excavation of the archaeological deposit in accordance with a data recovery plan (see *CEQA Guidelines* Section 15126.4(b)(3)(C)). The City of Vacaville shall ensure that descendant communities are consulted for their input and concerns during the development and implementation of any mitigation plan.

Upon completion of the evaluation and/or mitigation, the report shall be submitted to the City of Vacaville, the applicant, the Northwest Information Center at Sonoma State University, and descendant communities.

4.3-2: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries. This would be a potentially significant impact.

One previous archaeological study, completed for the Brighton Landing Specific Plan project, identified two potential prehistoric resources near the Southern Pacific Railroad tracks in the northeast corner of the project site. No resources were formally recorded as part of that project and no archaeological deposits were identified during the cultural resources survey of the project site. Additionally, the Native American Heritage Commission Sacred Lands File failed to identify any Native American cultural resources in the area (see Appendix E). The project site was listed as being moderately sensitive for archaeological resources in the *Archaeological Survey and Excavation Along the Tehama-Colusa Canal, Central California* study (see Appendix E), and often human remains are associated with archaeological sites.

The City's General Plan contains policies regarding the accidental discovery of human remains during construction of a project. Specifically, General Plan Policy P6.4 requires work stop immediately in the event cultural resources or human remains are uncovered during grading or

other on-site excavation activities until appropriate mitigation is implemented. Additionally, General Plan Policy P6.6 requires that human remains discovered during implementation of public and private projects be treated with respect and dignity. The project is also required to comply with Health and Safety Code Section 7050.5, which states no further disturbance or excavation of the site or nearby areas is allowed if remains are discovered until the remains have been examined by the County coroner. Compliance with General Plan policies and Health and Safety Code Section 7050.5 would help reduce the potential impact to human remains.

However, since ground-disturbing construction activities on the project site have the potential to uncover and potentially impact previously unrecorded human remains, this impact would be considered **potentially significant**.

Mitigation Measures

Implementation of Mitigation Measure CUL-2 would require the project applicant to stop construction work on the project site and initiate consultation with the City's Community Development Department, County Coroner, and a qualified archaeologist to determine the appropriate course of action in the event human remains are unearthed. Compliance with these measures would ensure that the project's potential impact to previously unrecorded human remains are mitigated to a less-than-significant level.

CUL-2 In the event that human remains are encountered, the on-site construction foreman shall stop all work within 25 feet of the discovery and shall immediately contact the City's Community Development Department and the County Coroner. At the same time, a qualified archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. On-site construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission shall identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate, and in coordination with the recommendations of the Most Likely Descendant. The report shall be submitted to the City of Vacaville Community Development Department and the Northwest Information Center, and descendant communities.

4.3.5 Cumulative Impacts

The cumulative impact analysis for cultural resources does not rely on a list of specific pending or reasonably foreseeable development proposals in the general vicinity of the project.

The geographic scope or cumulative context for evaluation of potential cumulative impacts on cultural resources is Solano County, which includes the cities of Vacaville, Fairfield, Suisun City, Vallejo, Dixon, Benicia and Rio Vista. While project specific impact analysis for cultural resources necessarily includes separate analyses for historical, archaeological and paleontological resources and human remains, the cumulative analysis combines these resources into a single, non-renewable resource base and considers the additive effect of project-specific impacts to significant regional impacts on cultural resources.

4.3-3: The proposed project could contribute to cumulative impacts to historical, archaeological and paleontological resources in the area. This would be a less-than-significant impact.

Archaeological evidence suggests that Solano County has been inhabited between 10,000 and 6,000 years B.P. Background research has identified a number of historical archaeological sites, prehistoric archaeological sites, and historic buildings and structures throughout the city and county. Urban development throughout the County has likely impacted a number of known and unknown historic, prehistoric and paleontological sites. It is reasonable to assume that present and future development would continue to have an impact on known and unknown cultural, historical, archaeological, and paleontological resources in the County. All significant and cultural resources and human remains are unique and non-renewable, all adverse effects or negative impacts erode a dwindling resource base. For example, the loss of any one archaeological site affects all others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. Proper planning and appropriate mitigation can help to capture and preserve knowledge of such resources and can provide opportunities for increasing our understanding of the past environmental conditions and cultures by recording data about sites discovered and preserving artifacts found. Federal, state, and local laws are also in place, as discussed above, that protect these resources in most instances. However, the cumulative loss of cultural, historic, archaeological, and paleontological resources from present and future development within the County would be considered a potentially significant cumulative impact.

The project site does not contain any known cultural, historic, archaeological or paleontological resources, and construction on the project site is not likely to impact these resources. Compliance with General Plan policies related to the preservation of cultural resources and the Health and Safety Code related to unearthing human remains in addition to implementation of

Mitigation Measures CUL-1 and CUL-2 would ensure that the project's contribution to the cumulative loss of cultural resources would be **less than significant**.

Mitigation Measures

None required.

4.3.6 References

City of Vacaville. 2012. *Brighton Landing Specific Plan Environmental Impact Report*. July 9, 2012.

City of Vacaville. 2015. *City of Vacaville General Plan*. Adopted August 11, 2015.

CPV Vacaville LLC. 2008. *Application for Certification CPV Vaca Station*. November 19, 2008. Available at http://www.energy.ca.gov/sitingcases/vacastation/documents/applicant/afc/Volume_I/

Solano County. 2008. *Solano County 2008 Draft General Plan Environmental Impact Report*. Draft. SCH no. 2007122069. April 18, 2008. http://www.co.solano.ca.us/civicax/filebank/blobdload.aspx?BlobID=15179.

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4.4 HYDROLOGY AND WATER QUALITY

4.4.1 Introduction

This section describes potential hydrologic effects related to drainage and water quality associated with development of the Roberts' Ranch Specific Plan (proposed project).

One comment letter was received from the Central Valley Regional Water Quality Control Board (CVRWQCB) that reiterated the need for the project applicant to comply with the general NPDES/WDR permits applicable to the site. General permits applicable to the proposed project are discussed in Section 4.4.3, Regulatory Setting and Section 4.4.4, Impact Analysis. In addition, the County of Solano submitted a comment letter requesting that the stormwater detention area proposed to serve the proposed project and the Brighton Landing project be evaluated for conformance with County general plan policies and zoning ordinance. The County also requests that the possibility of a City annexation of the detention basin be addressed in this EIR. The detention area is discussed under Impact HYDRO-1 in the context of stormwater runoff. Annexation of the detention area is not a component of the proposed project and thus is outside the scope of this EIR. A copy of the NOP and letters received in response to the NOP are included in Appendix A.

Information to prepare this section is derived primarily from the Roberts' Ranch Hydrology and Water Quality Evaluation prepared by West Yost Associates and previous work done by Phillipi Engineering, Inc. (PEI), who prepared a Storm Drain Modeling Study for the Brighton Landing project (Appendix F), and is supplemented by information from the City of Vacaville General Plan (City of Vacaville 2015) and City of Vacaville General Plan and Energy Conservation Action Strategy Environmental Impact Report (General Plan EIR) (City of Vacaville 2013).

4.4.2 Environmental Setting

Hydrology and Watersheds

The project site is located in the Old Alamo Creek watershed (Figure 4.4-1). Alamo Creek flows through the City from the eastern slopes of Mount Vaca to Ulatis Creek roughly six miles east of the project site. Ulatis Creek flows east and southeast ultimately draining into the Sacramento River via Cache Slough (Appendix F). Old Alamo Creek is located north of Elmira Road just north of the project site. During the 1960s, Alamo Creek was modified to redirect flows along a more southerly alignment known as New Alamo Creek. The modifications to Alamo Creek reduced the drainage area to Old Alamo Creek to a localized section of the eastern City as well as unincorporated areas to the east. The Old Alamo Creek watershed, which includes the proposed project, is approximately 990 acres. The modifications to Old Alamo Creek were part of a series of modifications to the Ulatis

Creek watershed in order to protect local agricultural lands from historical flooding along several of the major creeks in the area, including Alamo Creek (Appendix F).

There are no natural water features on the proposed project site; however, several irrigation well standpipes, weir gates, and irrigation canals are located on the property, along with water measurement and control systems, and flow meters (KC Engineering 2016).

Topography and Soils

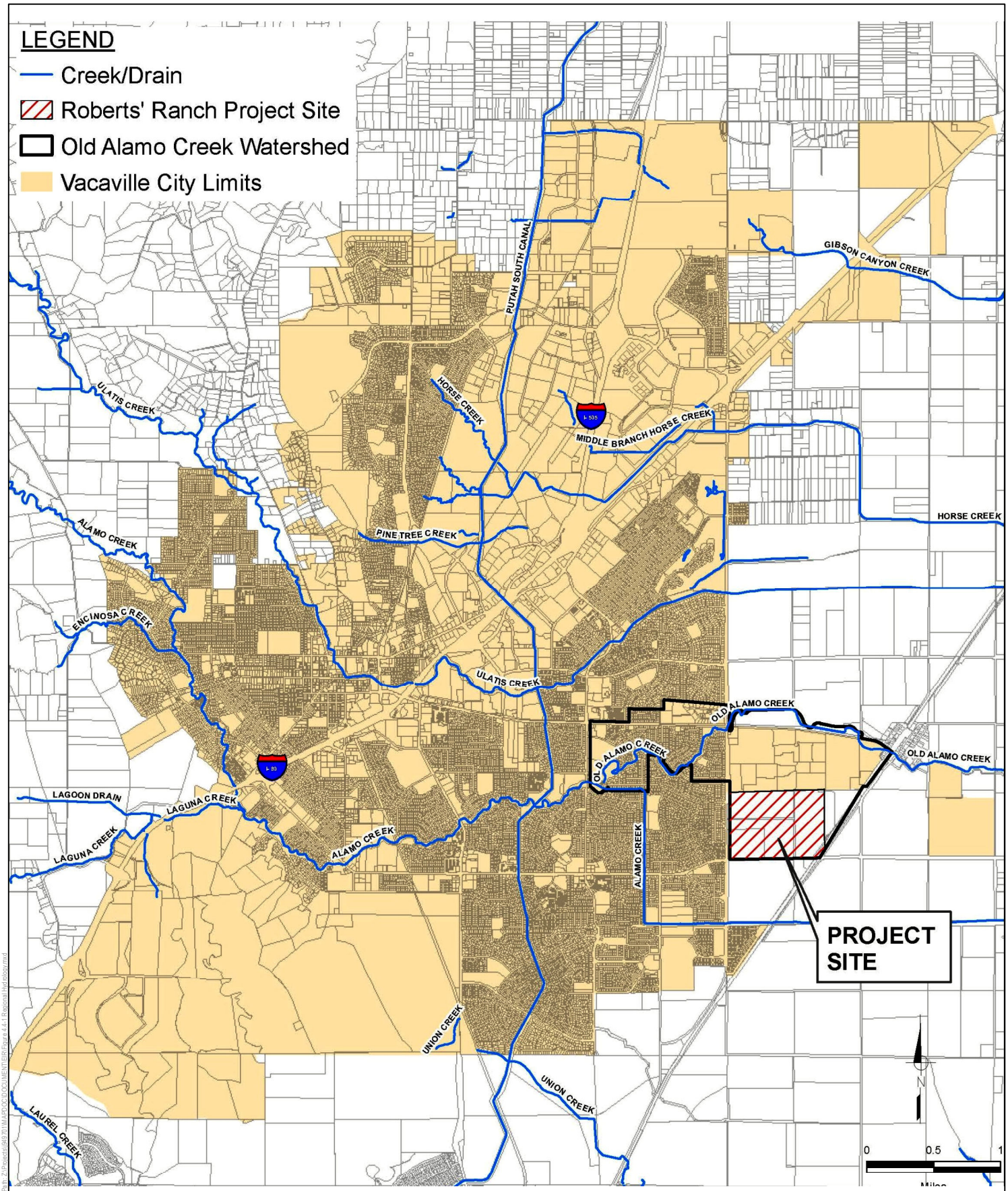
The project site is relatively flat with uniform west to east slopes ranging from 0.2% to 0.3%. Soil data from the Natural Resource Conservation Service maps soils on the project site Brentwood clay loam, Rincon clay loam, and Capay silty clay loam. These soils are generally considered to have moderate potential for erosion and fall within Hydrologic Soil Groups B, C, and D indicating that the infiltration capacities range from moderate (B) to very low (D) (Appendix F).

Drainage and Stormwater Runoff

Runoff on the project site sheet flows west to east until joining one of the small agricultural ditches on the site. These agricultural ditches convey runoff to the eastern boundary of the project site and on to the existing Solano Irrigation District Frost Canal, located west of the Union Pacific Railroad (UPRR). The Frost Canal conveys project flows north to the Old Alamo Creek near Elmira Road. Significant storm events can cause the Frost Canal to overtop its banks. In the event of flooding, flows from the canal will spill toward the east, over a dirt road, and into a ditch located immediately adjacent to the UPRR. This ditch would then convey flows north to a culvert just south of Elmira Road and continue to the east side of the UPRR. Runoff is then conveyed through a ditch north to Old Alamo Creek (Appendix F).

Surface Water Quality

The ultimate receiving water for storm flows from the project site and Alamo Creek is the Sacramento River. Beneficial uses and water quality objectives are established in the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board*, *Central Valley: Sacramento River Basin and San Joaquin River Basin* (CVRWQCB 2016). Beneficial uses for the Sacramento River include providing water supply for agriculture, recreation, and industrial uses, in addition to freshwater habitat, spawning grounds and wildlife habitat (CVRWQCB 2016). Ambient water quality in the Sacramento River is influenced by numerous natural and artificial surfaces including soil erosion, discharges from wastewater plants, stormwater runoff, agriculture, recreation activities, mining, timber harvesting, and flora and fauna. The Sacramento River is listed as “impaired” under Section 303(d) of the Clean Water Act (CWA) for chlordane, DDT, dieldrin, mercury, PBCs and unknown toxicity (SWRCB 2012).



SOURCE: West Yost Associates, 2016

FIGURE 4.4-1

Regional Hydrology

DUDEK

Roberts' Ranch Specific Plan EIR

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Urban Stormwater Quality

Water quality within the watershed is influenced by surrounding land uses and urban runoff varies due to factors such as differences in rainfall intensity, geographic features, vehicle traffic and percentage of impervious surfaces (City of Vacaville 2013). The project site is undeveloped and previous land uses include agriculture, which elevates the potential to contribute pollutants such as sediment, pesticides, and fertilizers within stormwater runoff. However, the Phase I Environmental Site Assessment conducted for the project site did not report any detectable level of organchlorine pesticides in the soil (KC Engineering 2016).

4.4.3 Regulatory Setting

Federal Regulations

Clean Water Act

The CWA (33 U.S.C. 1251 et seq.), as amended by the Water Quality Act of 1987, is the major legislation governing water quality. The main objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important sections of the act are as follows:

- CWA Section 303 requires states to adopt water quality standards for all surface waters of the United States. Water quality standards are defined as consisting of two elements: (1) designated beneficial uses of the water body and (2) criteria that protect the designated uses. States are also required to develop a list of impaired water bodies that do not meet water quality standards and objectives and establish a Total Maximum Daily Load (TMDL) for each pollutant/stressor. A TMDL defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. In California, the EPA has designated the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) with the authority to identify beneficial uses and adopt applicable water quality objectives.
- CWA Section 304(a) requires that the U.S. Environmental Protection Agency (U.S. EPA) publish advisory water quality criteria based on the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from pollutants in water. If multiple beneficial uses exist for a water body, water quality standards must protect the most sensitive use.
- CWA Section 401 (Water Quality Certification) requires an applicant for any federal permit that proposes an activity which may result in discharge to waters of the United States, obtain certification from the state that the discharge will comply with all provisions of the act.

- CWA Section 404 establishes a permit program for the discharge of dredge and fill material into waters of the United States, which is jointly administered by the U.S. Army Corps of Engineers and the EPA. Refer to Section 4.2, Biological Resources, Impact 4.2-3 for a discussion of jurisdictional waters.

Numerous agencies have responsibilities for administration and enforcement of the CWA. At the federal level this includes the EPA, the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the major federal land management agencies such as the U.S. Forest Service and the Bureau of Land Management. At the state level, with the exception of tribal lands, the California EPA and its sub-agencies, including the SWRCB, have been delegated primary responsibility for administering and enforcing the CWA in California.

Federal Antidegradation Policy

The federal antidegradation policy is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

National Pollution Discharge Elimination System

CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), which is a permitting system for the discharge of pollutants into waters of the United States. The permit program is administered by the SWRCB and the nine RWQCBs, who have programs that implement individual and general permits related to construction activities, stormwater quality runoff, and various types of non-stormwater discharges. Large communities with the potential to cause larger impacts to receiving waters are issued permits with requirements specific to that community. The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for Small Municipal Separate Storm Sewer System (MS4) operators in small communities. Cities permitted under the general MS4 permit are required to develop and implement a Stormwater Management Plan (SWMP) outlining measures to reduce the discharge of pollutants to the maximum extent practicable. MS4 permits are described in more detail under State Regulations and the City's adopted SWMP is described further under Local Regulations.

State Regulations

Porter-Cologne Water Quality Control Act

The Porter–Cologne Act (codified in the California Water Code, Section 13000 et seq.) is the primary water quality control law for California. Whereas the CWA applies to all waters of the United States, the Porter–Cologne Act applies to waters of the state, which includes isolated wetlands and groundwater in addition to federal waters. Under the Act, that State must adopt water quality policies, plans, and objectives that project the State's waters for the use and enjoyment of the people. The act is implemented by the SWRCB and the nine RWQCBs, who are required to adopt and periodically update water quality control plans (Basin Plans). Basin Plans are the regional water quality control plan that detail beneficial uses, water quality objectives, and implementation programs as required under the CWA and the Porter-Cologne Act. The act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. Waste Discharge Requirements (WDRs) are required and are issued exclusively under state law. WDRs typically require many of the same best management practices (BMPs) and pollution control technologies as required by NPDES-derived permits.

Basin Planning

The primary enforcement authority for the Porter-Cologne Act and portions of the CWA has been given to the SWRCB and its nine RWQCBs. The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for implementation of state and federal regulations. Each of the nine RWQCBs are responsible for adopting and implementing Basin Plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The CVRWQCB is responsible for the protection of the beneficial uses of waters draining to the Sacramento–San Joaquin Delta. The project site is located within the Old Alamo Creek watershed. Runoff from the project site would flow from west to east to the existing Solano Irrigation District Frost Canal, which would convey runoff north to Old Alamo Creek near Elmira Road. Old Alamo Creek connects to Ulatis Creek approximately six miles downstream (east) of the project site. Ulatis Creek flows east and southeast ultimately draining to the Sacramento River via Cache Slough (Appendix F).

The *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley: Sacramento River Basin and San Joaquin River Basin* designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240–13247) (CVRWQCB 2016). The most water quality-sensitive beneficial

uses applicable to the Sacramento–San Joaquin Delta include REC-1 (Water Contact Recreation), WARM (Warm Freshwater Habitat), COLD (Cold Freshwater Habitat), WILD (Wildlife Habitat), and migration and spawning (MIGR and SPWN).

State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high water quality in California. . The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy includes a provision stating that when existing water quality is better than required under the water quality control plan, such quality would be maintained until it can be demonstrated that a change would be consistent with maximum public benefit. Additionally, the policy requires any waste producing activities which would discharge into high-quality waters be required to meet discharge requirements ensuring that pollution or nuisance would not occur and that the highest water quality for maximum public benefit would be maintained.

Regional Water Quality Control Board (Central Valley Region)

NPDES Construction General Permit (Order No. 2009-0009 DWQ, as amended)

For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. Construction General Permits regulate stormwater flows from construction activities that disturb one acre or more of land and construction on smaller sites that are part of a larger project. The permit requires preparation of and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which includes Best Management Practices (BMPs) designed to reduce potential impacts to surface water quality through construction and operation of the project. The Construction General Permit requires routine inspection of all BMPs to monitor effectiveness of the SWPPP. The project applicant must submit a Notice of Intent (NOI) to the SWRCB to be covered by a NPDES permit and prepare the SWPPP prior to the beginning of construction. Since the proposed project would disturb more than one acre of land, the project would require coverage under the Construction General Permit.

The City’s standard conditions of approval requires development project applicants to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) for review by the City Engineer in conjunction with the submittal of the Improvement Plans, Grading Plans, and Final Map.

Municipal Stormwater Permit (CVRWQCB Order 2013-0001-DWQ, as amended)

For discharges from municipal storm sewer systems, the CVRWQCB has adopted revisions to the City's 2003 NPDES Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (Small MS4 Permit) in February 2013. The Small MS4 Permit is designed to avoid and minimize water quality impacts attributable to discharge from the stormwater drainage systems owned and/or operated by the co-permittees, which includes the City of Vacaville. This permit regulates stormwater runoff by requiring implementation of BMPs to reduce pollutants in runoff to the maximum extent practicable to protect water quality. The provisions of the Phase II General Permit are implemented in the City through Municipal Code Chapter 14.26, Urban Storm Water Quality Management and Discharge Control, which is described in more detail under Local Regulations.

The City's standard conditions of approval require development project applicants to demonstrate to the City Engineer and Director of Public Works that the proposed development meets the requirements of the MS4/Phase 2 storm water general permit and corresponding design standards.

Local Regulations

City of Vacaville Storm Drainage Master Plan

The City's Storm Drainage Master Plan (SDMP), first adopted in 1996 and last updated in 2001, evaluates existing storm drain systems and identifies existing deficiencies and required improvements. The SDMP's main focus is identifying improvements required to provide 100-year level flood protection to areas of the City proposed for new development while maintaining the current level of protection in already developed areas of the City. Improvement projects to resolve current deficiencies in the system are outlined in the SDMP and development impact fees were determined in order to ensure future development does not impact storm drainage for existing development within the City.

City of Vacaville Stormwater Management Plan

The City has developed a Stormwater Management Plan (SWMP) in compliance with the NPDES General Permit, which aims to reduce the discharge of pollutants to stormwater to the maximum extent practicable and protect water quality. The SWMP describes pollutant sources and outlines a strategy for how to control pollutants in local stormwater runoff including BMPs designed to address the six minimum measures: Public Education and Outreach, Public Involvement and Participation Program, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control Programs, Post-Construction Stormwater Management In New and Redevelopment Program, and Pollution Prevention and Good Housekeeping for Municipal Operations (City of Vacaville 2003).

City of Vacaville Standard Specifications and Standards Drawings

The City of Vacaville Standard Specifications and Standard Drawings includes Design Standards and Construction Standards for storm drain systems (City of Vacaville 2006, 2007). The Design Standards outline procedures for determining the appropriate design for storm drain facilities including hydrologic design and adequate sizing. Additionally, the Design Standards indicate that storm drain system improvements shall be designed to prevent a net change in runoff resulting from new development and that Best Management Practices (BMPs) be implemented to comply with the NPDES permit (City of Vacaville 2006). The Construction Standards include requirements for allowable pipe materials, pipe installation, final cleaning, and inspection (City of Vacaville 2007).

City of Vacaville General Plan

The City of Vacaville General Plan (City of Vacaville 2015a) Safety Element and Open Space and Conservation Element include several goals and policies relating to hydrology and water quality. The following goals and policies are applicable to the proposed project:

<u>Flood Protection</u>

Goal SAF-2 Collect, convey, store, and dispose of stormwater in ways that provide an appropriate level of protection against flooding, account for existing and future development, and address applicable environmental concerns.

Policy SAF-P2.5 Maintain open areas needed to retain stormwater and prevent flooding of urban or agricultural land.

Goal SAF-3 Provide effective storm drainage facilities for development projects.

Policy SAF-P3.1 Evaluate the storm drainage needs for each project; this evaluation should account for projected runoff volumes and flow rates once the drainage area is fully developed. In the Alamo Creek watershed upstream of Peabody Road (including Alamo, Laguna, and Encinosa creeks), require post-development 10-year and 100-year peak flows to be reduced to 90 percent of predevelopment levels. In the remainder of Vacaville, for development involving new connections to creeks, peak flows shall not exceed predevelopment levels for 10- and 100-year storm events.

Policy SAF-P3.2 Continue to require development impact fees to fund necessary storm drainage improvements, including drainage detention basins.

Policy SAF-P3.3 Require a Storm Drainage Master Plan to be prepared for new development projects to ensure new development adequately provides for on-site drainage facilities necessary to protect the new development from potential flood hazards and ensure that potential off-site impacts are fully mitigated.

Policy SAF-P3.4 Require that new development designate storm drainage easements or routes when tentative maps or specific plans are approved.

Goal SAF-4 Protect people and property from flood risk.

Policy SAF-P4.1 Prohibit development within mapped flood-prone areas unless mitigation of flood risk is assured.

Policy SAF-P4.2 Require that the lowest floor of any new construction or substantial improvement be elevated a minimum of 1 foot above the 200-year flood elevation.

Policy SAF-P4.4 Require that new development mitigate its additional runoff and mitigate removal of any floodplain areas.

Water Resources

Goal COS-14 Protect the quality and supply of surface water and groundwater resources.

Policy COS-P14.2 Integrate City planning and programs with other watershed planning efforts, including Best Management Practices (BMPs), guidelines, and policies of both the Sacramento and San Francisco Bay Regional Water Quality Control Boards.

Policy COS-P14.5 Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from construction or from new impervious surfaces.

Policy COS-P14.7 Protect groundwater recharge and groundwater quality when considering new development projects.

Vacaville Municipal Code

13.12 Water, 13.14 Control of Backflow and Cross-Connections, 13.20 Water Conservation

These chapters provide guidelines for water service provision and describe standards for connection sizes. In addition, the ordinances implement regulations to protect and maintain the potable water system, reduce water consumption and protect water quality.

Chapter 14.19 Grading Ordinance

The Vacaville Grading Ordinance regulates grading and earth moving activities within the City. Per the Grading Ordinance all grading within the City is subject to the standards contained in the California Building Code. The Grading Ordinance also contains provisions for minimum setbacks, erosion control measures, and dust and debris control measures to reduce sedimentation and runoff during construction (City of Vacaville 2008).

14.26 Urban Stormwater Quality Management and Discharge Control

The Urban Stormwater Quality Management and Discharge Control Ordinance is designed to reduce pollutants in stormwater discharges to the maximum extent practicable in order to protect and enhance water quality. The ordinance prohibits illegal discharges into the storm drain system and authorizes the City to adopt and enforce BMPs for any activity, operation, or facility that could cause or contribute to pollution or contamination of stormwater, the storm drains or waters of the United States. BMPs for new development are outlined in Section 14.26.030.020 and include post-construction management practices to control the volume, rate, and potential pollutant load of stormwater runoff; maintenance of storm water management facilities; and implementation of a post-construction BMP design plan, which includes a storm water facilities operation and maintenance plan (City of Vacaville 2015b).

4.4.4 Impacts

Methods of Analysis

Hydrology and water quality impacts were evaluated in the *Roberts' Ranch Hydrology and Water Quality Evaluation* prepared by West Yost Associates (Appendix F). This study builds on previous work done by Phillipi Engineering, Inc. (PEI), who prepared a Storm Drain Modeling Study for the Brighton Landing project, the adjacent property to the north of the proposed project (PEI 2011, PEI 2015). Though the focus of PEI's study was to determine the design storm drain flow rates, trunk storm drain pipe sizes and detention facilities necessary to adequately serve the Brighton Landing project, its study area also included the proposed project area for the purpose of planning the location and size of the detention basin to serve both projects. At the time, PEI used generic/conceptual information to model runoff from the proposed project site. The West Yost Associates study, included as Appendix F, provides an update to the original stormwater runoff models to be consistent with the current proposed project and the completed detention basin pump configuration, and provides comparisons of runoff rates for the pre- and post-project conditions.

The impact analysis below considers compliance with regulations pertaining to water quality and implementation of the City's standard conditions of approval for subdivisions as part of the

proposed project (described in Section 4.4.3). Impact determinations are made based on both the magnitude of project-related change from existing conditions, as well as the effectiveness of compliance with existing regulations and standards in addressing the applicable criteria in Appendix F of the CEQA Guidelines.

Issues Addressed in the Modified Initial Study

As discussed in the Modified Initial Study for the proposed project (Appendix B), potential impacts related to groundwater resources, 100-year flood zones, and other flood hazards (e.g., dam/levee failure and inundation by seiche, tsunami or mudflow) were determined to be less than significant. The Modified Initial Study found these impacts to be less than significant because the project is outside of flood hazard zones and because other impacts are adequately addressed under compliance with General Plan policies, implementation of Energy Conservation Action Strategy (ECAS) policies related to water conservation, and consistency with the California Building Code. Therefore, this EIR focuses on topics related to compliance with water quality standards, changes in the rate and volume of stormwater runoff, and stormwater drainage system capacity.

Thresholds of Significance

Consistent with Appendix F of the CEQA Guidelines, the City's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

Impacts and Mitigation Measures

4.4-1: Implementation of the proposed project may violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality. This would be a less-than-significant impact.

Construction

Construction of the project would result in earth disturbing activities such as site clearing and grading for construction of roads, parking areas, building pads, and park areas. Disturbed areas exposed to rainfall could lead to an increase in erosion and the discharge of sediment to receiving waters resulting in a degradation of water quality. Additional pollutants can be introduced during construction from vehicular use, construction materials, and construction waste products. Pollutants typically present on construction sites include petroleum products and heavy metals from equipment, and products such as paints, solvents, and cleaning agents, which could contain hazardous constituents. Construction activities could result in water quality degradation if runoff entering receiving waters contains pollutants in sufficient quantities to exceed water quality objectives defined in the Basin Plan or TMDLs established under CWA Section 303(d). Impacts from construction-related activities would generally be short term and of limited duration.

Because implementation of the proposed project would collectively require construction activities resulting in a land disturbance of more than 1 acre, the project applicant is required to obtain coverage under the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended), which pertains to pollution from grading and project construction. Coverage under the Construction General Permit requires a qualified individual (as defined by the SWRCB) to prepare a Stormwater Pollution Prevention Plan (SWPPP) to address the potential for construction-related activities to contribute to pollutants within the project's receiving waterways. The SWPPP must describe the type, location and function of stormwater best management practices (BMPs) to be implemented, and must demonstrate that the combination of BMPs selected are adequate to meet the discharge prohibitions, effluent standards, and receiving water limitations contained in Construction General Permit.

The following list includes examples of construction water quality BMPs that are standard for most construction sites subject to the Construction General Permit:

- Silt fences and/or fiber rolls installed along limits of work and/or the project construction site;
- Stockpile containment and exposed soil stabilization structures (e.g., visqueen, fiber rolls, gravel bags and/or hydroseed);
- Runoff control devices (e.g., fiber rolls, gravel bag barriers/chevrons, etc.) used during construction phases conducted during the rainy season;
- Wind erosion (dust) controls;
- Tracking controls at the site entrance, including regular street sweeping and tire washes for equipment;

- Establishment of vehicle fueling and maintenance areas and material storage areas that are either covered or are designed to control runoff;
- Proper waste/trash management; and
- Regular inspections and maintenance of BMPs.

These BMPs would be refined and/or added to as necessary by a qualitied SWPPP professional to meet the performance standards in the Construction General Permit.

To obtain coverage under the Construction General Permit, the project applicant must submit to the SWRCB a Notice of Intent and associated permit registration documents, including a SWPPP and site plan, and must obtain a Waste Discharge Identification Number. As a standard condition of approval, the project applicant is also required to provide the SWPPP for review by the City Engineer in conjunction with the submittal of the Improvement Plans, Grading Plans, and Final Map. In addition, all earthwork, grading, trenching, backfilling and compaction operations must be conducted in accordance with the City's Urban Stormwater Quality Management and Discharge Control Ordinance (Chapter 14.26 of the City Code) and the Vacaville Grading Ordinance (Chapter 14.19 of the City Code).

The BMPs required for coverage under the Construction General Permit and the erosion control provisions contained in City ordinances would require measures to prevent construction-related contaminants from reaching impaired surface waters and contributing to water quality impacts within Old Alamo Creek, Ulatis Creek, and/or the Sacramento–San Joaquin Delta. For these reasons, water quality impacts resulting from construction-related activities and ground disturbances would be **less than significant.**

Operation and Maintenance

Implementation of the proposed project would convert the existing agricultural lands to urban uses. The increase in impervious area created by the proposed project, as well as on-site activities and uses, could alter the types and levels of pollutants that could be present in project site runoff associated with project operation. Runoff from building rooftops, walkways, parking lots, and landscaped areas can contain nonpoint source pollutants such as oil, grease, heavy metals, pesticides, herbicides, fertilizers, and sediment. Concentrations of pollutants carried in urban runoff are extremely variable, depending on factors such as the following:

- Volume of runoff reaching the storm drains;
- Time since the last rainfall;
- Relative mix of land uses and densities; and
- Degree to which street cleaning occurs.

Under existing conditions, stormwater that is not infiltrated into the soil moves as sheet flow from west to east until joining one of the small agricultural ditches on the site. These agricultural ditches convey runoff to the eastern boundary of the project site and on to the existing Solano Irrigation District Frost Canal. The Phase I Environmental Site Assessment conducted for the project site did not report any detectable level of organchlorine pesticides in the soil (KC Engineering 2016). However, the past agricultural uses of the site mean that low levels of residual nutrients/fertilizers may remain within site soils. Given surface soils are exposed over the entire site, stormwater runoff may contain levels of sediment and/or nutrients characteristic of agricultural land uses.

Where roads, driveways and residences are proposed, the surface soils that are now exposed to stormwater runoff would be stripped and replaced with engineered fills that meet geotechnical specifications and would become impervious. The new site configuration would reduce the exposure of soils containing nutrients/fertilizers to stormwater runoff, and would likely reduce the turbidity levels of runoff when compared to the current agricultural use. However, it would also introduce new uses and activities that have the potential to degrade the quality of stormwater runoff. The primary pollutants of concern for a residential housing development are associated with uncovered parking areas (e.g., leaking fuel or fluids), landscaping and landscape maintenance (e.g., sediment, improper/excessive use of pesticides, and/or fertilizers/nutrients), and/or improper waste management (e.g., fugitive litter/trash). The release of such pollutants would be localized and periodic in nature, minor in magnitude (especially in comparison to the total volume of stormwater discharges entering regional waterways), and would only occur on an improperly designed and maintained development. Nevertheless, because the cumulative effects of past projects have resulted in substantial water quality problems in the region's major waterways, and because water quality problems are generally cumulative in nature, the City's standard conditions of approval, the Small MS4 Permit, and drainage design standards require developers to design and maintain projects in a manner that reduces pollutant concentrations within stormwater discharges to the maximum extent practicable.

Standard conditions of approval require the project applicant to demonstrate to the City Engineer and Director of Public Works that the proposed project meets the requirements of the City's Storm Drain Design Standards, the City's Stormwater Management Plan, and the Small MS4 Permit issued by the SWRCB. The proposed project would convey runoff to the City's detention basin constructed as part of the Brighton Landing project. This detention basin has a capacity of 120 acre-feet, and would provide both stormwater quality treatment and flood control storage for runoff from both the project and the Brighton Landing project to the north (Appendix F). To provide stormwater quality treatment, a detention basin must detain stormwater for a period of time—typically between from 24 to 48 hours—to allow particles and the associated pollutants to settle out before being discharged to the downstream receiving waters. An extended detention basin refers to a design that configures larger detention basins (constructed

for the purpose of flood control) to also serve as mitigation for water quality concerns. The volume-based water quality criteria for the developed condition for both Brighton Landing and Roberts' Ranch developments is 11.25 acre-feet (PEI 2015). Accordingly, the extended detention basin is designed to retain that volume, through a secondary berm around the basin's stormwater inlet, which allows sediment and pollutants from the water-quality design storm to settle out. By locating the main detention basin pumps outside of the extended detention basin, the treatment design volume for water quality is thereby prevented from being prematurely pumped out of the basin during peak storm events.

Based on the study prepared by West Yost Associates (Appendix F), the existing extended detention basin and the associated pump station can be configured to provide sufficient settling time to achieve adequate stormwater quality treatment that meets extended detention basin guidelines. The extended detention basin must meet the design requirements of the California Storm Water Best Management Practices Handbook, which is referenced in the City's design standards. The pump station for the extended detention basin has been modeled with, under ultimate buildout, two 12 cubic feet per second (cfs) and three 22 cfs pumps (total pumping capacity of about 90 cfs) (Appendix F). Additional options for structural stormwater BMPs in Appendix F include infiltration type BMPs such as infiltration trenches or basins where soils provide suitable percolation, or bioretention features such as vegetated swales and buffer strips. In addition to structural BMPs, City standard conditions of approval also require the proposed project to incorporate source control BMPs into the project design to prevent pollutants from entering runoff. Examples of source control BMPs include directing roof spouts to pervious areas, using of porous pavements, enclosing trash storage areas, and stenciling "Drains to Bay" signs at storm drain inlets to educate residents.

Based on the analysis prepared by West Yost Associates, the detention basin would provide adequate water quality treatment. In addition, the project would be conditioned to demonstrate compliance with the City's Storm Drain Design Standards, the City's Stormwater Management Plan, and the Small MS4 Permit. For these reasons, the long term impacts of the proposed project on water quality would be **less than significant.**

Mitigation Measures

None required.

4.4-2: Implementation of the proposed project may alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site. This would be a potentially significant impact.

The proposed project would convert the existing agricultural lands to residential, commercial, school, and park land uses. This would increase the impervious surfaces on the site and would

significantly alter the existing drainage pattern, which would cause an increase in the peak flows and volumes discharged from the site during storm events. As indicated in Appendix F, without construction of the detention basin, the proposed development within the watershed could increase the 10-year peak flow from 330 cfs to 455 cfs and the 100-year peak flow from 550 cfs to 710 cfs. The increase in flows could result in substantial erosion or siltation downstream if discharged directly to the downstream receiving water. However, the proposed project would use the existing detention basin east of the project boundary that would detain storm flows. Flows from the project are to be conveyed into the detention basin via an underground pipe network for storms up to the 10-year event. For larger storms, flows in excess of the pipe system capacity would be conveyed overland in the streets and directed into the detention basin. A pump station constructed at the detention basin would discharge flows from the basin at rates well below the existing peak flow rates.

According to the revised modeling examined by West Yost Associates, with the detention basin, the 10-year and 100-year peak flows from the watershed would be 37 cfs and 83 cfs, respectively (Appendix F). As a result, the proposed detention basin would prevent the project from creating a significant impact due to an increase in erosion or siltation downstream. However, West Yost Associates determined that there is not yet sufficient detail in the drainage designs and associated hydraulic modeling to ensure that all flows, including those in excess of the pipe system, would be adequately directed into the detention basin and the downstream conveyance (Appendix F). Therefore, the possibility for increased downstream erosion or siltation is considered a **potentially significant impact.**

Mitigation Measures

Consistent with General Plan policies SAF P3.1, P3.3, P3.4, and P4.4, and with City Standard Conditions of Approval for storm drain improvements, numbers 8 and 9, the final design of the project shall be required to adequately direct all flows to the existing detention basin and prohibited from increasing the area subject to flooding downstream. In order to demonstrate compliance with these requirements, the project applicant will be required to prepare a Storm Drain Master Plan (SDMP) prior to issuance of improvement plans for the development which would reduce this impact to less than significant.

HYDRO-1 Consistent with General Plan policies SAF P3.1, P3.3, P3.4, and P4.4, and with City standard conditions of approval for storm drain improvements, numbers 8 and 9, the final design of the project shall be required to adequately direct all flows to the existing detention basin and prohibited from increasing the area subject to flooding downstream. In order to demonstrate compliance with these requirements, the project applicant will be required to prepare a Storm Drain Master Plan (SDMP) prior to issuance of improvement plans for the development

which would reduce this impact to less than significant. The SDMP shall provide the necessary calculations to adequately demonstrate that the proposed drainage facilities adequately convey the design runoff from the project and adequately mitigate the impacts of increased runoff. In accordance with the City's Storm Drain Design Standards, the SDMP shall be prepared prior to the approval of the final map/improvement plans and shall include, but is not limited to, the following items:

- A topographic map of the drainage shed and adjacent areas as necessary to define the study boundary. The map shall show existing and proposed ground elevations (including preliminary building pads), with drainage sub-shed areas in acres, and the layout of the proposed drainage improvements.
- A map showing analysis points, proposed street grades, storm drainage facilities, and overland release paths with required easement locations for overland flow across private property.
- Preliminary pipe sizes with hydraulic grade lines, design flows, inverts, and proposed ground elevations at analysis points. This information shall be provided on the map showing the layout of the proposed drainage facilities.
- Summary of the detention basin and pump station including:
  - Additional pumping capacity added with this project.
  - Summary of detention storage capacity.
  - Proposed operations plan.
  - Downstream improvements or maintenance.
  - Proposed alterations required to avoid any increase in peak flows or areas subject to flooding. Such alterations may include, among other measures:
    - Adjustments to grading plans;
    - Adjustments to storm water system design;
    - Adjustments to pump station operations.

4.4-3: Implementation of the proposed project may substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. This would be a potentially significant impact.

As discussed previously, development of the project would significantly increase the stormwater runoff rates in the watershed without use of the detention basin. Without a

detention basin, the 10-year peak flow would increase from 330 cfs to 455 cfs and the 100-year peak flow would increase from 550 cfs to 710 cfs. However, these flows would be accommodated by the project's use of the existing detention basin at the downstream end of the project that would detain storm flows and pump them out at a rate well below the 10-year peak flow. With use of the existing detention basin and pump station the project would reduce the post development discharge peak storm water flow from existing 10-year and 100-year peak flows to an ultimate pump station discharge peak flow rate of approximately 100 cfs (PEI 2015). Appendix F found this to be an acceptable approach for mitigating the potential impacts of the project on downstream flooding. Consistent with the City's Standard Conditions of Approval for storm drainage, numbers 8 and 9, the detail needed to determine whether the project drainage facilities would adequately direct all flows, including overland flows during the 100-year storm, into the basin (Appendix F) would be prepared at the improvement plans stage of the project design. As a result, the possibility of increased flooding downstream is considered a potentially significant impact without mitigation to reduce the impact.

Peak discharges from the project site are proposed to be reduced significantly with use of the existing detention basin. The duration of peak discharges would be extended substantially, from about nine hours under pre-development conditions to about 24 hours under post-development conditions (Appendix F). The project would add an additional two pumps to the existing pump station that was constructed with the Brighton Landing project. This would increase the capacity of the pump station to about 100 cfs, which exceeds the capacity of the existing downstream channel. An existing culvert downstream of the detention basin was determined to have a capacity of about 10 to 15 cfs, possibly due to siltation or similar conditions, which means flow rates greater than about 15 cfs would result in overtopping of the downstream channel. The project would increase the peak discharge from the detention basin from about 45 cfs to about 100 cfs during a 100-year storm event (Appendix F). The project would also direct all runoff that currently flows directly from the site into the Frost Spill, to the detention basin for an overall reduction in discharge to the Frost Spill. The analysis from Appendix F indicates that peak flows would be reduced with implementation of the project. The extended peak flow from the detention basin would exceed the capacity of the downstream conveyance for approximately an additional 15 hours. Furthermore, the total volume of water discharged from the detention basin that is above the existing channel capacity would increase from about 85 acre-feet to about 120 acre feet, about a 40% increase, during a 100-year storm event. Consistent with General Plan policies SAF 3.1, 3.3, 3.4, and 4.4 and consistent with City Standard Conditions of Approval for storm drain improvements, numbers 8 and 9, the final design of the project shall be required to adequately direct all flows to the existing detention basin and be prohibited from increasing the area subject to flooding downstream. In order to demonstrate compliance with these requirements, the project applicant would be required to prepare a Storm Drain Master Plan (SDMP) prior to

issuance of improvement plans for the project. Therefore, the possibility of an increase in the area subject to flooding downstream is considered a **potentially significant impact.**

Mitigation Measures

Increased runoff generated from the urban land-uses proposed with the project could cause an increase in area subject to flooding downstream of the project. Consistent with General Plan policies SAF P3.1, P3.3, P3.4, and P4.4, and with City standard conditions of approval for storm drain improvements, numbers 8 and 9, the final design of the project shall be required to adequately direct all flows to the existing detention basin and be prohibited from increasing the area subject to flooding downstream. In order to demonstrate compliance with these requirements, the project applicant will be required to prepare a Storm Drain Master Plan (SDMP) prior to issuance of improvement plans for the development which would reduce this impact to less than significant.

HYDRO-2

a. Implement Mitigation Measure HYDRO-1.

b. The applicant shall conduct additional study of off-site drainage and flood conditions to demonstrate to the satisfaction of the City Engineer and Director of Public Works that the project shall not result in an increase in the depth or extent of flooding off-site, consistent with City Standard Conditions of Approval numbers 8 and 9. As part of the Storm Drain Master Plan, the applicant shall conduct a hydraulic analysis of the conveyance facilities downstream of the detention basin to determine the capacity of the downstream conveyance, the extent of the area subject to flooding under pre- and post-development conditions, and to identify the necessary mitigation measures that would reduce flooding to predevelopment levels. If mitigation measures are determined to be necessary based on detailed hydraulic analysis, such measures shall be incorporated into final project improvement plans.

4.4-4: Implementation of the proposed project may create or contribute to runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. This would be a potentially significant impact.

The proposed project would significantly increase the amount of impervious cover on the project site, which would cause a significant increase in runoff rates compared to existing rates. The project would tie into a detention basin downstream of the project boundary that would help mitigate for potential increases in flow and would also provide stormwater quality treatment. On-site runoff from the project would be conveyed to the detention basin via an underground pipe

network that would be constructed in accordance with the City's Standard Specifications and Drawings. The pipe sizes would vary from 15 to 72 inches in diameter. The proposed pipe network would be sized to convey the peak flow from the 10-year storm in accordance with City standards. Flows from storms larger than the 10-year event must be safely conveyed overland in the streets to the detention basin. City standards require the flow from the 100-year storm water surface elevation to be no more than 0.5 feet above the centerline elevation of a road and must be at least one foot below building pads.

Detailed pipe sizing calculations and overland release calculations are not included in the project drainage report and the adequacy of the proposed on-site systems could not be evaluated. Therefore, the possibility for the proposed on-site stormwater system to be exceeded by a storm event is considered a **potentially significant impact.**

Mitigation Measures

Because the impact mechanism addressed by Impact 4.4-4 is the same as that discussed under Impact 4.4-2 (limited capacity of off-site culvert), Mitigation Measures HYDRO-1 and HYDRO-2 would reduce the impact to a less-than-significant level for the same reasons. The mitigation measures require the final design of the project to adequately direct all flows to the existing detention basin and does not allow for any project-related increase in the area subject to flooding downstream.

HYDRO-3 Implement Mitigation Measures HYDRO-1 and HYDRO-2.

4.4.5 Cumulative Impacts

The geographic scope of cumulative effects on hydrology and water quality is the Old Alamo Creek watershed.

4.4-5: The proposed project, in addition to other projects in the watershed, could result in the generation of polluted runoff that could violate water quality standards or waste discharge requirements for receiving waters. This would be a less-than-significant impact.

Cumulative impacts from development of the project were analyzed in the City's General Plan Update EIR. Policies adopted in the General Plan address the evaluation of development to ensure adequate drainage facilities, the requirement for impact fees to fund storm drain improvements, and provision of storm drain master plans to guide development approvals (SAF P3.1, P3.3, P3.4), and ensure evaluation of drainage patterns, of flood risks, and of the facilities needed to protect water quality and maintain drainage systems (Policies SAF-P4.1 – 4.5). The proposed project and other potential cumulative projects in the vicinity of the project site,

including growth resulting from build-out of the City's General Plan, would be required to comply with the NPDES General Permit for Discharges of Storm Water Discharge Associated with Construction Activities issued by the State Water Resources Control Board. This permit requires projects to implement measures to prevent impacts, individual and cumulative, to water quality during construction. In addition, projects would also be required to comply with the City's NPDES stormwater permit from the CVRWQCB and their Stormwater Management Plan which prevent impacts to water quality after construction of a project. As discussed in the impact analysis above, the off-site detention basin has been designed to address flood control and water quality considerations for both the project and the approved Brighton Landing project, both of which are the primary contributing areas to the Frost Drain. Therefore, the potential for cumulative impacts to water quality is less than significant.

The proposed project and other potential projects that could contribute to cumulative impacts would also be subject to local, state, and federal regulations designed to minimize individual and cumulative impacts related to stormwater runoff rates and flooding. Implementation of mitigation measures for the proposed project and anticipated mitigation measures for other projects that would be required to maintain compliance with these regulations, along with implementation of the General Plan policies cited would reduce the potential cumulative impacts to a **less-than-significant level.**

Mitigation Measures

None required.

4.4.6 References

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4.5 LAND USE AND PLANNING

4.5.1 Introduction

This section describes the existing and proposed land use designations and zoning for the Roberts' Ranch Specific Plan (proposed project) and evaluates the potential effects on general land use compatibility and consistency with the City of Vacaville General Plan (City of Vacaville 2015) goals and policies and other relevant planning documents.

Comments received in response to the Notice of Preparation (NOP) pertaining to land use included a request that the Solano County General Plan and Zoning be evaluated for consistency with the portion of the project site remaining in unincorporated Solano County and the adjacent stormwater detention pond. Comments also requested information on whether or not the City's stormwater detention pond could be annexed into the City. The entire project site is proposed for annexation into the City of Vacaville, but the project did not include annexation of the City's detention basin. That land was planned to remain within the County. However, following receipt of the County's comment letter, the Vacaville City Council amended the General Plan to place the existing detention basin within the City's planned Sphere of Influence and to designate this land as Public Open Space on the City's General Plan land use diagram. Public uses such as detention basins are an allowed use within this land use designation. One comment from the Solano Local Agency Formation Commission suggested that the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 be identified in the regulatory setting. To the extent that comments are related to policy inconsistencies and general land use compatibility with existing plans, these issues are addressed in this section. Potential land use compatibility concerns related to increased traffic or other nuisance-type land use incompatibilities and consistency with resource-specific planning documents (e.g., regional air quality plans) are addressed in the other technical sections in Chapter 4 of this Environmental Impact Report (EIR). A copy of the NOP and comment letters received in response to the NOP are included in Appendix A.

Information referenced to prepare this section is based on the City of Vacaville General Plan Land Use Element (City of Vacaville 2015), City of Vacaville General Plan and Energy Conservation Strategy Draft EIR (City of Vacaville 2013), Solano County General Plan (Solano County 2008), Solano County Chapter 28 Zoning Ordinance (Solano County 2015) and the City's Title 14.09 Zoning Ordinance (adopted in 1996; amended in 1998).

4.5.2 Environmental Setting

This section describes the existing conditions in the project area and the built environment. This section also identifies the site's current and proposed zoning and General Plan land use designations.

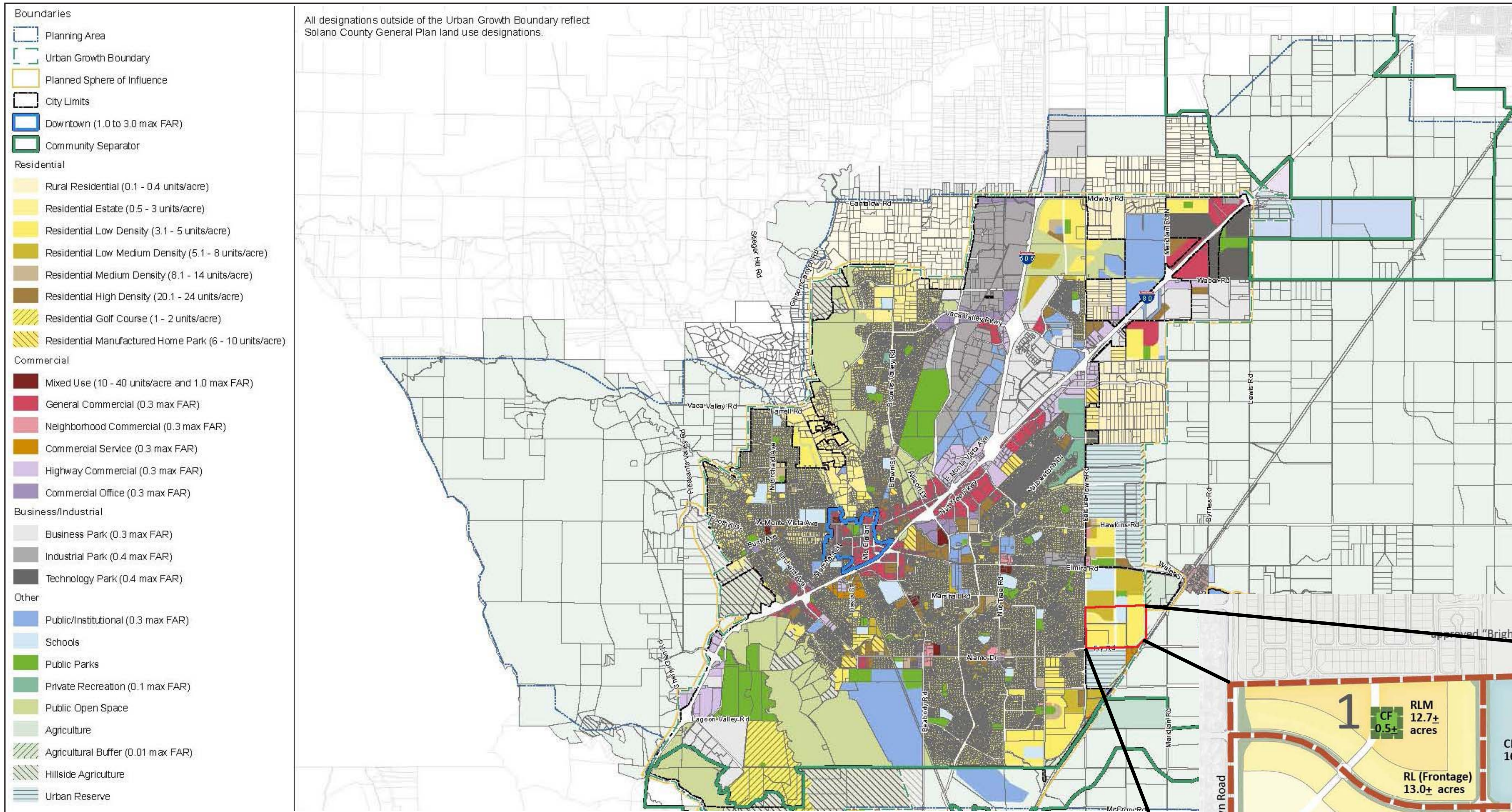
Existing Site Conditions

The project site is located in northern Solano County adjacent to the southeastern corner of the City of Vacaville, approximately 4 miles from Downtown Vacaville. The site is located in unincorporated Solano County within the City's proposed Sphere of Influence (SOI) in an area that straddles the City's Urban Growth Boundary (UGB). The approximately 248-acre project site is currently in active agricultural production for row crops, is relatively flat, and does not contain any buildings or trees. There is an existing PG&E easement in the eastern portion of the site for 500 kV and 230 kV overhead transmission lines that are part of the statewide electrical system. In addition there is a Solano Irrigation District (SID) irrigation canal that traverses the site from east to west.

The project site is bounded by Fry Road to the south, Leisure Town Road to the west, undeveloped land planned for development under the approved Brighton Landing Specific Plan to the north, and undeveloped land and the Union Pacific Railroad tracks to the east (see Figures 3-1 and 3-2 in Chapter 3, Project Description).

The project site is located within the Travis Air Force Base Airport Land Use Compatibility Plan (ALUCP). The Travis Air Force Base ALUCP establishes policies for noise, safety and airspace protection for uses near the airport. The project site is located in Compatibility Zone D, which only places a limitation on the height of structures within this zone and establishes procedures for the evaluation of potential wildlife attracting uses within close proximity to the base facility.

The project site is designated for agriculture in the Solano County General Plan and zoned A-40, Exclusive Agriculture 40 acres (Solano County 2008, 2015). The project site is designated as a future Specific Plan in the City's General Plan and also designated as part of the East of Leisure Town Road Growth Area (City of Vacaville 2015). The City's Land Use Designation figure (City of Vacaville 2015, Figure LU-6) designates various portions of the project site Residential Low Density (3.1-5 units/acre), Residential Low-Medium Density (5.1-8.0 units/acre), Schools, Agricultural Buffer, and Public Open Space. The project site does not currently include City zoning because it is located outside of the City limits. The project applicant is not requesting any change to the City's land use designations, but is requesting the site be pre-zoned Residential Low Density (RL-5 & RL-6), Residential Low Medium Density (RLM-3.6 & RLM-4.5) and Community Facilities (CF) with an Agricultural Buffer overlay zone over portions of the publicly owned lands. Figure 4.5-1 shows the existing and proposed land use designations for the project site, and Figure 4.5-2 shows the proposed zoning for the project site. As part of this project the City is proposing to annex the entire project site into the City limits.



Existing Land Use - Residential Low Density (3.1-5 units/acre);
Residential Low Medium Density (5.1-8 units/acre);
School

SOURCE: City of Vacaville

DUDEK

FIGURE 4.5-1
Existing and Proposed Land Use

Roberts' Ranch Specific Plan EIR

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FIGURE 4.5-2
Proposed Zoning

Roberts' Ranch Specific Plan EIR

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Surrounding Land Uses

Surrounding land uses include existing residential development to the west across Leisure Town Road, the approved Brighton Landing subdivision adjacent to the northern boundary, and undeveloped land currently in agricultural use south across Alamo Drive Extension and Fry Road. The Union Pacific Railroad tracks and undeveloped land in agricultural use is located to the east. A City-owned stormwater detention basin is located adjacent to the northeast corner of the project site.

Land surrounding the project area has General Plan designations and zoning from the City and Solano County and includes a mix of agriculture, residential and public uses (see Figure 4.5-3 and Figure 4.5-4). Land to the west of the site has a City land use designation of Residential Low Density and is zoned RL-6. Land north of the project site, in the Brighton Landing subdivision, includes land use designations of Residential Low Density, Residential Low-Medium Density, Schools and Public Parks and is zoned CF, RLM-3.6, and RL-6. Lands south and east of the project site within the unincorporated County and the City's planned SOI and the adopted UGB, has a City General Plan land use designation but is not zoned. Land south of Fry Road is designated in the City's General Plan as part of the East of Leisure Town Road Future Specific Plan. This land is designated as Urban Reserve and Commercial Service. Land east of the Brighton Landing project (north of the project site) is within the City limits and has a land use designation for Agriculture. Land east of the Union Pacific Railroad tracks in the unincorporated County has a County land use designation of Agriculture and is zoned A-40.

General Plan Land Use Designation Descriptions

The discussion below provides a brief overview of the County and City's General Plan land use designations for the project site, the County's zoning for the project site, and the proposed City zoning for the project site.

Solano County

Agriculture: This designation provides area for agricultural uses and allows for secondary uses that support the economic viability of agriculture. These areas are protected from intrusion by non-agricultural uses and other uses not directly supporting the viability of agricultural uses (Solano County 2008, p LU-19).

City of Vacaville

RLD - Residential Low Density: Properties with the RLD designation are intended for single-family residential uses on lots ranging from 5,000 to 10,000 square feet (sf). The base density

for RLD neighborhoods is 3.1 units per gross acre with a maximum potential density of 5 units per gross acre.

RLM - Residential Low-Medium Density: This designation provides for single-family, duplex and cluster housings on lots ranging from 3,600 to 4,500 sf. Clustered development on sites measuring at least 10 acres in size are also permitted under this designation. The base density for RLM neighborhoods is 5.1 units per gross acre with a maximum potential density of 8 units per gross acre.

School: This designation is used for existing and proposed school sites including public elementary, junior high and high schools. Sites with this designation are subject to review by school districts and ultimate locations may vary from what is proposed.

Agricultural Buffer: This designation is used to identify lands that border urban development and intensive or irrigated agriculture. The primary use for this designation is to provide a buffer between urban development and agricultural uses subject to an agreement between the City and SID. Proposed uses in buffer lands include passive open space uses such as pedestrian and bicycle trails or public infrastructure improvements.

Public Open Space: Land with this designation is owned or controlled by the City, a public entity or a non-profit entity. This designation can also be used to identify lands for future acquisition by the City and lands that are to be preserved in permanent open space. Public open space lands may be used for recreational purposes but this designation does not guarantee public access to these lands (City of Vacaville 2015, p. LU-22).

Municipal Code – Zoning Descriptions

Solano County

Exclusive Agriculture 40 acres (A-40): This zoning district is intended to provide for agricultural land uses and to preserve vitality of agricultural operations through allowing agricultural-related support uses, excluding incompatible uses and protecting viability of the family farm. Allowable uses within this zoning district include, but are not limited to, agricultural sensory structures, cultivated and irrigated farming, non-irrigated and non-cultivated farming, grazing or pasture livestock, nursery with public sales and small wineries (Solano County 2015, Table 28.21A).

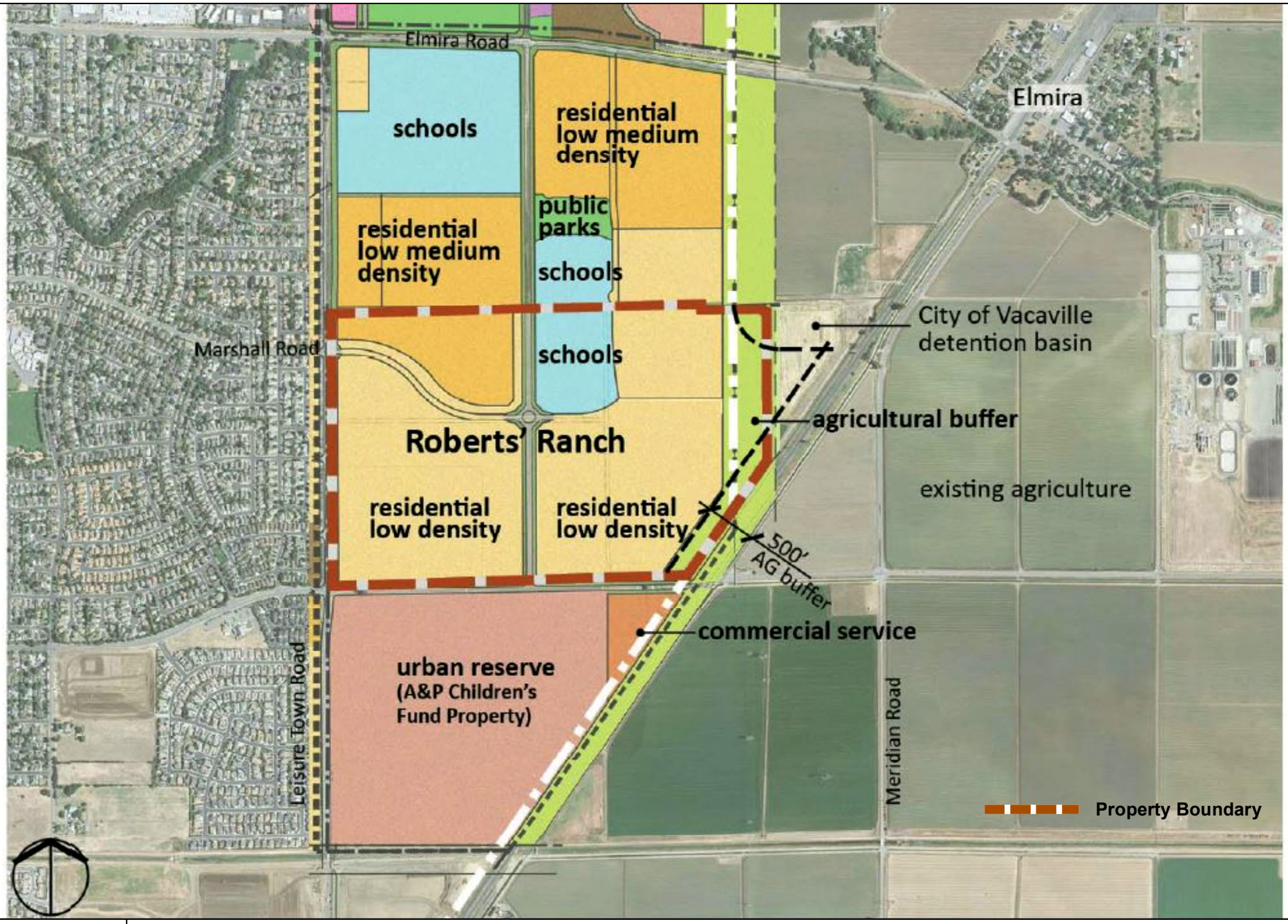

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FIGURE 4.5-3

Surrounding and Proposed Land Use

Roberts' Ranch Specific Plan EIR

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ZoningMap

Zoning By Parcel

- Residential Rural
- Residential Estates
- Residential Low Density
- Residential Low/Medium Density
- Residential Medium Density
- Residential High Density
- Manufactured Housing Park
- Downtown Commercial
- General Commercial
- Neighborhood Commercial
- Office Commercial
- Recreation Commercial
- Service Commercial
- Agriculture
- Agricultural Hillside
- Community Facilities
- Open Space
- Business Park
- Industrial Park

Street Centerline

- Minor Arterials
- Major Arterials
- Freeway Ramps
- Freeway

City Limits

Project Boundary

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SOURCE:

Roberts' Ranch Specific Plan EIR

FIGURE 4.5-4

Surrounding and Proposed Zoning

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City of Vacaville

Residential Low Density (RL-5 and RL-6): Properties zoned RL are intended to provide detached single-family residential development in densities of 3.1 to 5.0 units per gross acre with a lot range of 5,000 to 10,000 sf. Properties with an RL-5 designation would have a minimum lot size of 5,000 sf and properties with RL-6 designation would have a minimum lot size of 6,000 sf. At least 25% of units with a RL-5 designation must be designed in an alternative configuration and dispersed proportionally throughout the project. Alternative configuration of units is encouraged within the RL-6 district. Alternative configuration is defined in Chapter 14.09.074.090 of the Vacaville Zoning Code as a design that varies substantially from the typical single-family architecture style where the attached garage that fronts on the street is the dominant feature of the dwelling.

Residential Low Medium Density (RLM-3.6 and RLM-4.5): Properties zoned RLM are intended to provide detached single-family residential development in densities of 5.1 to 8.0 units per gross acre. Properties with an RLM-3.6 designation would have a minimum lot size of 3,600 sf and properties with an RLM-4.5 designation would have a minimum lot size of 4,500 sf. Alternative configuration is required in at least 50% of units within the RLM-4.5 district and 100% of units within the RLM-3.6 district.

Community Facilities (CF): The CF zoning designation provides opportunities for a range of community facilities and large public facilities occupying a minimum site area of 2 acres. Permitted uses in the CF designation include, but are not limited to, detention basins, membership organization facilities, parking lots, recreation uses such as playgrounds and neighborhood parks, and public schools including elementary schools (Chapter 14.09.100.030 of the City's Zoning Code).

4.5.3 Regulatory Setting

Federal Regulations

There are no federal plans, policies, regulations or laws applicable to the proposed project.

State Regulations

Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000

The Cortese-Knox-Hertzberg Local Government Reorganizations Act encourages orderly formation of Local Government Formation Committees (LAFCOs) and protects agricultural land resources by discouraging urban sprawl and coordinating logically and timed changes in local government boundaries. Solano County LAFCO regulates boundary changes, annexations, and

sphere of influence for cities, agencies and special districts within the county (Solano LAFCO 2015). Solano LAFCO has discretionary approval over the City's request to annex the project site into the City of Vacaville city limits.

Local Regulations

Solano County General Plan

The Solano County General Plan, adopted on August 5, 2008, is a long-range planning document to guide land use in the unincorporated areas of the County including areas outside the Vacaville City limits but within the City's planned UGB. Currently, the project site and lands immediately south and east are not within the City limits and is governed by the Solano County General Plan.

The following goals and policies from the County's General Plan Land Use Element are applicable to the proposed project.

Goal LU.G-1 Preserve and protect the current development pattern of distinct and identifiable cities and communities.

Goal LU.G-2 Encourage a development pattern that first seeks to maintain existing communities, second to develop vacant lands within existing communities presently served by public services, and third to develop lands immediately adjacent to existing communities where services can easily be provided.

Goal LU.G-4 Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.

Policy LU.P-1 Collaborate with cities to guide development to the county's urban centers and promote sustainable development patterns.

Policy LU.P-4 Designate as municipal service areas those areas where future development is to be provided with municipal or urban type uses through city annexation.

Policy LU.P-6 Retain existing land uses within municipal service areas until annexed into a city.

Policy LU.P-11 Within municipal service areas, work with cities to protect and maintain designated urban-agricultural buffers within city jurisdiction compatible with adjoining agricultural uses.

Policy LU.P-18 Require a variety of housing types (affordable and market-rate) near jobs, services, transit, and other alternative-transportation serving locations (e.g. rideshare lots).

Solano County Zoning Ordinance (Chapter 28)

The Solano County Zoning Code was adopted October 6, 2015. The Zoning Ordinance includes the zoning map and regulations governing the use of land and placement of improvements and buildings within various designations. Regulations include, but are not limited to, property development standards, general site use and regulations, parking standards and procedures for administering the ordinance.

The project site and lands immediately south and east are zoned A-40. This zoning district is intended to provide for agricultural land uses and to preserve vitality of agricultural operations. As part of this project the City is requesting the project site be annexed into the City. The project applicant is requesting the project site be pre-zoned, consistent with the City's current land use designations.

Solano County Airport Land Use Commission

The Solano County Airport Land Use Commission (ALUC) guides airport development in the county and governs the areas surrounding airports in order to prevent land use issues related to noise and safety. The ALUC prepares Land Use Compatibility Plans (LUCP) to ensure that cities within the county have policies and regulations in compliance with provisions of the plans.

Travis Air Force Base Airport Land Use Compatibility Plan

Travis Air Force Base is located approximately 5.35 miles south of the project site. The Travis Air Force Base ALUCP provides policies and guidance designed to ensure that future land uses surrounding the Air Force Base remain consistent and compatible with the airport facility safety and uses. The project site falls within Land Use Compatibility Zone D in the LUCP. Compatibility Zone D does not limit residential development or other uses, but would require the Solano County ALUC and Federal Aviation Administration review of structures with a proposed height of over 200 feet (Solano County 2002).

Residential and other development is consistent with guidelines presented for Zone D, with some restrictions for building height and wildlife attractants such as open water that may attract waterfowl. Further, the project site is within the "outer perimeter" area for bird strike hazard. New or expanded land use involving discretionary review that has the potential to attract the movement of wildlife and cause bird strikes are required to prepare an assessment of hazards

from wildlife movement, and the potential for new projects to attract wildlife must be reviewed as part of the environmental review process required by CEQA.

City of Vacaville General Plan

The *City of Vacaville General Plan* (General Plan) adopted August 11, 2015, is designed as a long-range planning document for guiding future conservation, enhancement and development in the City. The following goals and policies from the City's General Plan Land Use Element and Conservation and Open Space Element are applicable to the proposed project.

Goal LU-2 Carefully plan for new development in undeveloped portions of Vacaville.

Policy LU-P2.1 Require lands outside, but adjacent to, the current City limits to annex into the City of Vacaville as a prerequisite of development. Do not provide city utility services, water, and sanitary sewer to new development outside the City limit (with the exception of sanitary sewer for infill in the Elmira area) unless the City Council with the approval of the Local Agency Formation Commission (LAFCO), approves exceptions in situations where the following three conditions are met:

- The area in question cannot annex into the City immediately, because it is not currently contiguous to the City limit.
- The property owner signs a recorded, irrevocable agreement to annex the property to the City when such annexation is requested by the City.
- The development is consistent with this General Plan and is found to meet all appropriate City development standards.

Policy LU-P2.2 Require that specific plans be prepared for new areas brought into the city for development. Such specific plans must provide a coordinated plan for land use, public facilities, and public services. Prohibit individual, piecemeal developments within these outlying areas.

Goal LU-3 Coordinate land development with the provision of services and infrastructure.

Policy LU-P3.6 Require that new development or new Specific Plan areas be located immediately adjacent to existing development or infrastructure.

Goal LU-5 Maintain the City's Urban Growth Boundary

Policy LU-P5.6 Land Use Restrictions Outside the Urban Growth Boundary: In those areas located outside the Urban Growth Boundary and within the City's land use

jurisdiction, only the following shall be permitted: (1) all uses permitted in the Vacaville General Plan or the Land Use and Development Code on the Submittal Date, or existing on that date, shall continue to be permitted, and in the event any such use is damaged or destroyed by natural disaster, fire, or Act of God, it may be rebuilt and continued; (2) new uses consistent with the General Plan as amended by the Urban Growth Boundary Initiative; and (3) any infrastructure improvements necessary or appropriate to serve or protect existing uses and new permitted uses within the Urban Growth Boundary, including, but not limited to, construction and/or expansion of public facilities and utilities outside the Urban Growth Boundary that support such development elsewhere, such as stormwater detention basins, water tanks (reservoirs), sewer and water lines, and wastewater treatment plants to accommodate buildout of the Vacaville General Plan.

Goal LU-11 Preserve and enhance the existing character and sense of place in residential neighborhoods.

Policy LU-P11.3 Require a Planned Development permit for all residential development meeting one or more of the following criteria, consistent with the adopted Planned Development Regulations (the Planned Development permit process is intended to increase flexibility for these types of development by allowing deviations from typical development standards such as setbacks, building height, landscaping, parking, and design):

- Multi-family projects of ten units or more.
- Mixed use.
- A location potentially subject to natural or man-made geologic hazards, including hillside areas.
- Any project exceeding the maximum density allowed by the land use designation or with 50 units or more.

Goal LU-17 Provide for orderly, well-planned, and balanced growth in the East of Leisure Town Road Growth Area.

Policy LU-17.1 Limit residential development within the East of Leisure Town Road Growth Area to 2,175 dwelling units with the following general assumptions:

- Brighton Landing Specific Plan Area: 780 dwelling units
- Properties South of Brighton Landing and North of Fry Road: 785 dwelling units

- Properties North of Elmira Road: 610 dwelling units

Require a General Plan Amendment for residential development in excess of this amount.

Policy LU-P17.5 Require that specific plans be prepared for development in the East of Leisure Town Road Growth Area to ensure that coordinated plans for land uses, public facilities, and public services are created for such area, and require that these specific plans are consistent with the City's updated infrastructure master plans that account for development in the East of Leisure Town Growth Area.

Policy LU-P17.6 Require that specific plans for the East of Leisure Town Road Growth Area include a diagram showing the distribution of land uses and define permitted land uses, major public facilities (including schools, parks, roads, water, sewer, and drainage facilities), phasing, infrastructure financing mechanisms, interim fire protection measures, and any other elements that may be needed to ensure an orderly development process with minimal adverse impacts to the existing community. The specific plans shall be consistent with the City's master infrastructure plans prepared for the East of Leisure Town Road Growth Area.

Policy LU-P17.11 Require specific plans within the East of Leisure Town Road Growth Area to incorporate detention basins, agricultural buffer areas, and public open spaces into the physical amenities designed into the neighborhood. These amenities could include trails, passive open spaces, recreational spaces, or other features designed to create innovative, attractive neighborhood design.

Goal COS-4 Minimize conflicts between agricultural and urban uses.

Policy COS-P4.1 Within the area east of Leisure Town Road, south of the Locke Paddon Community and north of the railroad tracks, as shown in Figure LU-6 in the Land Use Element, require new development to maintain a 300- to 500-foot wide agricultural buffer along the eastern boundary of all residential development and existing agricultural lands. Require that uses within the agricultural buffer be limited to passive open space uses that are not accessed by a large number of employees or the general public at one time. Permitted uses within the buffer shall be limited as described below:

- Any portion of the buffer located inside the Urban Growth Boundary, adjacent to the Pacific Gas & Electric Company easement, shall contain

substantial landscaping to discourage unlawful access onto the agricultural lands, and to lessen the potential impacts of typical agricultural activities on residential uses. Passive recreational uses such as pedestrian and bicycle trails are permitted.

- Uses located outside of the Urban Growth Boundary, within the 385-foot wide Pacific Gas & Electric Company easement, shall be limited to public infrastructure improvements necessary or appropriate to serve or protect existing and new permitted uses within the Urban Growth Boundary, including but not limited to, alternative energy facilities, stormwater detention basins, water tanks (reservoirs), and sewer and water lines to accommodate buildout of the Vacaville General Plan.

The following goals and policies from the City's Housing Element that address new construction are applicable to the project and are listed below.

Policy H.1 - G 1 Ensure a supply of housing of differing type, size, and affordability in order to meet Vacaville's housing needs for the current and future residents and workers within the community.

Policy H.1 - G 4 Ensure the development and availability of housing appropriate for special needs groups including, but not limited to, young adults, young families, seniors, people with physical and developmental disabilities and homeless people.

Policy H.1- G 7 Establish development and construction standards that encourage energy conservation in residential areas.

City of Vacaville Zoning Ordinance (Title 14.09)

Zoning regulations for the City are included in Title 14.09 of the City's Land Use and Development Code. The Zoning Ordinance contains zoning maps and regulates land use to protect and promote public health, safety, and general welfare of citizens. Regulations include, but are not limited to, development standards, general site use regulations, regulation for the placement of buildings and structures, regulations for the provision of site improvements such as landscaping and parking, and procedures for administration of the ordinance.

The project site does not currently include City zoning because it is located outside of the City limits. The project applicant is requesting the site be pre-zoned RL-5 & RL-6, RLM-3.6 & RLM-4.5 and CF with an Agricultural Buffer overlay zone over portions of the publicly owned lands. These zoning districts would be consistent with General Plan land use designations and planned uses for the project site.

4.5.4 Impacts

Methods of Analysis

Existing land uses in the vicinity of the project site were identified based on a site visit. Planned land uses were identified based on the City's General Plan and information provided by the City and the project applicant. The land use evaluation is based on a qualitative comparison of existing and proposed uses on the site and their compatibility with existing land uses and planned land uses, as defined in the City's General Plan as well as other applicable local planning documents.

The California Environmental Quality Act (CEQA) Guidelines, Section 15125(d) (found in 14 CCR 15000 et seq.), states that the environmental setting of an EIR must discuss "any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans." An inconsistency with a general plan or other policy would not necessarily create an environmental impact. In some cases, a general plan policy lays out the standard by which an environmental impact is judged to be significant or less than significant. The determination of project consistency with the City's General Plan must be made by the City Council. The information provided in this section is meant to inform that decision.

The analysis below evaluates the proposed project's consistency with applicable goals and policies contained in the City's General Plan, as well as other relevant planning documents. Physical environmental impacts resulting from development of the project site are discussed in the applicable technical sections in Chapter 4 of this Draft EIR. CEQA does not treat project consequences relating solely to land use, socioeconomic or population, employment, or housing issues as direct physical impacts to the environment. An EIR may provide information regarding land use, planning, and socioeconomic effects; however, CEQA does not recognize these types of project consequences as typical impacts on the physical environment. The analysis in this section discusses only general land use compatibility and land use policy consistency as opposed to analyzing the physical impacts on the environment that could occur with implementation of the project. This discussion complies with Section 15125(d) of the CEQA Guidelines, as discussed above.

Implementation of the proposed project would result in a change in land use as compared to existing conditions, but would be consistent with the City's underlying land use designations to develop the site for residential uses. Changes in land use are regulated by the planning policies adopted by each local governmental jurisdiction in California. Therefore, this change in land use is evaluated in comparison to the planning goals and policies in the City's General Plan. General plans provide long-term goals, policies and standards for development, and all development proposals must be generally consistent with the overall land use guidance provided in a general plan. Additional land use controls are applied through the City's zoning,

subdivision and grading requirements as well as other City regulations and ordinances. The project's consistency with applicable ordinances, as well as specific land use implications associated with development of the project is discussed in this section. The analyses of consistency with other planning documents (e.g., regional air quality plans) are provided in the applicable technical sections in Chapter 4 of this Draft EIR. This analysis assumes development of the project site would comply with the design guidelines set forth in the Roberts' Ranch Specific Plan; therefore, such policies and standards are not specifically identified as mitigation. A copy of the Specific Plan is included on the City's website at www.cityofvacaville.com/RobertsRanch.

Impacts Addressed in the Modified Initial Study

As discussed in the Modified Initial Study (Appendix B), the project site is currently undeveloped and in active agricultural use; therefore, development of the proposed project would not divide an established community and this issue is not further addressed. The Draft Solano County Habitat Conservation Plan (Solano HCP) has not yet been adopted. However, the City's General Plan includes policies consistent with the draft Solano HCP and implementation of these policies would ensure that the project is consistent with the Solano HCP when adopted. This is discussed in greater detail in Section 4.2, Biological Resources. Therefore, consistency with an adopted conservation plan or natural community conservation plan is not further addressed.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Conflict with any regional land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Impacts and Mitigation Measures

4.5-1: Implementation of the proposed project may conflict with a regional land use plan, policy or regulation. This would be a less-than-significant impact.

Land Use Plans

The proposed project is subject to a determination of consistency with the Travis Air Force Base ALUCP. The project site is identified in the ALUCP as within Compatibility Zone D, which triggers ALUC and Federal Aviation Administration review of structures with a proposed height of over 200

feet. The project includes residential development and would not include buildings that exceed 200 feet in height. Compatibility Zone D does not limit residential development or other uses.

Section 4.2, Biological Resources, addresses whether or not the proposed project would create uses that would attract birds to the area that could result in a potential hazard to aircraft associated with a bird strike, and concludes that the project would have a less than significant effect on aircraft safety. The Travis Air Force Base ALUCP does not allow land uses within 12,500 feet of the Travis Air Force Base runways that may cause bird strike hazards to aircraft in flight. Such land uses typically include wetlands, agricultural operations, landfills, or golf courses. The proposed project would not affect bird strike hazard for aircraft using Travis Air Force Base, because it is located outside the runway approach/departure surface (Figure 2C in the Travis Air Force Base ALUCP) and the completed project would be composed of residential development with landscaped or managed open space areas. The project site is currently composed of agricultural operations, which when replaced with the project land uses would result in a net decrease in bird attractants at the site and a reduction in bird strike hazard to aircraft. In addition, the project does not include any sources of water (i.e., ponds, detention or retention facilities) that have the potential to attract the movement of wildlife and cause bird strikes with aircraft. Therefore, this impact would be **less than significant**.

City of Vacaville General Plan Policies

As required under CEQA, this analysis examines the consistency of the proposed project with applicable land use policies in the City's General Plan. Table 4.5-1 lists the General Plan policies related to land use that are applicable to the proposed project along with a determination of the project's consistency with each policy.

As discussed in Table 4.5-1, the project is consistent with applicable General Plan goals and policies and the impact on conflicting with these goals and policies is **less than significant**.

Regulations

Once annexed to the City the project site must be zoned consistent with the General Plan and anticipated uses of the project site. The site is currently located in unincorporated Solano County and has a County zoning designation of A-40. The project applicant is requesting that the site be pre-zoned RL-5/RL-6, RLM-3.6, and CF consistent with the City's underlying land use designations. The RLM units would be located in the northwest portion of the project site with the remainder of the site designated RL. Lot sizes required by the zoning code range from 3,600 sf (RLM-3.6) to 6,000 sf (RL-6) and lot sizes in the project site would range from 4,400 sf to 8,050 sf. Single family residential units are permitted by right within the RL and RLM zoning designations; public playgrounds, parks and neighborhood recreation centers on a site less than 2 acres in size are conditionally permitted.

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
Policy LU-P5.6	Land Use Restrictions Outside the Urban Growth Boundary: In those areas located outside the Urban Growth Boundary and within the City's land use jurisdiction, only the following shall be permitted: (1) all uses permitted in the Vacaville General Plan or the Land Use and Development Code on the Submittal Date, or existing on that date, shall continue to be permitted, and in the event any such use is damaged or destroyed by natural disaster, fire, or Act of God, it may be rebuilt and continued; (2) new uses consistent with the General Plan as amended by the Urban Growth Boundary Initiative; and (3) any infrastructure improvements necessary or appropriate to serve or protect existing uses and new permitted uses within the Urban Growth Boundary, including, but not limited to, construction and/or expansion of public facilities and utilities outside the Urban Growth Boundary that support such development elsewhere, such as stormwater detention basins, water tanks (reservoirs), sewer and water lines, and wastewater treatment plants to accommodate buildout of the Vacaville General Plan	Consistent. The developed portions of the Roberts' Ranch Specific Plan are located inside of the City's Urban Growth Boundary. Only a portion of the active open space, utilities, and the agricultural buffer are located outside of the Urban Growth Boundary.

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
Policy LU-P2.1	Require lands outside, but adjacent to, the current City limits to annex into the City of Vacaville as a prerequisite of development. Do not provide city utility services, water, and sanitary sewer to new development outside the City limit (with the exception of sanitary sewer for infill in the Elmira area) unless the City Council with the approval of the Local Agency Formation Commission (LAFCO), approves exceptions in situations where the following three conditions are met: • The area in question cannot annex into the City immediately, because it is not currently contiguous to the City limit. • The property owner signs a recorded, irrevocable agreement to annex the property to the City when such annexation is requested by the City. • The development is consistent with this General Plan and is found to meet all appropriate City development standards.	Consistent. The project site is within the City's planned Sphere of Influence and all proposed residential uses are within the Urban Growth Boundary. As part of the project, the City is proposing to annex the project site into the City limits. LAFCO will review the City's request to annex the project site and will evaluate the ability of service providers to serve the site, as part of the annexation evaluation.
Policy LU-P2.2	Require that specific plans be prepared for new areas brought into the city for development. Such specific plans must provide a coordinated plan for	Consistent. The Roberts' Ranch Specific Plan has been prepared for the project site. This Specific Plan provides a comprehensive approach that defines the various land

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
	land use, public facilities, and public services. Prohibit individual, piecemeal developments within these outlying areas.	uses, public facilities, and public services to accommodate future development. In addition, the Specific Plan includes design guidelines and discusses all required elements of development from utility infrastructure to circulation, and landscaping, which would ensure that development is cohesive and coordinated.
Policy LU-P3.6	Require that new development or new Specific Plan areas be located immediately adjacent to existing development or infrastructure.	Consistent. The project site is located across Leisure Town Road from existing residential development within the City and is located south of the recently approved Brighton Landing Subdivision, which is currently under construction. This area is designated in the General Plan as part of the East of Leisure Town Growth Area, which was anticipated for development with residential uses.
Policy LU-P11.3	Require a Planned Development permit for all residential development meeting one or more of the following criteria, consistent with the adopted Planned Development Regulations (the Planned Development permit process is intended to increase flexibility for these types of development by allowing deviations from typical development standards such as setbacks, building height, landscaping, parking, and design): • Multi-family projects of ten units or more. • Mixed use.	Consistent. The project includes 785 single-family residences, which would require the project applicant obtain a Planned Development permit. The Specific Plan shall serve as the Planned Development as part of the project approval, as noted in Chapter 3, Project Description Section 3.4.

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
	• A location potentially subject to natural or man-made geologic hazards, including hillside areas. • Any project exceeding the maximum density allowed by the land use designation or with 50 units or more.	
Policy LU-17.1	• Limit residential development within the East of Leisure Town Road Growth Area to 2,175 dwelling units with the following general assumptions: Brighton Landing Specific Plan Area: 780 dwelling units • Properties South of Brighton Landing and North of Fry Road: 785 dwelling units • Properties North of Elmira Road: 610 dwelling units Require a General Plan Amendment for residential development in excess of this amount.	Consistent. The Roberts' Ranch Specific Plan includes 785 single-family residential units consistent with this policy and the City's growth projections for this site.
Policy LU-P17.5	Require that specific plans be prepared for development in the East of Leisure Town Road Growth Area to ensure that coordinated plans for land uses, public facilities, and public services are created for such area, and require that these specific plans are consistent with the City's updated	Consistent. The Roberts' Ranch Specific Plan has been prepared for proposed development within the East of Leisure Town Road Growth Area. The Specific Plan includes a combination of residential low density and residential low-medium density development, neighborhood parks, open space, and a future school site. Chapter 7, Public Facilities,

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
	infrastructure master plans that account for development in the East of Leisure Town Growth Area.	of the Specific Plan provides guidelines for the development of infrastructure facilities necessary to serve the project. The project's infrastructure master plans have been prepared consistent with the City's infrastructure plans for future development within the East of Leisure Town Road Growth Area.
Policy LU-P17.6	Require that specific plans for the East of Leisure Town Road Growth Area include a diagram showing the distribution of land uses and define permitted land uses, major public facilities (including schools, parks, roads, water, sewer, and drainage facilities), phasing, infrastructure financing mechanisms, interim fire protection measures, and any other elements that may be needed to ensure an orderly development process with minimal adverse impacts to the existing community. The specific plans shall be consistent with the City's master infrastructure plans prepared for the East of Leisure Town Road Growth Area.	Consistent. The Roberts' Ranch Specific Plan includes diagrams showing the distribution of residential uses, public facilities uses and open space uses. Additionally, the Specific Plan includes a diagram of the zoning on the project site and lists the permitted and conditionally permitted land uses within each designation. As discussed above, the specific plan includes a Master Utility Plan that provides for adequate and reliable utilities consistent with the City's infrastructure master plans. Chapter 8 of the Specific Plan includes a discussion of the community services and facilities required for the project and guidelines to ensure that development meets City requirements for provision of these services and facilities. The project application also includes a proposed phasing plan indicating how all facilities & services will be provided during buildout of the project.

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
Policy LU-P17.11	Require specific plans within the East of Leisure Town Road Growth Area to incorporate detention basins, agricultural buffer areas, and public open spaces into the physical amenities designed into the neighborhood. These amenities could include trails, passive open spaces, recreational spaces, or other features designed to create innovative, attractive neighborhood design.	Consistent. The Roberts' Ranch Specific Plan includes a 500-foot agricultural buffer area and a public open space area along the eastern boundary of the project site, and a variety of project amenities including stroller parks, passive open space and trails throughout the project site consistent with this policy. The project does not include a detention basin but will tie into the detention basin located in the approved Brighton Landing project to the north. This basin has been sized to accommodate both projects.
Policy COS-P4.1	Within the area east of Leisure Town Road, south of the Locke Paddon Community and north of the railroad tracks, as shown in Figure LU-6 in the Land Use Element, require new development to maintain a 300- to 500-foot wide agricultural buffer along the eastern boundary of all residential development and existing agricultural lands. Require that uses within the agricultural buffer be limited to passive open space uses that are not accessed by a large number of employees or the general public at one time. Permitted uses within the buffer shall be limited as described below: • Any portion of the buffer located inside the Urban Growth Boundary, adjacent to the Pacific Gas & Electric Company easement, shall	Consistent. The project is located within the City's Urban Growth Boundary. The project includes a 500-foot wide agricultural buffer on the eastern boundary as required by the City to minimize impacts between residential uses and agricultural uses. A multi-use trail consisting of a 10-foot wide concrete or asphalt trail would provide consistent all-weather access within the buffer zone and low intensity, passive open space uses are included on the project plans. Landscaping in this area would include native grasses and other low-maintenance, habitat friendly plant communities.

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
	contain substantial landscaping to discourage unlawful access onto the agricultural lands, and to lessen the potential impacts of typical agricultural activities on residential uses. Passive recreational uses such as pedestrian and bicycle trails are permitted. • Uses located outside of the Urban Growth Boundary, within the 385-foot wide Pacific Gas & Electric Company easement, shall be limited to public infrastructure improvements necessary or appropriate to serve or protect existing and new permitted uses within the Urban Growth Boundary, including but not limited to, alternative energy facilities, stormwater detention basins, water tanks (reservoirs), and sewer and water lines to accommodate buildout of the Vacaville General Plan.	
Housing Element		
H.1 - G 1	Ensure a supply of housing of differing type, size, and affordability in order to meet Vacaville's housing needs for the current and future residents and workers within the community.	Consistent. The project provides a range of housing that would include differing types and sizes of homes. The Specific Plan is designed to incorporate a variety of single family housing to serve a wide range of buyers and residents, including families, young professionals, and “empty-nesters”.

Table 4.5-1
Policy Consistency

Policy Number	Policy	Consistency
H.1 - G 4	Ensure the development and availability of housing appropriate for special needs groups including, but not limited to, young adults, young families, seniors, people with physical and developmental disabilities and homeless people.	Consistent. The project provides a range of housing that would include differing types and sizes of homes. The Specific Plan incorporates recreational amenities called stroller parks and pedestrian connectivity intended to provide for needs of young families and seniors, and to ensure ease of mobility throughout the community. Housing types on a wide variety of lot sizes are intended to allow for housing available to a variety of housing needs in the City.
H.1- G 7	Establish development and construction standards that encourage energy conservation in residential areas.	Consistent. The project has been designed consistent with Title 24 and includes energy-efficient appliances consistent with local and state laws; uses recycled water for landscape irrigation; and roof integrated solar panels. The Specific Plan mobility standards establish a network of pedestrian/bike paths that provide connectivity to destinations within and adjacent to the Plan area. Landscape standards establish planting requirements for shade trees within residential areas and encourage building orientation for improved solar access.

These zoning designations are consistent with the underlying General Plan land use designations and planned residential and open space uses on the site. The proposed project has been designed to comply with the City's Zoning Ordinance and would not conflict with provisions contained in the Land Use and Development Code. Therefore, the impact would be **less than significant**.

Mitigation Measures

None required.

4.5.5 Cumulative Impacts

The land use analysis in an EIR does not typically include a discussion of cumulative impacts because the consistency analysis for applicable land use goals and policies and compatibility with existing adjacent uses is not an additive effect.

4.5.6 References

City of Vacaville. 1998. City of Vacaville Land Use and Development Code Title 14.09 "Zoning Ordinance." Adopted in 1996; last amended in 1998. Accessed April 12, 2016. http://www.codepublishing.com/CA/Vacaville/.

City of Vacaville. 2013. *City of Vacaville General Plan and Energy Conservation Action Strategy Draft EIR*. Prepared for the City of Vacaville by Placeworks. October 25, 2013.

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4.6 PUBLIC UTILITIES

4.6.1 Introduction

This section describes existing public utilities (wastewater, solid waste collection and disposal, and energy resources), that would serve the project site, and identifies anticipated demand for these services resulting from development of the Roberts' Ranch Specific Plan (proposed project).

Two comments were received in response to the Notice of Preparation (NOP) regarding public utilities. A comment from the Central Valley Regional Water Quality Control Board (CVRQCB) regarding wastewater treatment requirements. An additional comment from Solano LAFCO requested a discussion of the detention basin northeast of the project site since the basin is important to stormwater services in the City. Concerns regarding stormwater are addressed in Section 4.4, Hydrology, Drainage and Water Quality. A copy of the NOP and letters received in response to the NOP are included in Appendix A.

Information to prepare this section was obtained from the City of Vacaville General Plan (City of Vacaville 2015a) and City of Vacaville General Plan and Energy Conservation Action Strategy Environmental Impact Report (General Plan EIR) (City of Vacaville 2013a), the 2010 Urban Water Management Plan Update (2010 UWMP) (City of Vacaville 2011), the City of Vacaville Energy and Conservation Action Strategy (City of Vacaville 2015b), the Wastewater Technical Memorandum (Appendix G)], the City of Vacaville Utilities Department (City of Vacaville Utilities Department 2016), and individual service providers.

4.6.2 Environmental Setting

This section describes existing wastewater[1] systems for the City of Vacaville (City) that serve the project area, as well as information on solid waste collection and disposal and energy supply. Because the increased demand in water supply associated with buildout of the city, which includes the project site, was addressed in the City's General Plan EIR water supply is not evaluated in this section, but discussed in the Modified Initial Study included in Appendix B.

Existing Site

Wastewater

Wastewater collection and treatment for most developed areas within the City limits is provided by the City of Vacaville. The project site would be served by the City's wastewater infrastructure if the project is approved and the site annexed into the City. The City's sewer service includes operation and maintenance of gravity sewers, lift stations, force mains, and the Easterly Wastewater

[1] Sewer and wastewater are terms used interchangeably throughout this analysis.

Treatment Plant (Easterly WWTP). Since the project proposes to annex the project site into the City limits, wastewater collection and treatment services would be provided by the City.

Easterly Wastewater Treatment Plant

The Easterly WWTP is located east of the City adjacent to the unincorporated town of Elmira. The Easterly WWTP is operated by Wastewater Operations. Treated effluent from the Easterly WWTP flows into Old Alamo Creek. The Easterly WWTP treats an average of 8 million gallons per day (mgd) of wastewater and has a design capacity of 15 mgd sanitary base flow (SBF) and peak wet weather flows (PWWF) of 55.2 mgd (City of Vacaville 2016). The Easterly WWTP is permitted under National Pollution Discharge Elimination System (NPDES) permit No. CA0077691. In order to comply with provisions of the NPDES permit, the Easterly WWTP has recently completed treatment upgrades in order to provide tertiary filtration, advanced disinfection, denitrification, elimination of effluent blending, and related improvements (City of Vacaville 2013a). These upgrades do not affect the treatment capacity of the plant.

Project Area Wastewater Infrastructure

Existing trunk sewer lines are located adjacent to the Union Pacific Railroad tracks and along Fry Road near the project site. There is no sewer infrastructure on the project site. Sewer from the project site would ultimately be conveyed to planned, new improvements that would convey flows from the Alamo/Fry trunk line and the CSP-S trunk line. There is no current capacity available in the Alamo/Fry trunk sewer line to accommodate flows from the project site (West Yost Associates 2016). The CSP-S trunk line has a current capacity of 0.45 mgd but that capacity would eventually be consumed by flows from approved development in southeast Vacaville. Therefore, in the absence of further development beyond existing conditions the CSP-S line could accept some increased flows from the project, but the line does not contain sufficient capacity to accommodate the proposed project at buildout conditions for approved land uses (West Yost Associates 2016).

Solid Waste

Under a franchise agreement, Recology Vacaville Solano (RVS) holds the exclusive right to provide residential, commercial, and industrial solid waste collection and hauling in the City. Recyclable material can also be taken to several drop-off recycling centers throughout the City including the Recology Vacaville Recycling Center located at 855 1/2 Davis Street. Recyclable material collected by RVS is sent to the Recology Vallejo facility located at 2021 Broadway Street in Vallejo.

Refuse from the City is transported to the privately owned and operated Recology Hay Road Landfill located in the unincorporated county east of Vacaville. The Recology Hay Road landfill (Solid Waste Facilities Permit 48-AA-0002) has a permitted daily capacity of 2,400 tons and

receives 226,777 cubic yards and 136,066 tons of solid waste per year (CalRecycle 2016a, Solano County 2010). The total capacity of the landfill is 37 million cubic yards; as of 2010 the landfill has a remaining capacity of 30.4 million cubic yards and is projected to remain open until 2077 (CalRecycle 2016a). In 2014, Vacaville's per capita disposal rate was 4.6 pounds per person per day (PPD), which was well below the City's target disposal rate of 6.5 PPD, but slightly above the statewide average of 4.5 PPD (CalRecycle 2016b).

Energy

Energy Consumption

California's major sources of energy are petroleum products (i.e., gasoline, diesel, and oil), electricity and natural gas. In 2014 California generated 198,973 gigawatt hours (GWH) of electricity in-state including: 1,011 GWH from coal, 14,052 GWH from large hydro, 121,934 GWH from natural gas, 17,027 GWH from nuclear, 46 GWH from oil, 44,887 GWH from renewables and 16 GWH from other sources (CEC 2015).

An overview of electricity and natural gas consumption statewide and on a local level is provided below.

Electricity

California's major electric utilities send power through roughly 200,000 miles of overhead transmission and distribution lines and an additional 70,000 miles of underground lines (CEC 2016a).

Based on data and reports compiled by the California Energy Commission (CEC), in 2014, Californians consumed 293,268 GWH of electricity (CEC 2015). California produces roughly 68% of its electricity from power plants located within the state and from plants located outside the state but owned by California utilities. About 32% is imported electricity from the Pacific Northwest and the Pacific Southwest. In 2014, the total electricity imported, not counting California owned plants, was 94,360 GWH (CEC 2016a).

Electricity usage in California varies substantially by the type or function of the building, type of construction materials used, and the efficiency of each electrical device within the building. In 2014, the average annual usage of electricity for single-family residences in the U.S. was 10,932 kilowatthours (kWh), an average of 911 kWh per month (EIA 2015). In 2014, Solano County's residential energy consumption was 1004.91 million kilowatts (ECDMS 2016a).

Natural Gas

California's natural gas demand for industrial, residential, commercial and electric power generation was 2,313 billion cubic feet in 2012 (CEC 2016b). The natural gas was used to produce electricity (45%), in industrial use (25%), in residential use (21%), and in commercial uses (9%) (CEC 2016b).

Natural gas usage in residential homes varies base on the size of the unit, the type of dwelling, the number of major appliances and the construction and siting of the structure. In 2012, residential natural gas consumption totaled 6,312 thousand therms per year of which 41.7% was used for water heating, 3.61% was used for clothes dryers, 6.88% was used for cooking, 2.24% was use for pools and spas, and 45.56% was used for heating (CEC 2016b). Solano County's residential natural gas consumption in 2014 was 50.10 million therms (ECDMS 2016b).

City of Vacaville

Pacific Gas & Electric (PG&E) provides electric power and natural gas to the City of Vacaville. PG&E's service area stretches north–south from Eureka to Bakersfield and west–east from the Pacific Ocean to the Sierra Nevada Mountains. Northern California-sourced gas supplies come primarily from the gas fields in the Sacramento Valley. PG&E has 42,141 miles of natural gas distribution pipelines and 141,215 circuit miles of electric distribution. PG&E delivers 2.6 billion cubic feet of gas per day to its customers (PG&E 2016).

Based on average energy use from 2006 to 2008, residential land uses consume approximately 46% of the City's electricity demand (254 GWH) and 53% of the City's natural gas demand (13 million therms) (City of Vacaville 2013a). The City's Energy and Conservation Action Strategy (ECAS) (City of Vacaville 2015b) establishes energy conservation goals of reducing greenhouse gas emissions by 21.7% below the City's 2020 Business as usual (BAU) forecast. The ECAS includes community-wide measures aimed at reducing GHG emissions in the following nine sectors: transportation and land use; green building; renewable energy and low carbon fuels; energy conservation; water and wastewater; solid waste; parks, open space and agriculture; purchasing; and community action (City of Vacaville 2015b).

4.6.3 Regulatory Setting

Federal Regulations

Wastewater

National Pollution Discharge Elimination System Permit

Discharge of treated wastewater to surface water(s) of the United States, including wetlands, require a NDPES permit. In California, the Regional Water Quality Control Board (RWQCB)

administers the issuance of these federal permits. Detailed information is required to obtain a NDPES permit, including characterization of wastewater sources, treatment and processes, and effluent quality. Whether or not a permit may be issued and the condition of a permit are subject to many factors such as basin plan water quality objectives, impaired water body status of the receiving water, historical flow rates of the receiving water, effluent quality and flow, the air quality State Implementation Plan (SIP), the California Toxics Rule, and established total maximum daily loading rates for various pollutants.

Federal and State Clean Water Act

The Porter-Cologne Water Quality Control Act gives the ultimate authority over California water rights and water quality policy to the California State Water Resources Control Board (SWRCB). In addition, the Porter-Cologne Act established nine Regional Water Quality Control Boards (RWQCBs) to ensure that water quality on a local/regional level is maintained. The project site is under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB).

Electricity and Natural Gas

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) regulates and oversees the energy industries in the interests of the American public. The Energy Policy Act of 2005 gave FERC additional responsibilities including interstate commerce, licenses and inspections, energy markets, and penalizing energy organizers and individuals who violate FERC rules in the energy market.

State Regulations

Wastewater

General Waste Discharge Requirements for Sanitary Sewer Systems

The General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems were adopted by the SWRCB in May 2006. These WDRs require local jurisdictions to develop a sewer system management plan (SSMP) that addresses the necessary operation and emergency response plans to reduce sanitary sewer overflows. The WDRs require that the local jurisdiction approve the SSMP; the Vacaville City Council approved the City's SSMP on July 9, 2009.

Waste Discharge requirements included in NPDES permits issued by the CVRWQCB are based on the following guidance documents:

- Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan)
- California Toxics Rule

- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan)
- State Title 22 requirements
- Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan)

Solid Waste

California Integrated Waste Management Act – AB 939

To minimize the amount of solid waste that must be disposed of by transformation (i.e., recycling) and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties are required to divert 25% of all solid waste from landfill facilities by January 1, 1995, and 50% by January 1, 2000. Solid waste plans are required to explain how each city's AB 939 plan will be integrated within the respective county plan.

Senate Bill 1016

SB 1016 enacted in 2007 changes the process for bi-annual review of a jurisdiction's source reduction and recycling element and allows the California Integrated Waste Management Board to make a finding whether each jurisdiction is in compliance with the act's diversion requirements based on the jurisdiction's change in its per capita disposal rate. No longer is a diversion rate used to calculate compliance with AB 939, but a per capita disposal rate is used that calculates the number of pounds of solid waste diverted, divided by the total population, divided by 365 days. The City's 2015 diversion rate is 4.9 pounds per day (PPD), which is below the target of 6.5 PPD, but slightly above the state average of 4.5 PPD (Cal Recycle 2016b).

Energy

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24 Building Standards)

The CEC administers Title 24 Building Standards, which were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. California's building efficiency standards are updated on an approximately 3-year cycle. The 2016 Standards will continue to improve upon the current 2013 Standards for new construction of, and additions and alterations to, residential and

nonresidential buildings. The 2016 Standards will go into effect on January 1, 2017, following approval of the California Building Standards Commission (CEC 2016b).

Warren-Alquist Energy Resources Conservation and Development Act

The Warren-Alquist Act gives statutory authority over energy resources to the CEC. The CEC regulates energy resources coordinating research into energy supply and demand problems and to reduce the increase of energy consumption.

Local Regulations

Wastewater

Vacaville Municipal Code

Chapter 13.08, Sewers, of the Vacaville Municipal Code (City of Vacaville 2016) contains regulations to prevent pollution and control, and improve the quality and quantity of waste discharge. Chapter 11.01, Development Impact Fees, describes the Sewer System Impact Fee. The Sewer System Impact Fee are required for all new development in the City to provide for the construction of sewer and wastewater facilities as needed to serve the growing demand.

Sewer System Management Plan

The City's SSMP was developed in response to the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as described above. The SSMP was completed in June 2009 and provides a general framework for collection system operations, maintenance, and overflow prevention. It includes the following elements, commensurate with the statewide Waste Discharge Requirements:

- Development plan and schedule
- Goals
- Organization
- Legal authority
- Operation and maintenance programs
- Design and performance provisions
- Overflow emergency response program
- Fats, oils, and grease (FOG) control program
- System evaluation and capacity assurance plan

- Monitoring, measurement, an program modifications
- SSMP audits
- Communication program

City of Vacaville General Plan

The following goals and policies from the City of Vacaville General Plan Public Facilities and Services (PUB) Element, and Land Use (LU) Element are applicable to the proposed project.

Goal PUB-13 Collect, transmit, treat, and dispose of wastewater in ways that are safe, sanitary, and environmentally acceptable.

Policy PUB-P13.3 Require that new habitable structures located within the city limits connect to the public wastewater collection system.

Goal PUB-14 Coordinate wastewater conveyance, treatment, and disposal with land use planning.

Policy PUB-P14.3 Ensure that new development provides adequate funding for all wastewater infrastructure and facilities.

Policy PUB-P14.4 Prohibit any development that will not maintain adequate standards for wastewater service. All wastewater service standards shall be met prior to project occupancy.

Policy PUB-P14.5 Require that new development designate sewer easements or routes when tentative maps or specific plans are approved.

Goal LU-3 Coordinate land development with the provision of services and infrastructure.

Policy LU-P3.2 Manage growth so that the quantity and quality of public services and utilities provided to existing businesses and residents will not drop below the required levels of service because of new development, except when required findings related to levels of service are made. While existing development bears some responsibility to fund improvements that will resolve such deficits, ensure that new development also funds its fair share of the costs of maintenance and depreciation of facilities.

Policy LU-P3.4 Do not approve new development unless there is infrastructure in place or planned to support growth.

Policy LU-P3.5 Require that new development or Specific Plan areas be located immediately adjacent to existing development or infrastructure.

Goal LU-6 All development shall pay its own way and not result in a financial burden to existing development or services.

Policy LU-P6.2 Require that infrastructure and service improvements for future annexations or growth areas do not create an undue burden on existing City infrastructure and services.

Energy Conservation and Action Strategy

The following community-wide measures from the *Energy Conservation and Action Strategy* are applicable to the proposed project.

Wastewater Measures

WW-1 Support the conservation measures outlined in the City's Urban Water Management Plan and implement the City's Water Efficient Landscape requirements through the following sub-measures.

A. For all new development, require all water use and efficiency measures to comply with City Codes.

D. Implement water efficient residential programs identified in the current Urban Water Management Plan.

F. Encourage the use of non-potable water and recovered residential rainwater for irrigation purposes.

G. Continue to meter with commodity rates all new connections and retrofits of existing connections.

Solid Waste

Vacaville Municipal Code

Section 8.08 of the Vacaville Municipal Code, Solid Waste, Yard Waste, and Household Hazardous Waste, regulates the collection and disposal of solid waste, yard waste, and household hazardous materials. This section also implements the provisions of the Source Reduction and Recycling Element required by AB 939 and the SB 1016 update. The City's diversion rate target is 6.4 PPD and the City's actual 2015 diversion rate was 4.9 PPD (CalRecycle 2016b). The City currently has 40 programs in place to facilitate recycling, facility recovery, public education, transformation, and source reduction (CalRecycle 2016c). In addition, residential, commercial, business, industrial and public districts are all required to

provide areas for the collection of recyclable materials and solid waste per Section 14.09 of the City's Land Use and Development Code.

City of Vacaville General Plan

The following goals and policies from the City of Vacaville General Plan Public Facilities and Services (PUB) Element are applicable to the proposed project.

Goal PUB-9 Reduce the volume of solid waste generated in Vacaville through recycling and resource conservation.

Policy PUB-P9.3 Maintain and expand the citywide curb recycling program.

Policy PUB-P9.4 Maintain and expand the citywide household hazardous waste collection program.

Policy PUB-P9.5 Maintain and expand the citywide separate yard waste collection and composting program.

Policy PUB-P9.9 Require that construction sites provide for the salvage, reuse, or recycling of construction and demolition materials and debris.

Energy Conservation and Action Strategy

The following community-wide measures from the *Energy Conservation and Action Strategy* are applicable to the proposed project.

Solid Waste Measures

SW-1 Support waste reduction through the following sub-measures:

A. Continue to require at least 50 percent diversion (i.e., reuse or recycling) of non-hazardous construction waste from disposal, consistent with CALGreen – the Statewide Green Building code.

D. Encourage the use of salvaged and recycled-content materials and other materials that have low production energy costs for building materials, hard surfaces, and non-plant landscaping. Require sourcing of construction materials locally, as feasible.

Energy

City of Vacaville General Plan

The following goals and policies from the City of Vacaville General Plan Conservation and Open Space (COS) Element are applicable to the proposed project.

Goal COS-11 Conserve energy and fuel resources by increasing energy efficiency.

Policy COS-P11.1 Require that new development incorporate energy-efficient design features for HVAC, lighting systems, and insulation that exceed Title 24.

Policy COS-P11.2 Require that site and structure designs for new development promote energy efficiency.

Energy Conservation and Action Strategy

The following community-wide measures from the *Energy Conservation and Action Strategy* are applicable to the proposed project.

Renewable Energy and Low Carbon Fuels

RE-2 Encourage residential projects of ten units or more to participate in the CEC's New Solar Homes Partnership, which provides rebates to developers of six units or more who offer solar power in 50% of new units and is a component of the California Solar Initiative, or a similar program with solar power requirements equal to or greater than those of the CEC's New Solar Homes Partnership.

RE-5 Require that all new buildings be constructed to allow for the easy, cost-effective installation of future solar energy systems, unless prohibited by topographical conditions or other site specific constraints. "Solar ready" features should include: proper solar orientation (i.e., south facing roof area sloped at 20 to 55 degrees from the horizontal); clear access on the south sloped roof (i.e., no chimneys, heating vents, plumbing vents, etc.); electrical conduit installed for solar electric system wiring; plumbing installed for solar hot water system; and space provided for a solar hot water storage tank.

Energy Conservation

EC-1 Mandate the use of energy-efficient appliances in new development that meet Energy Star standards and the use of energy-efficient lighting technologies that meet or exceed Title 24 standards.

4.6.4 Impacts

Methods of Analysis

Wastewater

The analysis of impacts to wastewater treatment services is based on a wastewater treatment demand generated by the proposed project compared to the thresholds of significance listed below. Wastewater demand for the proposed project was quantified based on the planned land uses and wastewater flow generation rates specified in the City's *Sanitary Sewer System Design Standards* (City of Vacaville 2013b). The project's total wastewater generation is calculated in Table 4.6-1 below.

Table 4.6-1
Proposed Project Wastewater Generation

Proposed Development	Parcel Acres	Land Use		Flow Factor		Average Dry Weather Flows (gpd)[2]
		Quantity	*Units*	*Value*	*Units*	
Residential – Low Density	166.2	657	Du[1]	240	gpd/du	157,680
Residential-Low/Medium Density	29	128	Du	240	gpd/du	30,720
Public School - Elementary	16.5	726[3]	Students	25	gpd/student	18,150
Parks	2.9	2.5	Acres	0	gpd/acre	0
Frontage Right of Way	5.7	5.7	Acres	0	gpd/acre	0
Agricultural Buffer, Community Park	21.2	21.2	Acres	0	gpd/acre	0
Totals	**241.6**					**206,550**

Notes: Appendix G represents a conservative analysis of this demand because it uses a higher number of dwelling units than included in the final project design.

1 du = dwelling Unit

2 gpd = gallons per day

3 Estimated student enrollment; assumes all students associated with General Plan growth will be evenly distributed among four future middle schools, one located in Roberts' Ranch.

Source: Appendix G

As shown in Table 4.6-1, the project's total wastewater demand would be 206,550 gpd or approximately 0.21 million gallons per day (mgd) average dry weather flows (ADWF). Using a peaking factor of 2.3, the project's peak dry weather flow would be approximately 0.48 mgd.

Solid Waste

The analysis of impacts to landfill capacity is based on the amount of solid waste that would be generated by the proposed project compared to the thresholds of significance listed below. Solid waste generation was calculated for the project site based on the City's demand rate for solid waste of 4.9 pounds per resident per day (City of Vacaville 2013a). The project's total solid waste generation is calculated in Table 4.6-2 below.

Table 4.6-2
Proposed Project Solid Waste Generation

Proposed Use	Demand Factor	Residents[1]	Solid Waste Generation (lbs/day)	Solid Waste Generation (tons/year)
Single-family Residential	4.9 lbs/person/day	2,151	10,539.9	1,923.5
		Total	**10,539.9**	**1,923.5**

Notes:
1 Based on the City's person per household of 2.74 (City of Vacaville 2015a) and a total of 785 units
2 Solid waste generated by the future school site is not included in this estimate because the Vacaville Unified School District does not currently have plans to develop this site anytime in the near future.
Source: City of Vacaville 2013a

Issues Addressed in the Modified Initial Study

The General Plan EIR evaluated the increase in water demand and availability of water supplies associated with buildout of the general plan, which includes the project site. Adequate water supplies are available to serve the City; therefore, this topic is addressed in the Modified Initial Study included in Appendix B.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the County's General Plan, and professional judgment, a significant impact would occur if development of the proposed project would do any of the following:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Result in determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Increase demand on local and regional energy supplies requiring additional capacity and infrastructure.
- Comply with existing federal, state and local energy standards.
- Require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impacts and Mitigation Measures

4.6-1: The proposed project could exceed the treatment requirements of the applicable Regional Water Quality Control Board. This would be a less-than-significant impact.

Flows from the project site would be conveyed to the Easterly WWTP. The Easterly WWTP is permitted under National Pollution Discharge Elimination System (NPDES) permit CA-0077691 and the Central Valley Regional Water Quality Control Board (CVRWQCB) Waste Discharge Requirements (WDRs) Order R5-2012-0072. Under the NPDES permit, the Easterly WWTP is permitted to discharge 15 mgd ADWF into Old Alamo Creek. In order to comply with provisions of the NPDES permit, the Easterly WWTP recently underwent treatment upgrades in order to provide tertiary filtration, advanced disinfection, denitrification, elimination of effluent blending, and related improvements (City of Vacaville 2013a). The Easterly WWTP is required to comply with the NPDES permit requirements as well as the CVRWQCB's WDRs and added flows from the project would be within the plant's existing treatment capacity. Therefore, the project would have a **less-than-significant impact** on the ability of the Easterly WWTP to meet wastewater treatment requirements.

Mitigation Measures

None required.

4.6-2: The proposed project could require or result in the construction of new wastewater facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects. This would be a less-than-significant impact.

The Easterly WWTP treats an average of 8 mgd of wastewater and has a design capacity of 15 mgd sanitary base flow (SBF) and peak wet weather flows (PWWF) of 55.2 mgd (City of Vacaville 2016). The project's wastewater demand, as calculated in Table 4.6-1, would be approximately 0.21 mgd. Flows from the project site would equal approximately 2.6% of the wastewater currently

being treated by the Easterly WWTP. The increase in flows from the project site would represent an incremental increase in the flows currently treated at the plant and would not exceed the EWWTP's capacity. Therefore, this impact would be **less than significant**.

Mitigation Measures

None required.

4.6-3: The proposed project could result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. This would be a significant impact.

The proposed project would install 8-inch to 10- or 12-inch sewer lines within all roadways to service the residents and wastewater flows would be conveyed to the Alamo/Fry trunk line and/or the CSP-S trunk line. These lines then convey flow east to the Easterly WWTP. Site-specific conditions may require a new lift station if adequate fall cannot otherwise be maintained within project site sewers.

As discussed in the Environmental Setting, the Alamo/Fry trunk sewer line does not have existing capacity to accommodate flows from the project site through build-out. The CSP-S trunk line has an existing capacity of 0.45 mgd. with buildout of the General Plan, not including the proposed project, the CSP-S line would not have sufficient capacity to accommodate flows from both the project site and approved projects located south of the project area.

The proposed point of connection for sewer flows collected from the project site is a point located east of the site, north of Fry Road and immediately south of the detention basin, as illustrated in Figure 4.6-1. Additional capacity would be needed in the CSP-S trunk sewer line between the point of connection and the junction structure, located north of the point of connection and immediately east of the detention basin (see Figure 4.6-1). The City is currently updating its Wastewater System Master Plan, which would identify necessary improvements to wastewater infrastructure, including the Alamo/Fry and CSP-S trunk sewer lines. The City's development impact fee (DIF) program includes a list of sewer improvement projects that would be updated following completion of the update to the Wastewater System Master Plan. Based on the modeling for the updated Master Plan conducted by West Yost Associates, the City is planning improvements that would combine flows from the two nearby existing trunk sewers and upsize the downstream portion of the CSP-S trunk sewer (the downstream portion of the previously identified DIF 54A sewer project). The CSP-S trunk sewer line north of Fry Road and south of the point where the existing trunks are to be combined as part of the DIF 54A project would not require upsizing in the absence of the proposed project. Improvements covered under the DIF program for the CSP-S trunk line would begin near the north end of the detention basin and continue east to the Easterly WWTP (West Yost Associates 2016). Completion of the DIF 54A improvement

project would be required in order for there to be adequate capacity to convey the proposed project's wastewater flows. This would be a **significant impact**.

Sewer flows from the proposed project would ultimately be conveyed to the Easterly WWTP for treatment prior to being discharged to Old Alamo Creek. Evaluation of the existing capacity of the Easterly WWTP and ability to accommodate the project flows is evaluated under Impact 4.6-2.

Mitigation Measures

The following mitigation measures would require the project applicant to pay a development impact fee to pay for required infrastructure improvements, as well as fund the upsizing of an additional portion of trunk sewer. DIF54A is a connection-fee funded project and implementation of Mitigation Measure WW-1 would be required to address a portion of the capacity limitations, while Mitigation Measure WW-2 is necessary to extend improvements to the project's point of connection. Compliance with Mitigation Measures WW-1 and WW-2 would reduce the project's impact to less than significant.

WW-1 The project applicant shall pay connection fees as determined by the City's Department of Utilities and specified in the City's DIF program.

WW-2 The project applicant shall fund construction of any trunk sewer improvements needed upstream of the point where the Alamo/Fry trunk sewer and the CSP-S trunk sewer are combined under the DIF 54A project, beginning at the proposed project's point of connection.

4.6-4: The proposed project could be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs. This would be a less-than-significant impact.

The proposed project would generate solid waste associated with construction activities as well as from project operation. The project would comply with General Plan policy PUB-P9.9 that require construction sites provide for the salvage, reuse, or recycling of construction and demolition materials and debris.

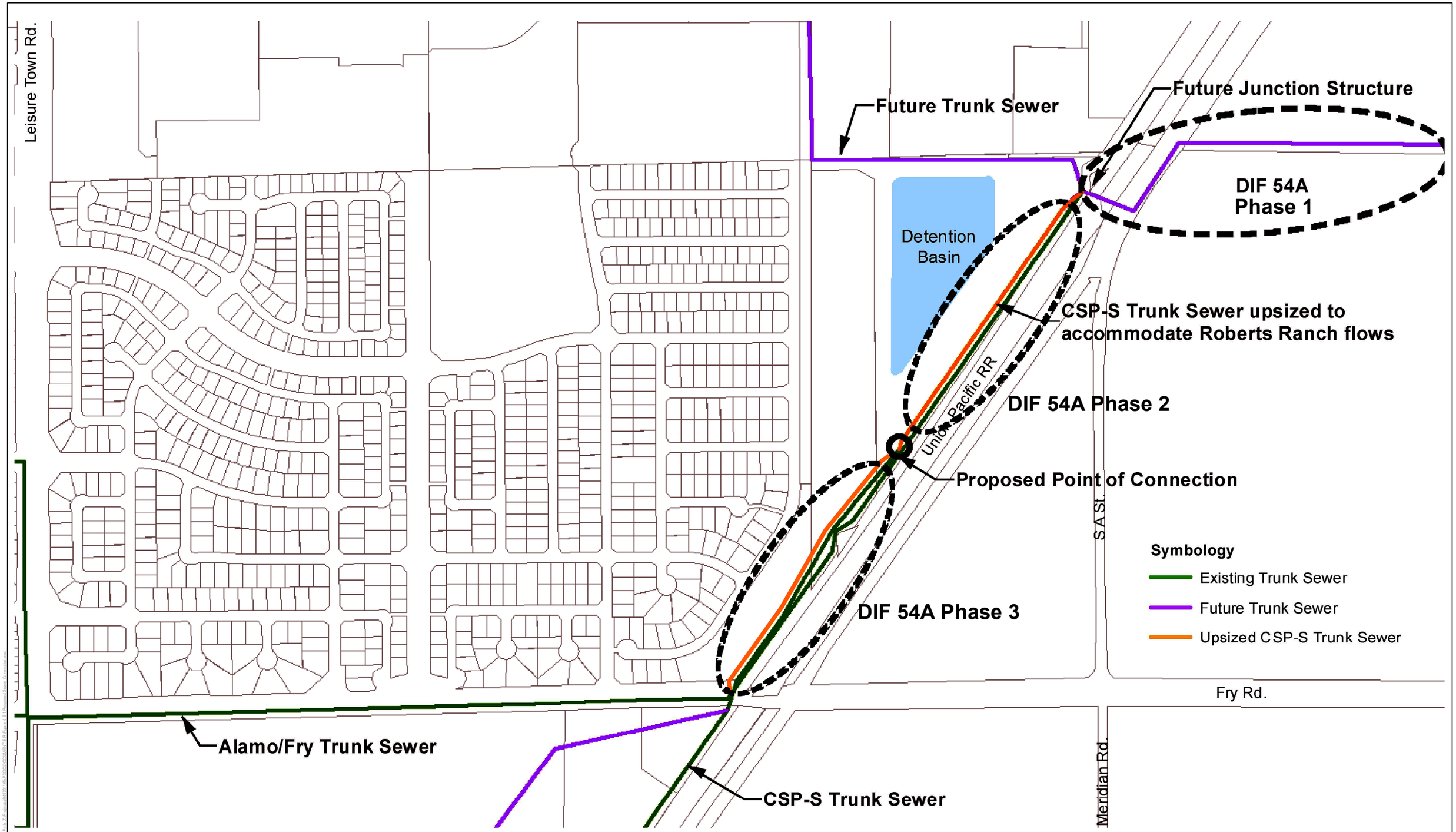

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FIGURE 4.6-1
Proposed Sewer Connection

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As shown in Table 4.6-2, the proposed project would generate approximately 1,923.5 tons per year (5.27 tons per day) of solid waste at buildout. Solid waste generated in the Specific Plan area would be transferred to the Hay Road Landfill in Vacaville. The Hay Road Landfill is permitted to accept up to 2,400 tons of refuse per day and receives approximately 136,066 tons per year of solid waste (CalRecycle 2016a, Solano County 2010). Of the 136,066 tons of solid waste received per year at the landfill, approximately 81,268 (59.7%) is from the City of Vacaville (City of Vacaville 2013a). The project's estimated solid waste generation would be less than one% of the permitted daily capacity and would be approximately 1.4% of the yearly tonnage received at the Hay Road Landfill. The project's total solid waste generation would increase the amount of tonnage received from the City of Vacaville by 2.3%. Additionally, the total capacity of the landfill is 37 million cubic yards; as of 2010 the landfill has a remaining capacity of 30.4 million cubic yards and is projected to remain open until 2077 (CalRecycle 2016a). Therefore, the Hay Road Landfill would have sufficient capacity to accommodate the proposed project and this impact would be **less than significant**.

Mitigation Measures

None required.

4.6-5: The proposed project could require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities. This would be a less-than-significant impact.

Electricity and natural gas services in the project area are provided by PG&E. Policies contained in the General Plan are aimed to reduce energy consumption by preventing energy waste and encouraging renewable energy generation. Policy COS-P11.1 requires new commercial and residential buildings to exceed the Title 24 standards for HVAC, lighting and insulation. Additional measures are provided in the ECAS in the Green Building, Renewable Energy and Low Carbon Fuels, and Energy Conservation sectors to promote energy conservation and the development of renewable energy sources in the City. The ECAS is intended to reduce overall energy usage throughout the City and is addressing this by reducing demand thereby reducing the need to require new energy-related infrastructure. The proposed project includes a number of sustainability measures (outlined in Chapter 3, Section 3.3), including use of roof integrated solar panels and large roof overhangs to create shade; use of energy efficient appliances; consideration of solar orientation in architectural design and use of landscaping, prevailing winds, shade, and sun screens to minimize solar heat in the summer and maximize solar heat gains in the winter; and incorporation of shaded courtyards and outdoor rooms to promote airflow within buildings and reduce the need for air-conditioning. Integration of energy conservation measures in addition to compliance with General Plan and ECAS policies would ensure that the proposed project has a **less-than-significant**

impact on energy demand and would not require the need for PG&E to construct new infrastructure or expand existing infrastructure to accommodate the project.

Mitigation Measures

None required.

4.6.5 Cumulative Impacts

The cumulative impact analysis includes projected buildout under the City of Vacaville 2035 General Plan. In addition to buildout of the 2035 General Plan, the cumulative context for wastewater treatment, solid waste, and energy includes buildout of the specific service area for each utility provided including recently approved and reasonably foreseeable development within the boundaries of the Wastewater Operations service area for wastewater, the Recology Hay Road service area for solid waste, and the PG&E service area for energy.

4.6-6: The proposed project could contribute to a cumulative increase in the demand for wastewater treatment, which could result in inadequate capacity and require the construction of new or expansion of existing wastewater treatment facilities. Based on the analysis below the impact is less than significant.

Buildout of the General Plan in addition to other reasonably foreseeable projects and plans within the Wastewater Operations service area, would increase demands on the Easterly WWTP and wastewater collection infrastructure such that there would be a significant cumulative impact in the absence of system upgrades.

The General Plan EIR noted that the Easterly WWTP is considered to have sufficient capacity to serve anticipated growth in the City for 16 years without the need for further expansion. Future development within the City is expected to increase flows to the Easterly WWTP to 16.2 mgd by 2035, which would exceed the current treatment capacity of the plant by approximately 8% (City of Vacaville 2013a). Current improvements to the Easterly WWTP allow for compliance with new NPDES permit discharge requirements, but would not add capacity over the current 15 mgd (City of Vacaville 2016). The City is required to plan, construct and maintain wastewater treatment facilities to meet State discharge requirements and to plan for expanding wastewater treatment capacity consistent with anticipated needs under General Plan policy PUB-P13.4. Additionally, under the NPDES permit, the City is required to annually estimate when flows are expected to reach the plant's 15.0 mgd capacity. When projections indicate that capacity would be reached within four years, the City is required to complete a plan to address the capacity limitations and send the plan for approval to the CVRWQCB within 120 days (West Yost Associates 2016). The General Plan EIR concluded that compliance with the NPDES permit requirements and implementation of General Plan policies, future development within the City

which included the project site would have a **less-than-significant impact** on the demand for wastewater treatment and meeting wastewater treatment requirements (City of Vacaville 2013a). Therefore, the proposed project would not contribute additional impacts to an existing cumulative impact.

Mitigation Measures

None required.

4.6-7: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects. Based on the analysis below the impact is less than significant.

According to the 2035 General Plan EIR, buildout of the General Plan which includes the project site would result in approximately 26,500 new residents that would generate an additional 26,698 tons of solid waste per year (City of Vacaville 2013a). The City's ECAS includes measures to reduce solid waste and increase recycling, which would reduce the actual amount of solid waste sent to the landfill. All solid waste in the City would be delivered to the Recology Hay Road Landfill. The Recology Hay Road Landfill, as of 2010, has an estimated remaining capacity of 30.4 million cubic yards and is estimated to be enough capacity to remain open until 2077 (CalRecycle 2016a). Solid waste generated through buildout of the General Plan would increase the City's annual solid waste by approximately 0.03% of the permitted capacity of the Recology Hay Road Landfill (City of Vacaville 2013a).

Solano County generated 327,993 tons of solid waste in 2010. Based on County development trends, in the year 2035 the County would generate 411,921 tons of solid waste, approximately 26% more solid waste than it did in 2010. Solano County has successfully diverted more than the state mandated diversion rate and it is reasonable to assume that the County would continue to meet the diversion goals as the population continues to grow in the future (City of Vacaville 2013a).

Cumulative development under the City's General Plan and within the County of Solano was determined would not result in the need to expand existing landfills or construct a new landfill creating a cumulative impact. Cumulative impacts to solid waste facilities were determined to be a **less than significant**; therefore, the proposed project would not contribute to an existing cumulative impact.

Mitigation Measures

None required.

4.6-8: The proposed project could contribute to a cumulative increase in energy demand, which could result in the need for construction of new energy production and/or transmission facilities or expansion of existing facilities. Based on the analysis below the impact is less than significant.

Future development under the City's General Plan would increase the demand for electricity and natural gas in the City and within the PG&E service boundary. Policies from the General Plan and the ECAS include measures to prevent the wasteful use of energy as well as meet the State's energy efficiency standards. The General Plan EIR concluded that implementation of General Plan policies would ensure that future development within the City would not result in significant impacts associated with the cumulative increase in demand for energy resulting in the need for construction or expansion of facilities (City of Vacaville 2013a). Since other jurisdictions in the region are required to meet the State's Title 24 energy efficiency standards, future development within the City would not contribute to a cumulative impact to increased energy demand, which would require the construction or expansion of production facilities and the impact is **less than significant**. Therefore, the proposed project would not contribute to an existing cumulative impact.

Mitigation Measures

None required.

4.6.6 References

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4.7 TRANSPORTATION AND CIRCULATION

4.7.1 Introduction

This transportation and circulation section discusses existing and cumulative transportation and circulation conditions associated with the proposed Robert's Ranch Specific Plan project (proposed project). The analysis includes consideration of motorized vehicle traffic impacts on roadway capacity and intersections, and potential impacts to transit, bicycle, and pedestrians. In addition, an evaluation of construction impacts is also included. Quantitative transportation analyses have been conducted for the following six scenarios:

- Existing Conditions
- Existing plus Project
- Existing plus Approved Projects
- Existing plus Approved Projects plus Project
- Cumulative Year 2035 without the Project
- Cumulative Year 2035 plus Project

Comments received in response to the NOP (see Appendix A) focused on several aspects of the project related to transportation and circulation. The Solano County Planning Services Division, Department of Resource Management requested that the traffic analysis evaluate potential impacts (both project specific and cumulative) to County roads resulting from the project. The Yolo Solano Air Quality Management District requested that the analysis examine whether the project's design incorporates available features that could contribute to vehicle trip reduction and the use of clean technology vehicles. Specifically, availability of infrastructure to support electric vehicle charging; bicycle and pedestrian infrastructure; connections to other surrounding uses to encourage non-motorized travel; and integration of bike lanes into the project site. Caltrans raised a number of comments including identifying traffic impact fees to be used for project mitigation; analyzing project impacts on the Interstate 80 (I-80) corridor from State Route 113 to the Carquinez Bridge and the Leisure Town Road interchange; analysis of project travel demand; and a request the analysis consider travel demand management (TDM) strategies, such as formation of a transportation management association and adoption of an aggressive trip reduction target with Lead Agency monitoring and enforcement. Caltrans also requested the traffic analysis scenarios be provided and the traffic report be prepared consistent with guidance outlined in Caltrans' *Guide for the Preparation of Traffic Impact Studies.* In addition, information on vehicle miles traveled is included in Section 4.1, Air Quality. All of the comments raised are addressed in this section.

4.7.2 Environmental Setting

Road System

The existing road system and traffic analysis locations are shown in Figure 4.7-1.

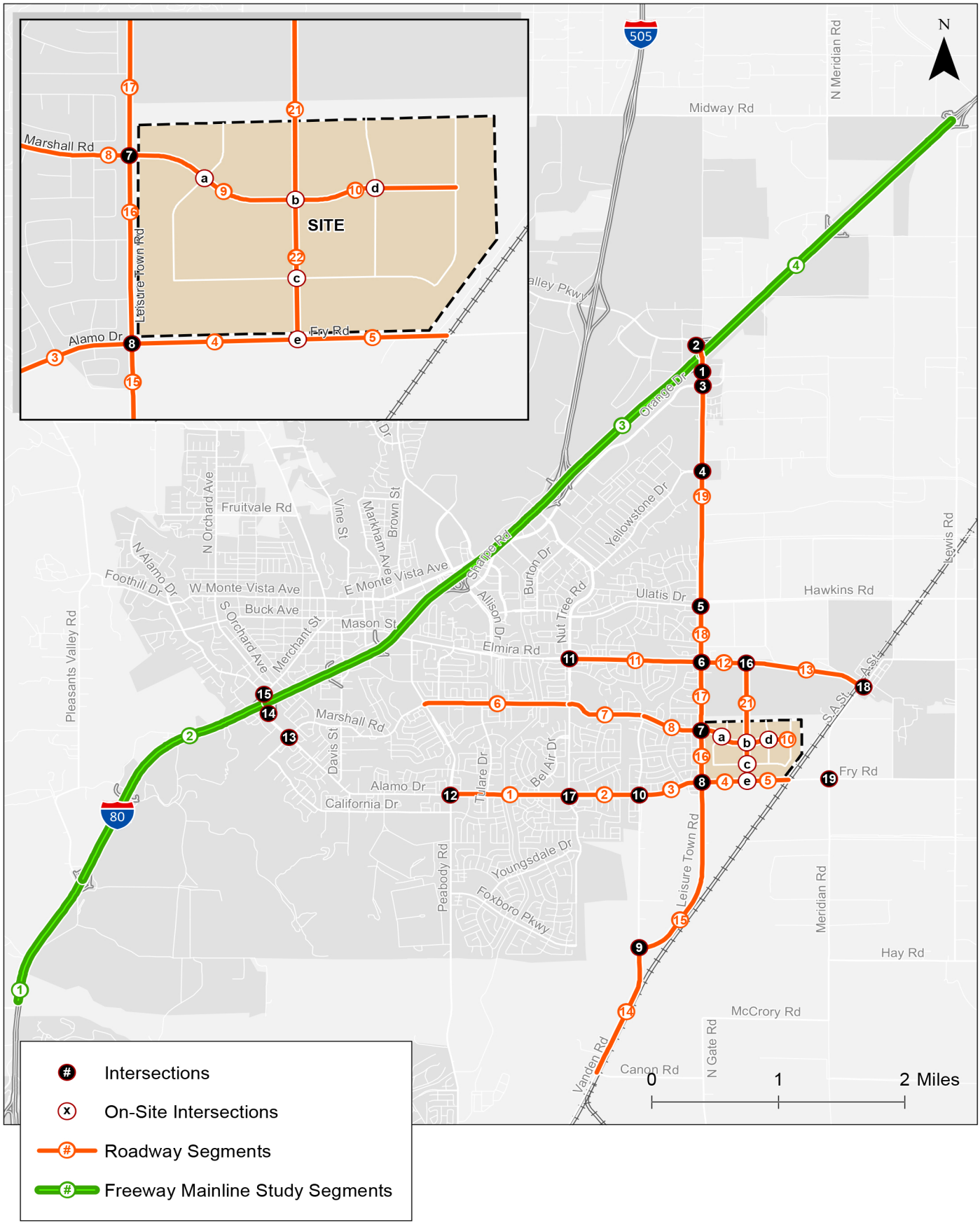
Regional Access

Regional vehicular access to the project area is provided primarily by the freeway system that serves northern Solano County. I-80, which primarily has four travel lanes in each direction in the study area, extends southwest through Fairfield and Vallejo, crosses the Carquinez Bridge and the San Francisco-Oakland Bay Bridge to terminate at Highway 101 in San Francisco. It also extends northeast through Dixon and Davis, over the Sacramento River to Sacramento and beyond. Interstate 680 provides north-south connections from I-80 near Cordelia to San Jose. Interstate 505 (I-505) has two travel lanes in each direction and links I-80 to Interstate 5, a major north-south freeway serving the west coast of the United States.

Local Access

In addition to I-80 and I-505, the following road segments in the study area have been identified as regional routes and part of the Congestion Monitoring Program system in the 2005 Solano County Comprehensive Transportation Plan (CTP), and in the 2015 Congestion Monitoring Program (CMP):

- Leisure Town Road (future Jepson Parkway) between I-80 and Vanden Road (CTP)
- Vanden Road from Leisure Town Road south to Peabody Road in Solano County (CTP and CMP)
- Elmira Road between Leisure Town Road and I-80 (CTP)
- Elmira Road from Leisure Town Road east to A Street in the Town of Elmira City Limits (CMP)



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SOURCE: Kittelson & Associates, Inc. (2016)

FIGURE 4.7-1
Study Locations

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These roads and other key arterials, collectors and local streets in the study area are described below:

- **Elmira Road** is an east-west street that spans between "A" Street in the Town of Elmira and I-80, where it continues westward as Mason Street. Elmira Road is designated as a minor arterial with one travel lane in each direction east of Leisure Town Road. West of Leisure Town Road, it is a major arterial with two travel lanes in each direction. Elmira Road is a designated truck route.
- **Leisure Town Road** is a north-south arterial that extends between I-80 and Vanden Road. In the project vicinity, it has one travel lane in each direction. Leisure Town Road would provide project access via its existing intersection with Fry Road, one proposed limited access street connection and a proposed full access intersection at Marshall Road. Leisure Town Road is part of the proposed Jepson Parkway Project, a planned four-lane divided arterial.
- **Marshall Road** is a two-lane collector street that extends between Leisure Town Road and just west of California Drive.
- **Nut Tree Road** is a north-south arterial that connects Foxboro Parkway, across I-80 and East Monte Vista Avenue, to the Nut Tree development area. Where development exists along Nut Tree Road, it has four travel lanes. As development occurs along the southern portion of Nut Tree Road, it would be widened from its current two lanes to four lanes.
- **Peabody Road** is a north-south street extending between Elmira Road in Vacaville and Air Base Parkway in Fairfield. Within Vacaville, Peabody Road is designated as a four-lane arterial. South of Vacaville within Solano County, Peabody Road operates as a two-lane rural road with paved shoulders.
- **Byrnes Road** is a north-south two-lane collector street that extends south from Weber Road to the Town of Elmira where it continues as California Pacific Road to just south of Water Street.
- **Vanden Road** is a two-lane collector street. It spans from Peabody Road in Fairfield, through unincorporated Solano County, and terminates at Marshall Road in Vacaville. West of Peabody Road, it continues as Cement Hill Road. Vanden Road from south City limits to Leisure Town Road is part of Jepson Parkway Project, a planned four-lane divided arterial

Existing Traffic Operations

This section provides information on the existing operating conditions (in terms of level of service) for selected intersections, road segments, and freeway mainline segments in the vicinity of the project site.

Level of Service Methodology

Methodologies outlined in the Transportation Research Board's Highway Capacity Manual (HCM) are used to evaluate level of service for intersections and freeway mainline segments. Road segment analysis is based on the HCM and commonly-accepted default values derived by the California Department of Transportation.

Level of service describes the operating conditions experienced by persons on a transportation system. For motorized vehicles, level of service is a qualitative measure of the effects of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, driving comfort, and convenience. Levels of service are designated LOS A through F, from best to worst, which cover the entire range of traffic operations that might occur. LOS A through E generally represent traffic volumes at less than roadway capacity, while LOS F represents conditions where traffic demands exceed capacity and the flow of traffic breaks down, resulting in stop-and-go conditions and long queues of vehicles.

Intersections

For unsignalized intersection, with the exception of all-way stop controlled intersections, the methodology calculates an average total delay per vehicle for each minor street movement and for the major street left-turn movements based on the availability of adequate gaps in through traffic on the main street. A level of service designation is assigned to individual movements or to combinations of movements in the case of shared lanes, based on delay. It is not unusual for some of the minor street movements to have LOS D, E or F condition while the major street movements have LOS A, B or C condition. In such a case, the minor street traffic experiences delays that can be substantial for individual minor street vehicles, but the majority of vehicles using the intersection have very little delay. Usually in such cases, the minor street traffic volumes are relatively low. Unsignalized intersection levels of service are reported for the overall intersection, as well as for the worst approach or critical movement based upon the average delay per vehicle. Because the City's level of service standards are based on average intersection level of service and do not address individual movements, the level of service results for the intersection as a whole are used as determinants for significant impacts.

At signalized and all-way stop intersections, the level of service is determined by the weighted average delay for all vehicles entering the intersection and the calculated average total delay per vehicle and level of service for the intersection as a whole. **Error! Reference source not found.** and **Error! Reference source not found.** present the average delay criteria used to determine the level of service at unsignalized and signalized intersections, respectively. The average delay criteria used to determine the level of service at all-way stop controlled intersections are the same as those shown for signalized intersections in **Error! Reference source not found.**.

Consistent with the City of Vacaville's General Plan Update, the City has established a citywide goal of LOS "C" or better at signalized and unsignalized intersections. However, Chapter 14.12.180 of the City's Municipal Code establishes traffic impact standards, which allow City decision-makers to allow and accept LOS D without mitigation improvements. In March 2013, the City Council adopted Resolution 2013-123, identifying HCM LOS of mid-D (<45 seconds of delay) as a threshold of significance for the General Plan Update environmental impact report. With the City's goal of LOS C in mind, this report identifies any signalized or unsignalized intersection operating below LOS "C".

Table 4.7-1
Level of Service Definition for Unsignalized Intersections

Level of Service	Description	Vehicle Delay (seconds per vehicle)
A	Little or no delay	0 – 10
B	Short traffic delays	> 10 – 15
C	Average traffic delays	> 15 – 25
D	Long traffic delays	> 25 – 35
E	Very long traffic delays	> 35 – 50
Mid-E		42
F	Extreme delays potentially affecting other traffic movements at the intersection	> 50

Source: Kittelson & Associates, Inc. 2016. Transportation Research Board, Highway Capacity Manual, 2010. City of Vacaville.
Notes: At two-way stop controlled intersections, LOS is determined for each minor street movement and major street left turn. At all-way stop-controlled intersections, LOS is determined for each individual approach and for the entire intersections based on average control delay.

Table 4.7-2
Level of Service Definition for Signalized Intersections

Level of Service	Description	Vehicle Delay (seconds per vehicle)
A	Very low delay	≤ 10
B	Minimal delay	> 10 – 20
C	Acceptable delay	> 20 – 35
D	Approaching unstable delay	> 35 – 45
Mid-D		> 45 – 55
E	Unstable operations and substantial delay	> 55 – 80
F	Excessive delay	> 80

Source: Kittelson & Associates, Inc. 2016. Transportation Research Board, Highway Capacity Manual, 2010. City of Vacaville.

The potential need for traffic signals at unsignalized intersections where the minor street movements experience substantial delay is evaluated in accordance with the California Manual on Uniform Traffic Control Devices (CA MUTCD). The analysis for the proposed project focuses on the peak hour warrant (Warrant 3). The peak hour warrant is being used as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed the peak hour warrant are considered for the purposes of this analysis to be likely to meet one or more of the other signal warrants, such as the 4-hour or 8-hour warrants. This peak hour analysis is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. The City establishes priorities for traffic signal installations citywide and conducts detailed warrant analysis. The need for traffic signals may be established as a part of a proposed project.

Road Segments

Road segment level of service was determined by using peak hour two-way volumes derived from weekday AM and PM peak hour intersection turning movements. The weekday AM peak hour refers to the four consecutive 15-minute periods within the peak period (which occurs from 7:00 AM to 9:00 AM) with the highest traffic volume. The weekday PM peak hour refers to the four consecutive 15-minute periods within the peak period (which occurs from 4:00 PM to 6:00 PM) with the highest traffic volume.

For road segments, the city's traffic study guidelines refer to the General Plan Transportation Element (2007) which established maximum thresholds for LOS C for two-way hourly flow and maximum thresholds for LOS C and LOS D for one-way directional hourly flow, as shown in **Error! Reference source not found.**. The City generally has distinct directional traffic patterns during peak hours. The level of service thresholds take into account the peak directional flow and factor the two-way capacity as appropriate to establish the directional capacity for each segment level of service. For planning level analysis, existing and projected directional volumes have been compared to the segment capacities established by the city guidelines.

Table 4.7-3
Road Segment Level of Service Criteria

Segment Classification	LOS C Total Two-Way Capacity	Calculated Directional LOS C Capacity	Calculated Directional LOS D Capacity	Calculated Directional Capacity
6-Lane Divided Arterial	4,500	2,700	3,038	3,375
4-Lane Divided Arterial	3,500	2,100	2,363	2,625
4-Lane Arterial	2,500	1,500	1,688	1,875

Table 4.7-3
Road Segment Level of Service Criteria

Segment Classification	LOS C Total Two-Way Capacity	Calculated Directional LOS C Capacity	Calculated Directional LOS D Capacity	Calculated Directional Capacity
2-Lane Arterial	1,500	900	1,013	1,125
Collector	1,000	600	675	750

Notes: Calculated LOS C directional capacity is based on an assumed split of 60%/40% on local streets and 55%/45% on freeways. Calculated directional capacity assumed LOS C to be 80% of available capacity and LOS D to be 90% of capacity.
Source: City of Vacaville, *General Plan Transportation Element,* December 2007, Figure 6-1.

Freeway Mainline Segments

Caltrans' *Guide for the Preparation of Traffic Impact Studies* requires the use of HCM analysis methodology and applies the freeway mainline segment level of service criteria presented in **Error! Reference source not found.**.

Table 4.7-4
Freeway Mainline Segment Level of Service Criteria

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	≤ 11
B	18
C	26
D	35
E	45
F	> 45

Source: Transportation Research Board, Highway Capacity Manual, 2010.

Intersection Operations

A quantitative level of service analyses were performed for the 19 study intersections selected in consultation with City staff. Each of the 19 study intersections and their traffic control type are presented in **Error! Reference source not found.**. Weekday AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) peak period intersection turning movement counts were provided by the City for all but six of the existing study intersections. Turning movement counts provided by the City were collected between March 2015 and March 2016. Turning movement counts for the

remaining six intersections were collected on Thursday, April 7, 2016. Existing traffic volumes are shown in Figure 4.7-2 and existing traffic operations is shown in Table 4.7-6.

Table 4.7-5
Study Intersection Locations

#	Intersection	Traffic Control	
		Existing	*Future*
1	Leisure Town Road (Jepson Parkway) / I-80 EB Ramps	Signal	Signal
2	Leisure Town Road (Jepson Parkway) / I-80 WB Ramps	Signal	Signal
3	Leisure Town Road (Jepson Parkway) / Orange Drive	Signal	Signal
4	Leisure Town Road (Jepson Parkway) / Sequoia Drive-White Pine Street	Signal	Signal
5	Leisure Town Road (Jepson Parkway) / Ulatis Drive[1]	Two-Way Stop	Signal
6	Leisure Town Road (Jepson Parkway) / Elmira Road	Signal	Signal
7	Leisure Town Road (Jepson Parkway) / Marshall Road[1]	Two-Way Stop	Signal
8	Leisure Town Road (Jepson Parkway) / Alamo Drive-Fry Road	Signal	Signal
9	Leisure Town Road (Jepson Parkway) / Vanden Road[2]	Signal	Roundabout
10	Alamo Drive/ Vanden Road	Signal	Signal
11	Alamo Drive/ Nut Tree Road[4]	Signal	Signal
12	Alamo Drive/ Peabody Road	Signal	Signal
13	Alamo Drive/ Marshall Road[4]	Signal	Signal
14	Alamo Drive/ I-80 EB On-Ramp[4]	Signal	Signal
15	Alamo Drive/ Merchant Street[4]	Signal	Signal
16	Elmira Road/ North-South Arterial[3]	Does Not Exist	Signal
17	Elmira Road/ Nut Tree Road	Signal	Signal
18	Water Street/ A Street[4]	All-Way Stop	All-Way Stop
19	Alamo Drive-Fry Road / A Street-Meridian Road[4]	All-Way Stop	All-Way Stop

Source: Kittelson & Associates, Inc., 2016.
Notes:
1 This is currently a Two-Way Stop controlled intersection and was analyzed as such for Existing Conditions.

[2] This is currently a signalized intersection and was analyzed as such for Existing Conditions.
[3] The North-South Arterial has not yet been built, therefore no traffic operations were recorded under exiting condition scenarios
[4] Denotes new intersection turning movement counts were collected on Thursday, April 7, 2016. Counts were provided by the City for all other locations.

Table 4.7-6
Intersection Operations – Existing Conditions

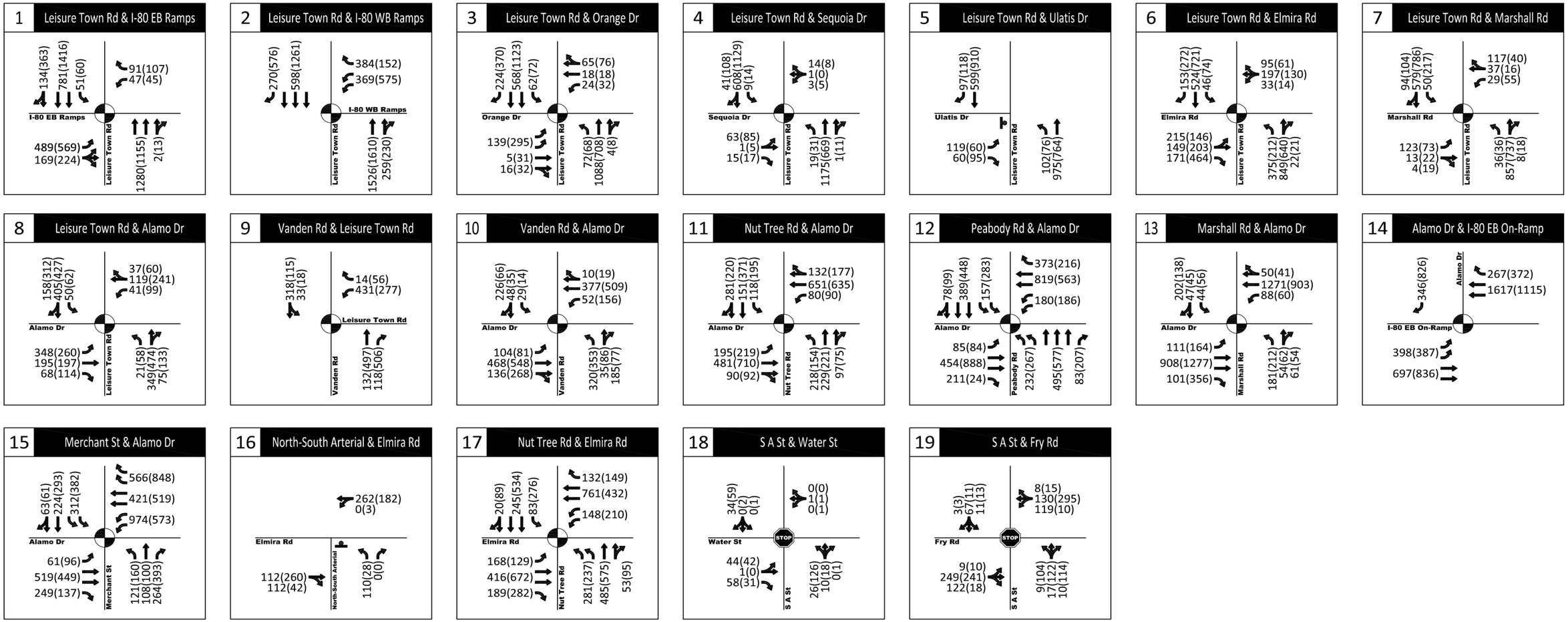
#	Intersection	Traffic Control[2]	Peak Hour	LOS[3]	Delay[4]
1	Leisure Town Road (Jepson Parkway) / I-80 EB Ramps	Signal	AM	C	22.2
			PM	B	19.9
2	Leisure Town Road (Jepson Parkway) / I-80 WB Ramps	Signal	AM	A	6.9
			PM	A	8.1
3	Leisure Town Road (Jepson Parkway) / Orange Drive	Signal	AM	B	18.8
			PM	B	19.4
4	Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street	Signal	AM	A	9.2
			PM	C	24.6
5	Leisure Town Road (Jepson Parkway) / Ulatis Drive	TWSC	AM	B (F)	13.1 (>50.0)
			PM	A (F)	5.0 (>50.0)
6	Leisure Town Road (Jepson Parkway) / Elmira Road	Signal	AM	D	44.3
			PM	C	34.8
7	Leisure Town Road (Jepson Parkway) / Marshall Road	TWSC	AM	A (F)	6.9 (>50.0)
			PM	A (F)	3.6 (>50.0)
8	Leisure Town Road (Jepson Parkway) / Alamo Drive–Fry Road	Signal	AM	C	25.4
			PM	C	29.6
9	Leisure Town Road (Jepson Parkway) / Vanden-Foxboro Road	Signal	AM	A	8.4
			PM	A	6.6
10	Alamo Drive/ Vanden Road	Signal	AM	B	19.9
			PM	C	25.1
11	Alamo Drive/ Nut Tree Road	Signal	AM	C	28.5
			PM	C	34.2
12	Alamo Drive/ Peabody Road	Signal	AM	C	29.1
			PM	C	29.8
13	Alamo Drive/ Marshall Road	Signal	AM	C	28.3
			PM	C	28.2

Table 4.7-6
Intersection Operations – Existing Conditions

#	Intersection	Traffic Control[2]	Peak Hour	LOS[3]	Delay[4]
14	Alamo Drive/ I-80 EB On-Ramp	Signal	AM	A	7.5
			PM	A	3.8
15	Alamo Drive/ Merchant Street	Signal	AM	D	38.9
			PM	C	28.2
16	Elmira Road/ North-South Arterial[1]	Does not Exist	AM	–	–
			PM	–	–
17	Elmira Road/ Nut Tree Road	Signal	AM	C	33.9
			PM	D	42.1
18	Water Street/ A Street	AWSC	AM	A (A)	6.9 (7.5)
			PM	A (A)	7.8 (8.4)
19	Alamo Drive–Fry Road / A-Meridian	AWSC	AM	A (B)	9.6 (10.3)
			PM	B (B)	10.6 (11.6)

Source: Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable.
1 Intersection does not exist under existing conditions, therefore intersection operations were omitted
2 Signal = Signalized Intersection, TWSC = Two-Way Stop Control intersection, AWSC = All-Way Stop Control Intersection
3 LOS = Level of Service; Parentheses denote the intersection's critical movement LOS
4 Delay = average vehicle delay; delay reported in seconds. The results for unsignalized intersections are shown as the average for all movements and for the critical movement (e.g., A(B); 7.8(8.4)).

All intersections currently operate at the City's goal LOS C or better during both the weekday AM and PM peak hours, with the exception of the Leisure Town Road (Jepson Parkway) / Elmira Road (#6); Alamo Drive/ Merchant Street (#15); and, Elmira Road/ Nut Tree Road (#17), which operate at the City's standard LOS mid-D or better during one peak hour. While the average intersection delays at the two-way stop controlled intersections of Leisure Town Road (Jepson Parkway) / Ulatis Drive (#5) and Leisure Town Road (Jepson Parkway) / Marshall Road (#7) are consistent with LOS A, the critical stop-controlled movements operate at LOS F during the weekday AM and PM peak hours. However, the peak hour traffic signal warrant is not met at either location under existing conditions. Future improvements planned as part of the Jepson Parkway project include the installation of a traffic signal at Leisure Town Road (Jepson Parkway) / Ulatis Drive (#5). Signalization of Leisure Town Road (Jepson Parkway) / Marshall Road (#7) would be completed by the Parkway. The project would modify the intersection to provide the fourth leg of the intersection.



AM(PM) - Traffic Volume

STOP - All-Way Stop

- Stop Sign

- Traffic Signal

SOURCE: Kittelson & Associates, Inc. (2016)

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FIGURE 4.7-2

Existing Intersection Traffic Volumes & Geometry

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Road Segment Volumes

Peak hour road segment volumes were derived from the turning movement volumes at adjacent intersections. Volumes along these segments were compared to the thresholds listed in **Error! Reference source not found.** depending on the road facility type. **Error! Reference source not found.** shows the road segment analysis along the study segments.

The peak hour volumes on all but two of the study road segments are consistent with LOS C or better during the weekday AM and PM peak hours. None of the study road segments exceed LOS D under existing conditions. Leisure Town Road south of Vanden (#14) exceeds LOS D in the northbound direction during the weekday PM peak hour. The volumes are on Leisure Town Road from Ulatis Drive to Orange Drive (#19) are at LOS D levels in the northbound and southbound directions during the weekday AM and PM peak hours. The Jepsen Parkway project is slated to begin construction in 2017 and would widen these segments of Leisure Town Road from two to four lanes.

Table 4.7-7
Road Segment Level of Service – Existing Conditions

#	Road Segment	Volume Exceeds LOS C (Exceeds LOS D)			
		AM Peak Hour		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*
Alamo Drive – Fry Road					
1	W of Nut Tree	No (No)	No (No)	No (No)	No (No)
2	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)
3	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)
4	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)
5	East of N-S Arterial	No (No)	No (No)	No (No)	No (No)
Marshall Road					
6	W of Nut Tree	No (No)	No (No)	No (No)	No (No)
7	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)
8	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)
9	Leisure Town (Jepson) to N-S Arterial1	-	-	-	-
10	East of N-S Arterial1	-	-	-	-
Elmira Road					
11	Nut Tree to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)
12	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)
13	East of N-S Arterial	No (No)	No (No)	No (No)	No (No)
Leisure Town Road (Jepson Parkway)					
14	South of Vanden	No (No)	No (No)	No (No)	Yes (Yes)
15	Vanden to Alamo	No (No)	No (No)	No (No)	No (No)

Table 4.7-7
Road Segment Level of Service – Existing Conditions

#	Road Segment	Volume Exceeds LOS C (Exceeds LOS D)			
		AM Peak Hour		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*
16	Alamo to Marshall	No (No)	No (No)	No (No)	No (No)
17	Marshall to Elmira	No (No)	No (No)	No (No)	No (No)
18	Elmira to Ulatis	No (No)	No (No)	No (No)	No (No)
19	Ulatis to Orange	No (No)	Yes (No)	Yes (No)	No (No)
20	I-80 Overcrossing	No (No)	No (No)	No (No)	No (No)
North-South Arterial[1]					
21	Elmira to Marshall	-	-	-	-
22	Marshall to Alamo-Fry	-	-	-	-
23	Alamo-Fry to Leisure Town (Jepson)	-	-	-	-

Source: Vacaville Land Use and Development Code: Chapter 14.13, 2015. Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable. NB/EB = northbound/eastbound; SB/WB = southbound/westbound; Shading in cells means exceeds threshold.
1 Intersection does not exist under existing conditions, therefore intersection operations were omitted;

Freeway Mainline Segment Operations

Freeway mainline volumes were compiled from data obtained from the California Department of Transportation Performance Enhancement Measurement System (PeMS) database. Historical data was used where current data was lacking for the analysis segment. In the event of a detector being available adjacent to a ramp, ramp and mainline volumes were added together for the analysis of that particular segment direction.

Error! Reference source not found. shows the freeway segment analysis at selected study locations along I-80 at the east and west end of the study area. As shown in **Error! Reference source not found.**, all of the study freeway mainline segments operate at LOS D or better during the weekday AM and PM peak hours.

Table 4.7-8
Freeway Mainline Segment Level of Service – Existing Conditions

Freeway Mainline Segment / Direction	AM Peak Hour		PM Peak Hour	
	Density	*LOS*	*Density*	*LOS*
I-80 West of Lagoon Valley Road				
Eastbound	18.5	C	16.7	B
Westbound	30.0	D	21.4	C

Table 4.7-8
Freeway Mainline Segment Level of Service – Existing Conditions

Freeway Mainline Segment / Direction	AM Peak Hour		PM Peak Hour	
	Density	*LOS*	*Density*	*LOS*
I-80 West of Alamo Drive				
Eastbound	18.7	C	22.2	C
Westbound	31.5	D	22.4	C
I-80 East of Leisure Town Road				
Eastbound	19.6	C	21.0	C
Westbound	24.8	C	20.3	C
I-80 East of Midway Road				
Eastbound	19.0	C	23.7	C
Westbound	24.9	C	20.9	C

Source: Performance Enhancement Measurement System (PeMS), 2016. Kittelson & Associates, Inc. 2016.
Notes: Density = passenger cars per mile per lane; LOS = Level of Service

Existing Transit

Bus service in the City of Vacaville is provided by Vacaville City Coach, Fairfield and Suisun Transit (FAST), and YOLOBUS (**Error! Reference source not found.**). Vacaville City Coach offers six local fixed-route services to or from the Vacaville Transportation Center located on Allison Drive at Travis Way. The Transportation Center also serves as a transfer point for intercity routes operated by Fairfield and Suisun Transit. The Vacaville Regional Transportation Center, located at the corner of Davis Street and Hickory Lane, is another key intercity transit hub, with two nearby park and ride lots along Davis Street on either side of I-80.

In addition to the fixed-route service, City Coach Special Services provides Americans with Disabilities Act (ADA) paratransit service to eligible residents within Vacaville. Trips beyond the city limits of Vacaville may be specially arranged with City Coach. The existing transit network is shown in Figure 4.7-3.

Fairfield and Suisun Transit (FAST) offers three intercity routes through Vacaville, primarily to serve weekday commuters. YOLOBUS offers one fixed bus route between Vacaville and Davis via Interstate 505 and Winters that provides three daily trips in each direction from Monday to Saturday.

The project site is not currently directly served by any public transit service. The nearest bus stop for City Coach's Route 8 is located on Vanden Road south of Marshall Road, which is about two-thirds of a mile from the proposed project access on Leisure Town Road at Marshall Road. City

Coach Route 8 operates between the Transportation Center and the Transit Plaza via Elmira Road, Peabody Road, Youngsdale Drive, Vanden Road, and Davis Street. Hours of operation are between 6:00 AM and 7:00 PM on weekdays and 8:00 AM and 6:00 PM on Saturday.

Existing Bicycle Facilities

The City currently classifies bikeways into three categories: bike path (Class I), bike lane (Class II), and bike route (Class III). Bike paths meet the state requirements for Class I shared-use paths. These paths are dedicated off-street public paths designed and constructed for both bicycle and pedestrian traffic. In the project vicinity, Alamo Creek Bikeway is a bike path along Alamo Creek between Marshall Road and Leisure Town Road. Bike lanes meet the State requirements for striped on-street Class II bike lanes. These lanes are marked exclusively for bike travel on roadways. Bike lanes are provided between Leisure Town Road and just east of Nut Tree Road in the vicinity of the project. Bike routes meet the State requirements for Class III on-street bike routes. On-street bike routes, which must be signed or marked, bicycle riders must share the roadway with vehicles. The City's existing bicycle network is shown in Figure 4.7-4.

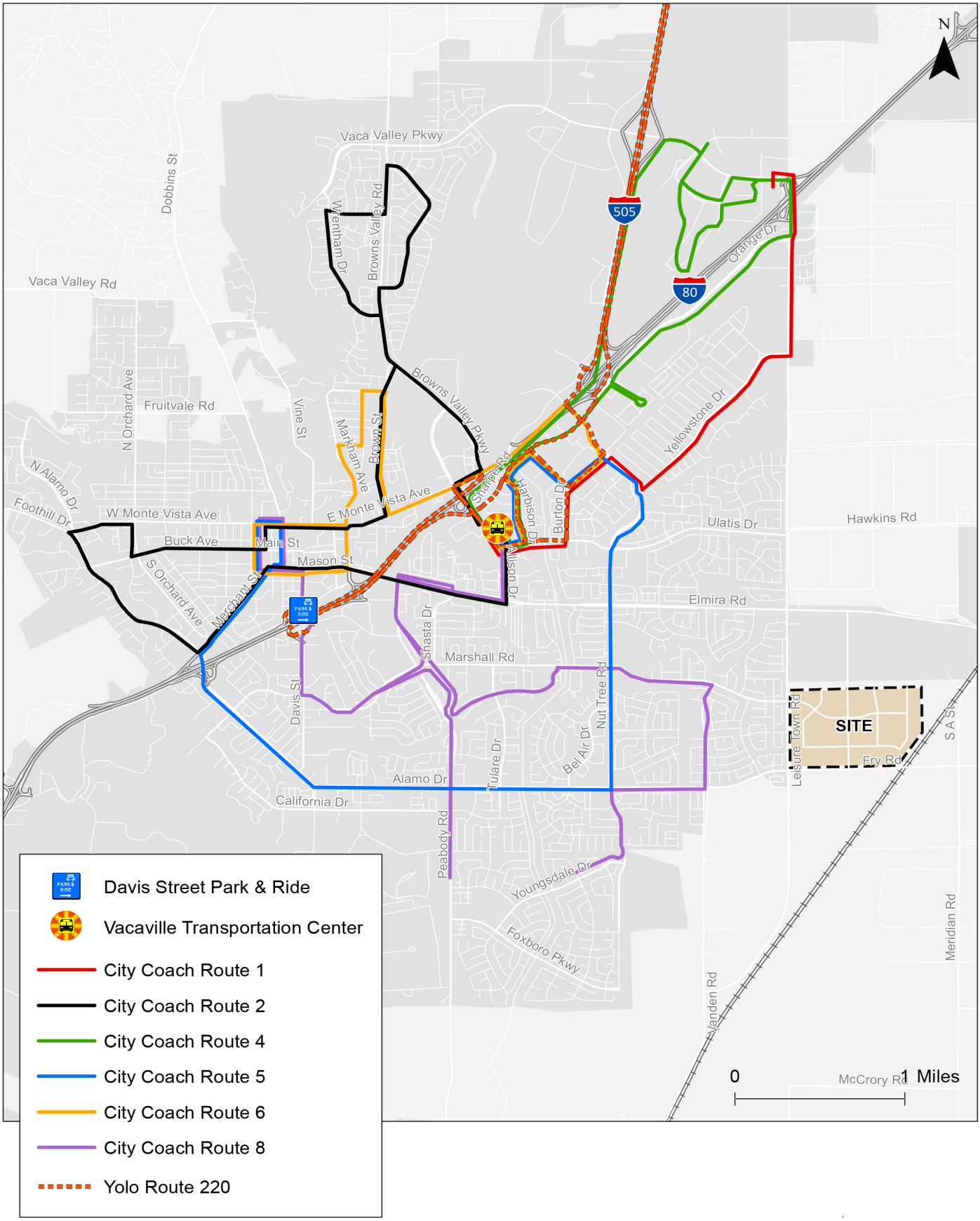
There are no existing on-street bike routes in the project vicinity. However, several facilities are planned in the study area, including the Elmira Road Bike Path, Ulatis Creek Bike Path, and Jepson Parkway Bike Path.

Existing Pedestrian Facilities

In Vacaville, sidewalks with raised curb and gutter are typically provided along arterials and collectors, as well as in newer residential developments. Existing pedestrian facilities in the project vicinity are limited because this area is currently at the urban fringe. Sidewalks are provided only on the west side of Leisure Town Road and on the south side of Elmira Road west of Leisure Town Road. There is no sidewalk or paved shoulder on Elmira Road east of Leisure Town Road. At the signalized intersection of Leisure Town Road (Jepson Parkway) / Elmira Road (#6), pedestrian signal heads are provided as well as marked crosswalks on the north and west legs of the intersection.

Planned Transportation Improvements

The planned transportation improvement most relevant to the proposed project is the Jepson Parkway Road Widening Project.



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SOURCE: Kittelson & Associates, Inc. (2016)

FIGURE 4.7-3
Existing Transit Service

Roberts' Ranch Specific Plan EIR

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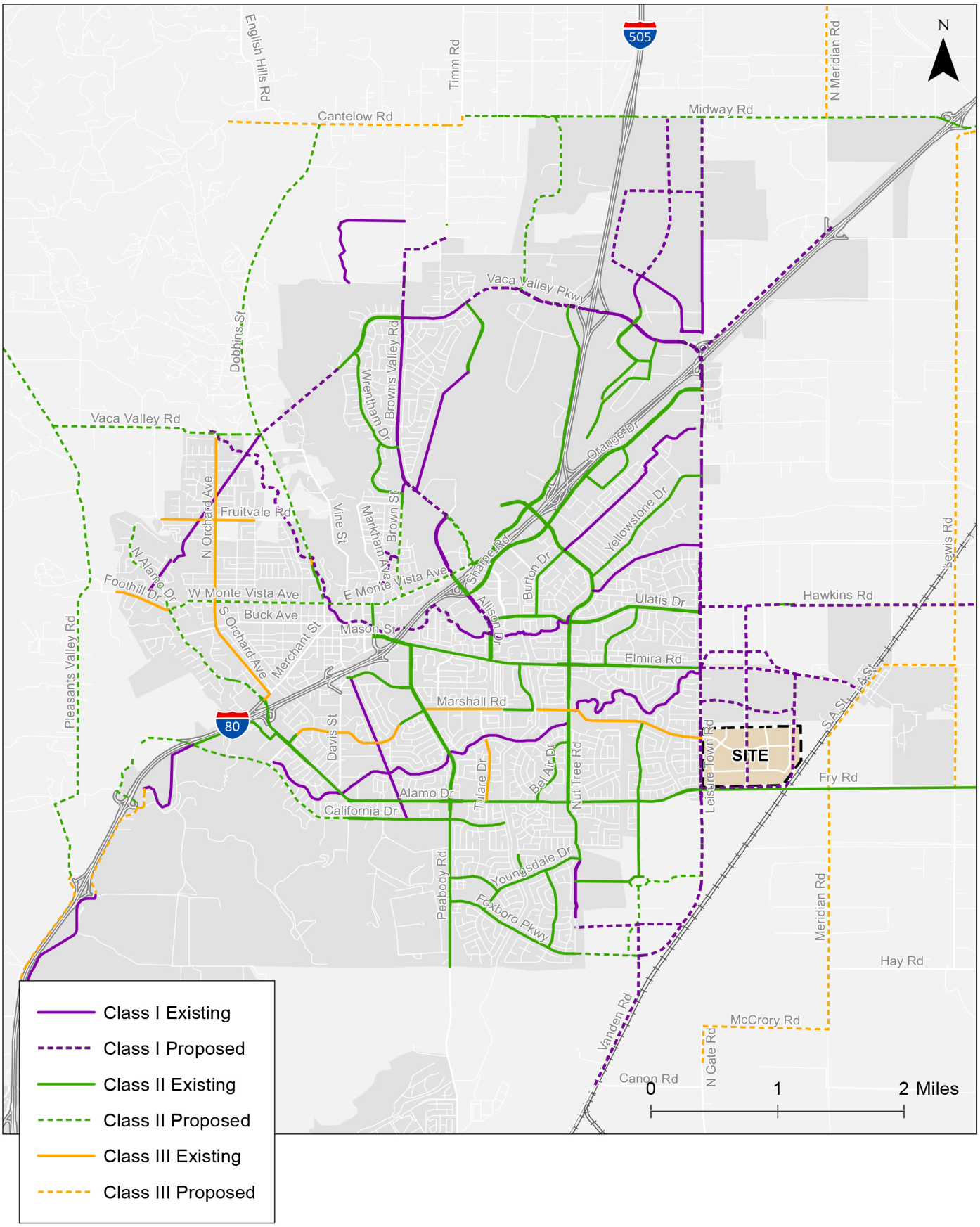

SOURCE: Kittelson & Associates, Inc. (2016)

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FIGURE 4.7-4

Existing Bicycle Facilities

Roberts' Ranch Specific Plan EIR

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Jepson Parkway Road Widening Project

Jepson Parkway is planned as a four-lane road connecting State Route 12 in Fairfield/Suisun City with I-80 in Vacaville. The alignment would include portions of the current alignments of Peabody Road, Vanden Road and Leisure Town Road. The Jepson Parkway Concept Plan provides design guidelines and requirements for each segment of the Parkway. The full project is not funded for implementation.

The City of Vacaville has completed design of an initial phase of Jepson Parkway between Vanden Road just south of the intersection with Leisure Town Road and Leisure Town Road just north of the intersection with Elmira Road. Funding is committed for this phase and the anticipated start of construction is in the spring of 2017. The construction is expected to take two years. The Jepson Parkway Road Widening Project would include an off-street bicycle and pedestrian path on the west side of the roadway.

4.7.3 Regulatory Setting

Existing transportation policies, plans, laws and regulations that apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions.

Federal Regulations

Federal Highway Administration

The Federal Highway Administration (FHWA) is the agency of the United States Department of Transportation (DOT) responsible for the federally funded roadway system, including the interstate highway network and portions of the primary State highway network, such as I-80. FHWA funding is provided through the Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 can be used to fund local transportation improvements in Vacaville, such as projects to improve the efficiency of existing roads, traffic signal coordination, bikeways, and transit system upgrades.

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) of 1990 provides comprehensive rights and protections to individuals with disabilities. The goal of the ADA is to assure equality of opportunity, full participation, independent living, and economic self-sufficiency. To implement this goal, the United States Access Board has created accessibility guidelines for public rights-of-way. The guidelines address various issues, including roadway design practices, slope and terrain issues, and pedestrian access to streets, sidewalks, curb ramps, street furnishings,

pedestrian signals, parking, and other components of public rights-of-way. The guidelines would apply to proposed roadways in the project area.

State Regulations

California Department of Transportation

The California Department of Transportation (Caltrans) is the primary State agency responsible for transportation issues. One of its duties is the construction and maintenance of the State highway system. Caltrans has established standards for roadway traffic flow and developed procedures to determine if State-controlled facilities require improvements. For projects that may physically affect facilities under its administration, Caltrans requires encroachment permits before any construction work may be undertaken. For projects that would not physically affect facilities, but may influence traffic flow and levels of services at such facilities, Caltrans may recommend measures to mitigate the traffic impacts of such projects. Caltrans facilities within the Vacaville study area include I-80 and I-505, as well as the on- and off-ramps from these State facilities.

The following Caltrans procedures and directives are relevant to the project:

- **Level of Service Target.** Caltrans maintains a minimum level of service at the transition between LOS C and LOS D for all of its facilities.[1] Where an existing facility is operating at less than the LOS C/D threshold, the existing measure of effectiveness should be maintained.[2]
- **Environmental Assessment Review and Comment.** Caltrans, as a responsible agency under the California Environmental Quality Act (CEQA), is available for early consultation on projects to provide guidance on applicable transportation analysis methodologies or other transportation related issues, and is responsible for reviewing traffic impact studies for errors and omissions pertaining to the State highway facilities. In relation to this role, Caltrans published the Guide for the Preparation of Traffic Impact Studies (December 2002), which establishes the Measures of Effectiveness as described under “Level of Service Target” above. The Measures of Effectiveness are used to determine significant impacts on State facilities. The Guide also mandates that traffic analyses include mitigation measures to lessen potential project impacts on State facilities and to meet each project’s fair share responsibility for the impacts. However, the ultimate mitigation measures and their implementations are to be determined based on consultation between Caltrans, the City of Vacaville, and the project proponent.

[1] Level of service is explained further in Section 0.
[2] California Department of Transportation, 2002. Guide for the Preparation of Traffic Impact Studies.

Regional Regulations

Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) is the transportation planning, coordinating, and financing agency for the nine-county Bay Area, including Solano County. It also functions as the federally mandated metropolitan planning organization (MPO) for the region. MTC authored the current regional transportation plan known as *Transportation 2035* that was adopted on April 22, 2009. *Transportation 2035* specifies a detailed set of investments and strategies throughout the region from 2010 through 2035 to maintain, manage, and improve the surface transportation system, specifying how anticipated federal, State, and local transportation funds will be spent. The projects included in the 2035 Plan that would most directly affect the proposed project are:

- Construction of a new Fairfield/Vacaville Multi-Modal Train Station at the southeast corner of Peabody Road and Vanden Road in northeast Fairfield for Capitol Corridor intercity rail service.
- Construction of Jepson Parkway from State Route 12 to I-80 at the Leisure Town Road Interchange. In Vacaville, Jepson Parkway will follow the Leisure Town Road alignment along the western border of the Brighton Landing Specific Plan area.

Solano Transportation Authority

The Solano Transportation Authority (STA) has been designated as the Congestion Management Agency to address congestion issues in Solano County and the seven cities within the county, including Vacaville. It is responsible for countywide transportation planning, programming transportation funds, managing and providing transportation programs and services, delivering transportation projects, and setting transportation priorities. The STA Board of Directors adopted the Solano County Comprehensive Transportation Plan (CTP 2030)[3] in June 2005. The Plan envisions, directs, and prioritizes the transportation needs of Solano County through 2030.

As the designated Congestion Management Agency, STA worked with jurisdictions within the county, including Vacaville, to identify locations where periodic congestion monitoring would occur as required by the State's CMP legislation. Level of service standards are established for segments of the CMP roadway system that connect communities with each other and with the State highway system.

[3] Solano Transportation Authority, *Solano Comprehensive Transportation Plan,* adopted June 8, 2005.

Local Regulations

Vacaville General Plan

The City of Vacaville's General Plan contains guiding and implementing policies that are relevant to transportation and circulation in the study area. These guiding and implementing policies are listed below.

Through the General Plan update and adoption process in 2015, the City assessed the operational analysis methodology in the Transportation Research Board's Highway Capacity Manual as an alternative to the Circular 212 Planning Method that the City previously used to perform intersection level of service.

Policy TR-P1.3 Continue to coordinate and support regional efforts to construct Jepson Parkway in accordance with the Jepson Parkway Concept Plan (2000), or subsequent updates to the Plan for Jepson Parkway.

Policy TR-P2.1 Work with the California Department of Transportation (Caltrans) and Solano Transportation Authority (STA) to achieve timely construction of programmed freeway and interchange improvements.

Policy TR-P2.3 Encourage Caltrans to widen and upgrade Interstate 80 through Vacaville. In new development areas adjoining Interstate 80 and Interstate 505, require major building setbacks and offers-of-dedication to permit the long-term planning and widening of the freeways.

Policy TR-P3.1 Strive to maintain LOS C as the LOS goal at all intersections and interchanges to facilitate the safe and efficient movement of people, goods, and services. Design improvements to provide LOS C conditions based on the City's most recent 20+ year traffic forecast. At unsignalized intersections, maintain an overall LOS C standard with the worst approach to the intersection not exceeding LOS D.

Policy TR-P3.2 At signalized and all-way stop control intersections, LOS mid-D shall be the LOS significance threshold. At two-way stop control intersections, LOS mid-E shall be the LOS significance threshold on the worst approach.

Policy TR-P3.3 To allow for infill development and higher density development at transit centers, the LOS significance threshold shall be LOS D at signalized and all-way stop control intersections in the Downtown Urban High Density Residential Overlay District or other Priority Development Areas (PDA)

designated by the City. At two-way stop controlled intersections in these areas, the overall LOS significance threshold shall be LOS mid-E with the worst approach not exceeding LOS E.

Policy TR-P3.4 The City may allow LOS above the established LOS significance thresholds for a particular location as an interim level of service where improvements are programmed by the City that will improve the service to an acceptable level.

Policy TR-P3.5 The City may allow LOS above the established LOS significance thresholds for a particular location on the basis of specific findings described in Chapter 14.13 of the Vacaville Land Use and Development Code, Traffic Impact Mitigation Ordinance.

Policy TR-P3.7 Roadway improvements implemented by the City using the Development Impact Fee Program or other funding sources shall be designed based on the level of service standards prescribed in Policies TR-P3.1 and TR-P3.3.

Policy TR-P3.8 Require roadway improvements implemented by development projects to be designed based on the level of service standards prescribed in Policies TR-P3.2 and TR-P3.3.

Policy TR-P4.1 Evaluate development proposals based on the level of service standards prescribed in Policies TR-3.1 through TR-3.5.

Policy TR-P4.2 As part of development approvals, require reasonable demonstration that traffic improvements necessary to mitigate development in accordance with Policies TR-3.1 through TR-3.3 will be in place in time to accommodate trips generated by the project, or satisfy findings identified in Policies TR-3.4 and TR-3.5.

Policy TR-P4.3 In order to ensure that adequate roadway capacity is provided for the buildout of the General Plan and that new development does not preclude the construction of adequate circulation facilities, require all new development to provide right-of-way dedications consistent with this Transportation Element (Figure TR-6).

Policy TR-P4.4 When reviewing development proposals, consider Year 2035 projections for fair share contributions to transportation improvements (as shown in Figure TR-5) and full buildout projections (beyond Year 2035) for dedication of right of way for future road improvements (as shown in Figure TR-6).

Policy TR-P4.5 For locations where the LOS would exceed thresholds described in Policies TR-P3.2 and TR-P3.3 without the addition of traffic from a proposed

development, the City may establish impact and mitigation criteria based on the incremental traffic contribution from the proposed development as described in Chapter 14.13 of the Land Use and Development Code (Traffic Impact Mitigation Ordinance).

Policy TR-P5.1 Design intersections on arterial roadways to meet level of service standards and to avoid traffic diversion to local roadways or the freeway.

Policy TR-P5.2 Locate high traffic generating uses so that they have direct access or immediate secondary access to arterial roadways, while balancing the need to control the number of driveways that enter arterial roadways.

Policy TR-P6.3 Consider traffic calming measures consistent with the City's traffic calming policies and approved by the City as part of development proposals in an effort to lower vehicle speeds and enhance mobility for bicyclists and pedestrians.

Policy TR-P6.4 Review phased developments for the potential for contributing to, or creating routes for, cut-through traffic, and establish conditions of approval as needed to limit the potential for cut-through traffic on residential roadways.

Policy TR-P7.3 Require that new development applications include transit amenities, such as bus stops, bus bays, transit shelters, benches, and on-site drop-off locations, as appropriate, or explain why these features are infeasible or unnecessary.

Policy TR-P7.4 Require that new development applications design roadway networks to accommodate transit vehicles and facilitate efficient transit routes.

Policy TR-P7.6 Require that new development applications design roadway networks to accommodate on-street bicycle lanes, and only allow bicycle routes with sharrows when on-street bicycle lanes are impractical or infeasible.

Policy TR-P7.7 Require that new roadway networks be designed as a grid pattern to reduce circuitous travel patterns and improve access and circulation for all modes.

Policy TR-P7.8 Prioritize transportation improvements that support and enhance travel by transit, bicycle, and pedestrian modes to and from designated Priority Development Areas (PDA).

Policy TR-P8.4 Require that new development applications include bike paths or bike lanes, when appropriate.

Policy TR-P8.5 Enhance and improve bicycle connections between neighborhoods and between neighborhoods and significant destinations, such as parks, schools, transit stops and transit centers, shopping centers, and employment centers.

Policy TR-P8.9 Require that new multi-family and non-residential developments provide adequate public and private bicycle parking and storage facilities.

Policy TR-P10.1 Cooperate with public agencies and other entities to promote local and regional public transit serving Vacaville.

Policy TR-P11.4 Continue to work with Caltrans and the Solano Transportation Authority (STA) to identify and evaluate sites for parking to connect with transit and support rideshare parking, and establish standards for the development of parking sites for rideshare and transit users.

Policy TR-P11.5 Support and encourage Caltrans to preserve options for future transit use when designing improvements for Interstate and State highways.

Policy TR-P11.7 Require specific plans in new growth areas to include planning for future public transit service to these areas by considering the addition of future transit stops and route connections as part of the public transportation system.

Vacaville Municipal Code

The City's Municipal Code includes regulations that govern the transportation system. The Land Use and Development Code, and the Traffic Impact Mitigation Ordinance are of particular relevance to the project. The Land Use and Development Code identifies off-street parking requirements for each type of land use and provides development standards for emergency vehicle and fire apparatus access to residential projects. The Traffic Impact Mitigation Ordinance establishes a procedure to assess and mitigate the potential impacts of proposed development projects on the transportation system.

The Traffic Impact Mitigation Ordinance establishes traffic impact standards, which specifically allow City decision-makers to allow and accept LOS D without mitigation improvements. This standard is more lenient than that indicated in the General Plan, which establishes mid-LOS D using delay-based HCM methodology as the minimum standard of LOS for all intersections, road links, and interchanges. The Traffic Impact Mitigation Ordinance also provides for LOS E and LOS F approval under defined circumstances.

The City's Traffic Impact Mitigation Ordinance requires traffic studies for development projects found to meet the trip generation thresholds established in the ordinance. Traffic studies are

required to include traffic analysis for three conditions: Existing Conditions, Existing Conditions plus Projects that have been approved (Existing plus Approved Projects) and a 20- to 25-year projection. Transportation improvements required to mitigate impacts are based on results of this analysis. Right of way dedication is required for roadway improvements identified in the current General Plan to accommodate traffic conditions associated with buildout of all allowable land uses. Conditions of approval for development projects involving transportation improvements are based on short term impacts (Existing plus Approved Projects) and the 20-year projections.

4.7.4 Impacts

Methods of Analysis

The Vacaville traffic model was used to estimate the traffic growth increment resulting from the project. This growth was applied to the existing traffic counts to develop the volumes for Existing plus Project scenario.

Trip Generation

The trip generation for the proposed project is presented in Table 4.7-9. Trip generation rates for the proposed residential land use were obtained from the Institute of Transportation Engineer's (ITE) *Trip Generation*, 9th edition (2012), using the Single-Family Residential land use category (210). Trips to the proposed stroller parks and open space within the plan area are assumed to be either walk, bike or internal auto trips and would not add vehicle trips to the external road network. The proposed project would generate 589 weekday AM and 785 weekday PM peak hour vehicle trips.

Table 4.7-9
Vehicle Trip Generation

Land Use	ITE Code	Size	ITE Rate		Trips	
			AM	*PM*	*AM*	*PM*
Single-Family Residential	210	785 Dwelling Units	0.75	1.00	589	785
Project Vehicle Trips					**589**	**785**

Source: Kittelson & Associates, Inc. 2016.

Vehicle Trip Distribution and Assignment

The project-generated vehicle trips were distributed and assigned to the road network by the citywide traffic model. The model's distribution patterns for the project trips are summarized in Table 4.7-10 and Figure 4.7-5. The project only trips are illustrated in Figure 4.7-6.

Table 4.7-10
Project Vehicle Trip Distribution

Origin/Destination	Distribution Percent	
	AM Peak Hour	*PM Peak Hour*
Leisure Town Road, to the north	28%	23%
Leisure Town Road, to the south	6%	6%
Elmira Road, to the west	29%	27%
Marshall Road, to the west	15%	6%
Alamo Drive, to the west	17%	33%
Alamo-Fry Road, to the east	5%	5%
Total	**100%**	**100%**
Freeway Trips		
I-80 West of Alamo Drive	20%	14%
I-80 East of Leisure Town	13%	8%

Source: Kittelson & Associates, Inc. 2016. Vacaville Traffic Model.

Cumulative Impacts

The future traffic was evaluated through a process that involved vehicle trip generation, trip distribution, and assignment of the trips to the road network using the City's traffic model.

Traffic Volume Forecasts

Traffic volume forecasts are derived from the Vacaville citywide traffic model. The inputs to the model are land uses and road network assumptions throughout the city. The version of the model is the same that was used for the current General Plan EIR (2015), with specific updates to reflect the latest development projections from the City and representation of the proposed Roberts Ranch Specific Plan.

Land Use Forecasts

Land use forecasts for the Approved and 2035 Cumulative scenarios were derived from a parcel-based land use database maintained by the City of Vacaville, linked to a geographic information system (GIS). Parcels labeled as likely to develop under the Approved or 2035 Cumulative scenarios were tabulated for each geographic area (transportation analysis zone or TAZ) used in the traffic model. Residential uses were tabulated by numbers of single-family or multi-family units, Non-residential uses are tabulated by the number of developed acres.

Transportation Network

The existing transportation network is assumed for the Existing plus Approved scenario.

The following changes to the transportation network are assumed for cumulative conditions:

- Vaca Valley Road/I-505 interchange and overcrossing improvements.
- California Drive overcrossing.
- Jepson Parkway project, which would improve Leisure Town Road to a four-lane divided arterial from Route 12 to I-80 at the Leisure Town Road interchange. In Vacaville, Jepson Parkway will follow the Leisure Town Road alignment along the western border of the Specific Plan area.
- Signalization and realignment of the Leisure Town Road/Ulatis Drive and Leisure Town Road/Hawkins Road intersections
- Signalization of the Leisure Town Road/Marshall Road intersection.
- Widening of Fry Road to a four-lane arterial east of Leisure Town Road
- Widening of Peabody Road to a four-lane arterial between the Vacaville City Limits and Markley Lane.

The following bicycle facilities are planned in the study area:

- **Elmira Road Bike Path.** A Class I bike path would be built along the old Southern Pacific Railroad right-of-way on the north side of Elmira Road between Leisure Town Road and Edwin Drive.
- **Ulatis Creek Bike Path.** A Class II bike lane and Class I bike path along Ulatis Creek between Ulatis Drive and Leisure Town Road would be completed by the summer of 2012.
- **Jepson Parkway Bike Path.** A Class I bike path would be provided as a part of the Jepson Parkway improvements from I-80 along Leisure Town Road and Vanden Road to Fairfield.

DUDEK

SOURCE: Kittelson & Associates, Inc. (2016)

FIGURE 4.7-5

Project Vehicle Trip Distribution

Roberts' Ranch Specific Plan EIR

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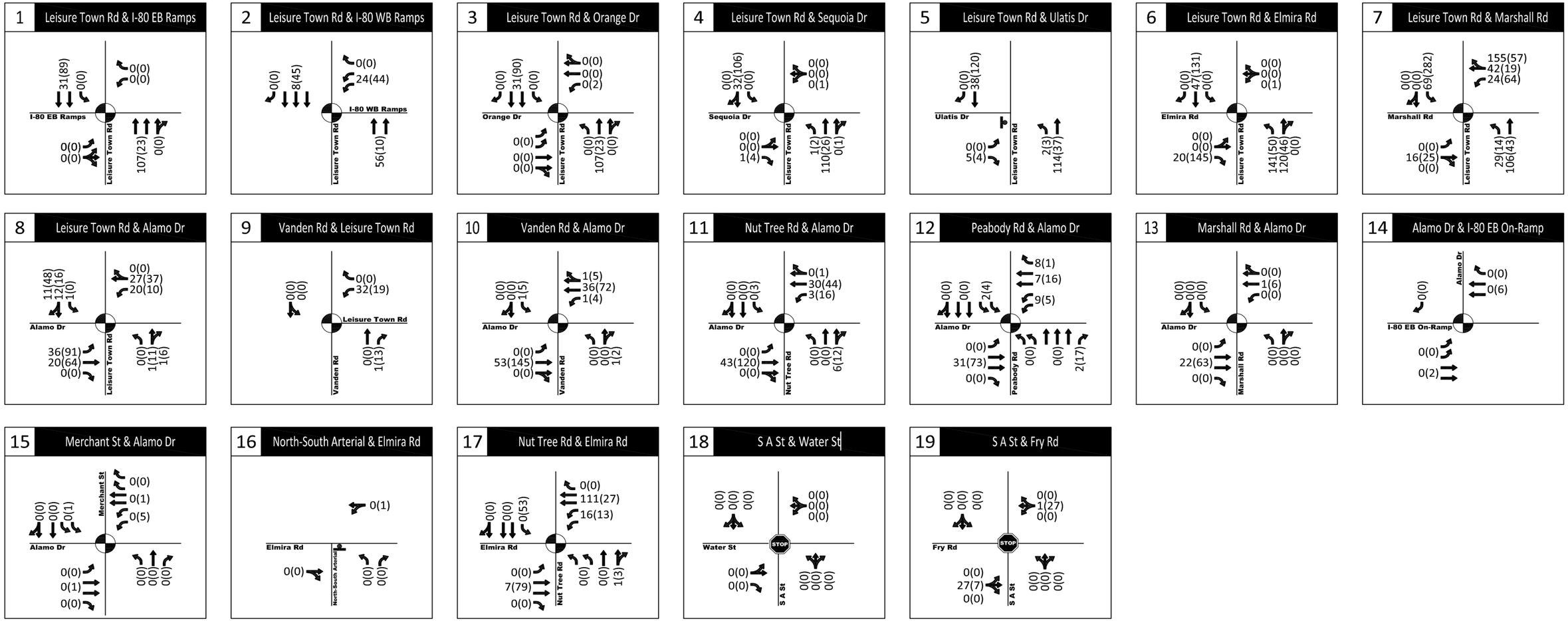

AM(PM) - Traffic Volume

STOP - All-Way Stop

- Stop Sign

- Traffic Signal

SOURCE: Kittelson & Associates, Inc. (2016)

DUDEK

FIGURE 4.7-6

Project Only Traffic Volumes & Geometry

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The following transit facilities are planned in the study area:

- **Commuter Rail Station.** Construction of a new Fairfield/Vacaville Multi-Modal Train Station at the southeast corner of Peabody Road and Vanden Road in northeast Fairfield for Capitol Corridor intercity rail service. The Fairfield/Vacaville Multi-Modal Rail Station would further enhance regional transit connections.

Issues Addressed in the Modified Initial Study

As discussed in the Modified Initial Study (see Appendix B), the project would not result in a change in air traffic patterns that could contribute to a safety risk, nor does the project include any design hazards or would introduce any incompatible uses. If additional development is proposed in the project site, additional project-level site plans would be reviewed by the City as a part of the entitlement process. The City would require project improvement plans to include safety elements such as school advanced warning signs and school crosswalk markings, per standard City practices. All designs would conform to the City's Design Standards and Standard Drawings unless exceptions are approved by the City. Therefore, these issues are not addressed further in the EIR.

Thresholds of Significance

Consistent with Appendix G of the CEQA Guidelines, the Vacaville General Plan, and professional judgment, a significant impact with respect to transportation and circulation would occur if development of the proposed project would do any of the following:

Intersections in Vacaville

- Cause a signalized or all-way stop controlled intersection outside of the Downtown Urban High Density Residential Overlay District4 to operate below LOS mid-D (average delay of 45 seconds or more for signalized, and 30 seconds or more for all-way stop).
- Cause the worst approach at a one/two-way stop controlled intersection outside of the Downtown Urban High Density Residential Overlay District to operate below LOS mid-E on the worst approach (average delay 45 seconds or more), or conflict with City policy to design intersections to provide for LOS D on the worst approach in the horizon year development forecast.
- Cause a signalized intersection or all-way stop controlled intersection in the Downtown Urban High Density Residential Overlay District to operate below LOS D (an average delay of 55 seconds or more for signalized and 35 seconds or more for all-way stop).

[4] The Downtown Urban High Density Residential Overlay District is roughly defined by West Street to the west, E. Monte Vista Avenue/E. Deodara Street to the north, Depot Street to the east, and Mason Street/Stevenson Street to the south.

- Cause a one/two-way stop controlled intersection in the Downtown Urban High Density Residential Overlay District to operate below LOS mid-E (an average delay of 45 seconds or more), or the worst approach to the intersection to operate below LOS E (an average delay of 50 seconds or more).
- Cause the volume-to-capacity ratio to increase by 0.02 or more at a signalized intersection or road segment operating at an unacceptable service level without the project.
- Cause the average delay to increase by 5 seconds or more at an unsignalized intersection operating at an unacceptable service level without the project.[5]

Road Segments in Vacaville

- Cause peak hour traffic volumes to exceed LOS C thresholds.[6]

For intersections and road segments on the Solano County Congestion Management System:

- Cause an intersection to degrade to below LOS C except where the existing level of service is below LOS C; at which point the project should not decrease the existing level of service.

Conflicts with Congestion Management Programs

According to Section III, CMP System Performance Element, of the Solano County Congestion Management Program, a project impact is considered significant if the project-generated traffic would:

- Cause the following road segments to degrade below LOS E:
  - Interstate 80 (I-80) between Post Mile 23.03 (Pena Adobe Road) and 24.08 (Alamo Drive). All other adjacent segments of I-80 have a CMP LOS standard of LOS F, including I-80 west of Pena Adobe Road to SR 12 West in Fairfield, and I-80 east of Alamo Drive to SR 113 South in Dixon.
  - I-505 between I-80 and the county line.
  - Elmira Road between Leisure Town Road and the Vacaville city limits.
  - Peabody Road between California Drive and Fairfield city limits.
  - Vaca Valley Parkway between I-80 and I-505.
- Cause the following road segments to degrade below LOS D:
  - Vanden Road between Peabody Road and Leisure Town Road.

[5] Due to normal fluctuation in daily traffic counts and motorists perceptions of traffic conditions, a change in v/c of less than 0.02 and in average delay by less than 5 seconds was considered to be imperceptible.

[6] The current Vacaville General Plan does not include a level of service threshold for local road segments. The LOS C threshold is consistent with prior transportation impact analysis studies in Vacaville.

For the purposes of this EIR, the City of Vacaville considers the project impact to be significant if the project-generated traffic would cause any intersection or road segment on the Congestion Management System to degrade from LOS E or better to LOS F, even if the CMP LOS standard for that segment is LOS F. This standard is more stringent than the LOS standards established by the CMP.

Result in Inadequate Emergency Access

- Would the project result in inadequate emergency access.

Conflicts with Transit, Bicycle or Pedestrian Transportation

- Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Impacts and Mitigation Measures

4.7-1: Implementation of the proposed project would degrade operations at one study intersection. This is considered a significant impact.

Intersection operations were assessed for Existing plus Project conditions and compared to existing conditions. Under existing conditions all intersections operate at the City's standard LOS mid-D or better during the weekday AM and PM peak hours.

Weekday AM and PM peak hour intersection volumes for Existing plus Project conditions are illustrated in Figure 4.7-7 and intersection operations are summarized in Table 4.7-11.

With Existing plus Project traffic volumes, the intersection of Leisure Town Road (Jepson Parkway) and Elmira Road (#6) would operate above LOS mid-D with average delay greater than 45 seconds in the weekday AM peak hour. This is a **significant impact.**

Mitigation Measures

Implementation of Mitigation Measure TRAFF-1 would improve the intersection operations to LOS D or better during the AM and PM peak hours. This section of the Jepson Parkway Improvement Project is funded and programmed for construction, ensuring future implementation. With mitigation, this intersection would operate above the City of Vacaville LOS standards and the project impact would be less than significant.

TRAFF-1 At the Leisure Town Road (Jepson Parkway) / Elmira Road intersection (#6), the Project shall install the following improvements or pay in-lieu traffic fees to the City.

- Widen the north leg to provide one additional through lane; this includes widening the north leg of the intersection to accommodate the second northbound through receiving lane.

This mitigation is consistent with the City's Jepson Parkway Road Widening Project which will begin construction in 2017. At this intersection, the Jepson Parkway Project will provide:

- Northbound approach - two left-turn lanes, one through lane and one shared through-right turn lane
- Southbound approach - one left turn lane, two through lanes and one right-turn lane
- Eastbound approach - two left-turn lanes, one through lane and one right-turn lane
- Westbound approach - one left-turn lane, one through lane and one right-turn lane

Table 4.7-11
Intersection Operations –Existing plus Project

#	Intersection	Traffic Control[2]	Peak Hour	Existing		Existing plus Project	
				LOS[3]	*Delay*[4]	*LOS*[3]	*Delay*[4]
1	Leisure Town Road (Jepson Parkway) / I-80 EB Ramps	Signal	AM	C	22.2	C	31.5
			PM	B	19.9	C	21.2
2	Leisure Town Road (Jepson Parkway) / I-80 WB Ramps	Signal	AM	A	6.9	A	7.3
			PM	A	8.1	A	8.5
3	Leisure Town Road (Jepson Parkway) / Orange Drive	Signal	AM	B	18.8	B	17.9
			PM	B	19.4	B	19.8
4	Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street	Signal	AM	A	9.2	B	11.3
			PM	C	24.6	C	29.4
5	Leisure Town Road (Jepson Parkway) / Ulatis Drive	TWSC	AM	B (F)	13.1 (>50.0)	C (F)	20.5 (>50.0)
			PM	A (F)	5.0 (>50.0)	A (F)	7.5 (>50.0)

Table 4.7-11
Intersection Operations –Existing plus Project

#	Intersection	Traffic Control[2]	Peak Hour	Existing		Existing plus Project	
				LOS[3]	*Delay*[4]	*LOS*[3]	*Delay*[4]
6	Leisure Town Road (Jepson Parkway) / Elmira Road	Signal	AM	D	44.3	Mid-D	53.5
			PM	C	34.8	D	40.0
7	Leisure Town Road (Jepson Parkway) / Marshall Road	TWSC / Signal	AM	A (F)	6.9 (>50.0)	B	11.9
			PM	A (F)	3.6 (>50.0)	B	13.7
8	Leisure Town Road (Jepson Parkway) / Alamo Drive–Fry Road	Signal	AM	C	25.4	C	31.2
			PM	C	29.6	D	39.5
9	Leisure Town Road (Jepson Parkway) / Vanden-Foxboro Road	Signal	AM	A	8.4	A	9.0
			PM	A	6.6	A	6.9
10	Alamo Drive/ Vanden Road	Signal	AM	B	19.9	C	20.1
			PM	C	25.1	D	34.5
11	Alamo Drive/ Nut Tree Road	Signal	AM	C	28.5	C	28.8
			PM	C	34.2	C	34.5
12	Alamo Drive/ Peabody Road	Signal	AM	C	29.1	C	28.8
			PM	C	29.8	C	30.5
13	Alamo Drive/ Marshall Road	Signal	AM	C	28.3	C	31.3
			PM	C	28.2	C	31.1
14	Alamo Drive/ I-80 EB On-Ramp	Signal	AM	A	7.5	A	7.4
			PM	A	3.8	A	3.8
15	Alamo Drive/ Merchant Street	Signal	AM	D	38.9	D	39.0
			PM	C	28.2	C	28.6
16	Elmira Road/ North-South Arterial[1]	Does not Exist	AM	-	-	-	-
			PM	-	-	-	-
17	Elmira Road/ Nut Tree Road	Signal	AM	C	33.9	D	36.7
			PM	D	42.1	D	44.8

Table 4.7-11
Intersection Operations –Existing plus Project

#	Intersection	Traffic Control[2]	Peak Hour	Existing		Existing plus Project	
				LOS[3]	*Delay*[4]	*LOS*[3]	*Delay*[4]
18	Water Street/ A Street	AWSC	AM	A (A)	6.9 (7.5)	A (A)	6.9 (7.5)
			PM	A (A)	7.8 (8.4)	A (A)	7.8 (8.4)
19	Alamo Drive–Fry Road / A-Meridian	AWSC	AM	A (B)	9.6 (10.3)	A (B)	9.8 (10.4)
			PM	B (B)	10.6 (11.6)	B (B)	10.9 (12.0)

Source: Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable.
1 Intersection does not exist under existing conditions, therefore intersection operations were omitted.
2 Signal = Signalized Intersection, TWSC = Two-Way Stop Control intersection, AWSC = All-Way Stop Control Intersection. The Leisure Town Road / Elmira Road intersection would be signalized with the project.
3 LOS = Level of Service; Parentheses denote the intersection's critical movement LOS.
4 Delay = Average vehicle delay reported in seconds per vehicle. Delays beyond 50 seconds are reported as ">50.0" at unsignalized locations.

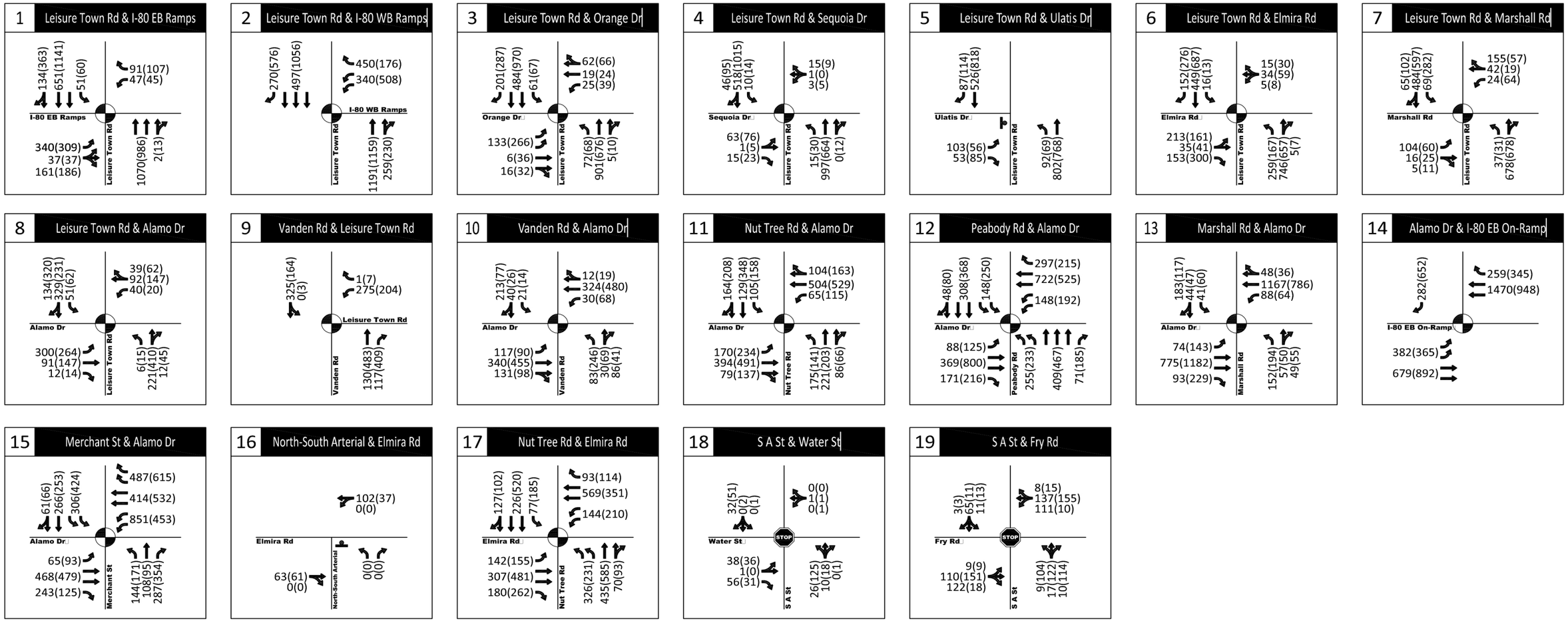
Table 4.7-12
Road Segment Level of Service Thresholds –Existing plus Project

#	Road Segment	Existing				Existing plus Project			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*
Alamo Drive – Fry Road									
1	W of Nut Tree	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
2	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
3	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
4	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
5	East of N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
Marshall Road									
6	W of Nut Tree	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
7	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
8	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
9	Leisure Town (Jepson) to N-S Arterial1	-	-	-	-	No (No)	No (No)	No (No)	No (No)
10	East of N-S Arterial1	-	-	-	-	No (No)	No (No)	No (No)	No (No)
Elmira Road									
11	Nut Tree to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
12	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
13	East of N-S Arterial1	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
Leisure Town Road (Jepson Parkway)									
14	South of Vanden	No (No)	No (No)	No (No)	Yes (Yes)	No (No)	No (No)	No (No)	Yes (Yes)
15	Vanden to Alamo	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
16	Alamo to Marshall	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
17	Marshall to Elmira	No (No)	No (No)	No (No)	No (No)	No (No)	Yes (No)	Yes (No)	No (No)

Table 4.7-12
Road Segment Level of Service Thresholds –Existing plus Project

#	Road Segment	Existing				Existing plus Project			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*
18	Elmira to Ulatis	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	Yes (No)	No (No)
19	Ulatis to Orange	No (No)	Yes (No)	Yes (No)	No (No)	No (No)	Yes (No)	Yes (No)	No (No)
20	I-80 Overcrossing	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
North-South Arterial[1]									
21	Elmira to Marshall2	-	-	-	-	-	-	-	-
22	Marshall to Alamo-Fry	-	-	-	-	No (No)	No (No)	No (No)	No (No)
23	Alamo-Fry to Leisure Town (Jepson)	-	-	-	-	No (No)	No (No)	No (No)	No (No)

Source: Vacaville Land Use and Development Code: Chapter 14.13, 2015. Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable. 1 Segment does not exist under existing conditions; 2Segment does not exist under existing + project conditions.
NB/EB = northbound/eastbound; SB/WB = southbound/westbound; Shading in cells means results exceed threshold



AM(PM) - Traffic Volume
- All-Way Stop
- Stop Sign
- Traffic Signal

SOURCE: Kittelson & Associates, Inc. (2016)

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FIGURE 4.7-7
Existing Plus Project Traffic Volumes & Geometry

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4.7-2: Implementation of the proposed project would increase traffic volumes above the LOS C threshold on two study road segments. This is considered a significant impact.

Road segment volumes were assessed for Existing plus Project conditions and compared to thresholds established by the City of Vacaville. Road segment volumes relative to level of service thresholds for Existing and Existing plus Project conditions are summarized in Table 4.7-12. There are two segments which exceed LOS C traffic volumes under existing conditions and would continue to have traffic volumes above LOS C thresholds with the addition of project traffic:

- Vanden Road south of Leisure Town Road (#14)
- Leisure Town Road between Ulatis and Orange (#19)

The addition of project traffic would cause two additional segments to exceed LOS C traffic volumes resulting in a **significant impact**.

- **Leisure Town Road (Jepson Parkway) between Marshall Road and Elmira Road (#17):** The addition of project traffic to existing traffic levels would cause the volumes to exceed the LOS C threshold in the northbound direction during the weekday AM peak hour and the southbound direction during the weekday PM peak hour.
- **Leisure Town Road (Jepson Parkway) between Elmira Road and Ulatis Road (#18):** The addition of project traffic to existing traffic levels would cause the volumes to exceed the LOS C threshold in the southbound direction during the weekday PM peak hour.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-2a would allow the segment between Marshall Road and Elmira Road to operate at an acceptable LOS. The section between Marshall and Elmira is part of the Jepson Parkway Road Widening Project which is funded and currently being implemented. The impact on this segment would reduced to less than significant.

Implementation of Mitigation Measure TRAFF-2b would allow the segment between Elmira Road and Ulatis Road to operate at an acceptable LOS. However, the section between Elmira and Ulatis is not part of the currently funded Jepson Parkway Road Widening Project, and therefore right-of-way and funding cannot be ascertained. The impact would remain significant and unavoidable.

TRAFF-2a The project shall install the following improvements or pay in-lieu traffic fees to the City.

- Widen Leisure Town Road (Jepson Parkway) to two lanes in each direction between Marshall Road and Elmira Road.

This mitigation is consistent with the Jepson Parkway Road Widening Project which the City is currently implementing. The mitigation would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours.

TRAFF-2b Widen Leisure Town Road (Jepson Parkway) to provide two lanes in the southbound direction between Ulatis Road and Elmira Road.

This mitigation is consistent with the ultimate configuration of the Jepson Parkway Concept Plan but is not part of the Jepson Parkway Road Widening Project which the City is currently implementing. The mitigation would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours.

Table 4.7-13
Freeway Mainline Segment Level of Service –Existing plus Project

Freeway Mainline Segment / Direction	Existing				Existing plus Project			
	AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
	Density	*LOS*	*Density*	*LOS*	*Density*	*LOS*	*Density*	*LOS*
I-80 West of Lagoon Valley Road								
Eastbound	18.5	C	29.5	D	18.6	C	29.8	D
Westbound	30.0	D	22.5	C	30.3	D	22.5	C
I-80 West of Alamo Drive								
Eastbound	18.7	C	28.9	D	18.8	C	29.2	D
Westbound	31.5	D	24.4	C	31.9	D	24.5	C
I-80 East of Leisure Town Road								
Eastbound	19.6	C	28.9	D	19.9	C	28.9	D
Westbound	24.8	C	20.5	C	24.9	C	20.8	C
I-80 East of Midway Road								
Eastbound	19.0	C	25.2	C	19.4	C	25.3	C
Westbound	24.9	C	20.7	C	25.0	C	21.0	C

Source: Performance Enhancement Measurement System (PeMS), 2016. Kittelson & Associates, Inc. 2016.
Notes: Density = passenger cars per mile per lane; LOS = Level of Service

4.7-3: Implementation of the proposed project would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance. This would be a less-than-significant impact.

Freeway mainline freeway segment operations for Existing and Existing plus Project conditions are summarized in Table 4.7-13. As shown in the table, study freeway segments on the CMP

system would operate within acceptable standards under the Existing and Existing plus Project scenarios. Therefore, the impact is **less than significant.**

Mitigation Measures

None required.

4.7-4: Implementation of the proposed project, including installation of traffic circles and other traffic calming devices, may delay emergency response or impede movement of emergency vehicles. This would be a potentially significant impact.

The analysis of emergency access considers both the adequacy of emergency access to and from the project site at ultimate buildout, and the adequacy of emergency access during construction, while some project components are already occupied but before all project roadways have been constructed. Emergency secondary access would be available in all phases of project development to address the requirements of the fire department.

The project site would be served by the Vacaville Police Department from the main police station located in downtown Vacaville and the recently constructed fire station in the Southtown project (Vanden and Cogburn Circle).

The project site layout at ultimate buildout would be consistent with State Fire Marshall Regulations, Title 19 California Code of Regulations, which require access road right-of-way to be no less than 20 feet from building to the public street. However, traffic circles and traffic calming devices shown on the project plans could potentially delay response time for emergency vehicles resulting in a **potentially significant impact**.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-3 would provide emergency vehicle accessibility that meets accepted standards and the project impact would be less than significant.

TRAFF-3 Roundabouts and traffic circles shall be designed to accommodate fire trucks and other large vehicles to travel through the intersection at an appropriate speed for emergency response. On-street parking shall be prohibited near the traffic circles to ensure clear passage. All traffic calming devices shall be designed in accordance with City standards and be approved by the City.

4.7-5: Implementation of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. This would be a potentially significant impact.

The Robert's Ranch Specific Plan upon completion would be consistent with the adopted transportation-related plans, ordinance, programs, or policies described in the Regulatory Setting section above, including General Plan goals and policies establishing a balanced multimodal system. Interim phases of the project may conflict with adopted plans, policies, and programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities during the initial phases of implementation. This would be a **potentially significant impact**.

The proposed sidewalks and multi-use path would provide safe and convenient pedestrian travel. Pedestrian and bicycle pathways would be provided to connect selected cul-de-sacs, including through sound walls along certain streets, thus providing access to collectors and key local roads that would provide added convenience and connectivity for pedestrians and bicyclists. Class II bike lanes would be provided along designated streets, increasing connectivity for bicyclists and serve as an additional buffer for pedestrians.

Because the project would be constructed in phases over a period of time, the project may potentially conflict with adopted plans, policies and programs related to multi-model facilities prior to full buildout of the project. For instance, the provision of pedestrian and bicycle facilities and connections to Elmira Road and Leisure Town Road might not be adequate when the initial phases, which are slated to occur on the eastern portion of the plan area, are constructed. Therefore, the project would have potentially significant interim or short-term impacts related to multi-modal facilities. However, at full buildout, the project would not conflict with adopted plans, policies, and programs related to multi-modal facilities and would not decrease the performance and safety of such facilities.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-4 would ensure that multimodal accessibility is provided during all phases of project development and the project impact would be less than significant.

TRAFF-4 The project-level site plan shall be submitted for each phase of the project development for review and approval by the City to ensure safe and direct facilities for pedestrians, bicyclists, and transit riders are provided and the design does not conflict with adopted plans, policies, and programs related to such facilities.

4.7.5 Cumulative Impacts

The cumulative impacts section describes the potential transportation impacts of the project relative to two background conditions, Existing plus Approved Projects and projected 2035 development under the General Plan. Impacts related to the following two criteria are included in the cumulative analysis:

- Circulation System Performance

- Conflicts with Congestion Management Programs

Impacts related to inadequate emergency access and conflicts with transit, bicycle or pedestrian transportation would be identical to the impacts described in the project impacts section. Therefore, they are not repeated in the cumulative impacts evaluation. The project would not make a cumulatively considerable contribution to any emergency access or transit, bicycle or pedestrian transportation; therefore, all impacts and would be a less than significant impact.

Impacts on the circulation system were assessed in terms of traffic operations at study intersections and traffic volumes on local street segments.

4.7-6: Under Existing plus Approved plus Project conditions, traffic volumes would exceed intersection LOS operations at six intersections. This is considered a significant impact.

Weekday AM and PM peak hour intersection volumes for Existing plus Approved conditions are illustrated in Figure 4.7-8 and Existing plus Approved plus Project conditions are illustrated in Figure 4.7-9. Intersection operations are summarized in Table 4.7-14.

The following six intersections are expected to exceed the City's LOS thresholds during the weekday AM and/or PM peak hours under Existing plus Approved plus Project conditions:

- **Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street (#4):** The addition of project traffic to Existing plus Approved traffic levels would change the operation from LOS D to LOS E during the weekday PM peak hour.
- **Leisure Town Road (Jepson Parkway) / Ulatis Drive (#5):** The stop-controlled movements would operate at LOS F with Existing plus Approved traffic levels and the project would add more than five seconds of delay during the weekday AM peak hour.
- **Leisure Town Road (Jepson Parkway) / Elmira Road (#6):** The intersection would operate at LOS F during the weekday AM and PM peak hours with Existing plus Approved traffic levels and the project would add more than 0.02 to the volume/capacity ratio.
- **Leisure Town Road (Jepson Parkway) / Marshall Road (#7):** The project would install a traffic signal at this intersection, but with the existing lane geometry the intersection is expected to operate above LOS Mid-D (average delay greater than 45 seconds) during the weekday PM peak hour.
- **Leisure Town Road (Jepson Parkway) / Alamo Drive-Fry Road (#8):** The intersection would operate above LOS Mid-D during the weekday PM peak hour with Existing plus Approved traffic levels and the project would change the LOS to E and add more than 0.02 to the volume/capacity ratio.

- **Elmira Road / Nut Tree Road (#17):** The intersection would operate above LOS Mid-D during the weekday PM peak hour with Existing plus Approved traffic levels and the project would add more than 0.02 to the volume/capacity ratio.

Table 4.7-14
Intersection Operations – Existing plus Approved

#	Intersection	Traffic Control[2]	Peak Hour	Existing plus Approved		Existing plus Approved plus Project	
				LOS[3]	*Delay*[4]	*LOS*[3]	*Delay*[4]
1	Leisure Town Road (Jepson Parkway) / I-80 EB Ramps	Signal	AM	C	29.5	C	30.5
			PM	C	33.7	C	34.7
2	Leisure Town Road (Jepson Parkway) / I-80 WB Ramps	Signal	AM	B	10.4	B	11.4
			PM	B	13.8	B	14.8
3	Leisure Town Road (Jepson Parkway) / Orange Drive	Signal	AM	B	18.1	C	20.3
			PM	C	20.0	C	20.5
4	Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street	Signal	AM	B	12.8	A	9.9
			PM	D	37.3	E	56.0
5	Leisure Town Road (Jepson Parkway) / Ulatis Drive	TWSC	AM	E (F)	41.3 (>50.0)	F (F)	>50.0 (>50.0)
			PM	A (F)	8.0 (>50.0)	B (F)	11.6 (>50.0)
6	Leisure Town Road (Jepson Parkway) / Elmira Road	Signal	AM	F	>80.0	F	>80.0
			PM	E	58.7	F	>80.0
7	Leisure Town Road (Jepson Parkway) / Marshall Road	TWSC / Signal	AM	D (F)	29.4 (>50.0)	D	41.9
			PM	B (F)	13.0 (>80.0)	Mid-D	52.2
8	Leisure Town Road (Jepson Parkway) / Alamo Drive–Fry Road	Signal	AM	D	36.6	D	44.0
			PM	Mid-D	51.2	E	79.3
9	Leisure Town Road (Jepson Parkway) / Vanden-Foxboro Road	Signal	AM	B	11.9	B	12.4
			PM	A	7.9	A	8.1

Table 4.7-14
Intersection Operations – Existing plus Approved

#	Intersection	Traffic Control[2]	Peak Hour	Existing plus Approved		Existing plus Approved plus Project	
				LOS[3]	*Delay*[4]	*LOS*[3]	*Delay*[4]
10	Alamo Drive/ Vanden Road	Signal	AM	C	31.5	C	32.5
			PM	D	37.3	D	40.9
11	Alamo Drive/ Nut Tree Road	Signal	AM	C	33.6	C	34.0
			PM	D	36.4	D	37.3
12	Alamo Drive/ Peabody Road	Signal	AM	C	30.8	C	31.0
			PM	C	32.5	C	33.5
13	Alamo Drive/ Marshall Road	Signal	AM	D	35.2	D	35.2
			PM	C	31.3	C	31.2
14	Alamo Drive/ I-80 EB On-Ramp	Signal	AM	A	8.4	A	8.4
			PM	A	4.4	A	4.4
15	Alamo Drive/ Merchant Street	Signal	AM	D	40.8	D	40.9
			PM	C	29.4	C	29.6
16	Elmira Road/ North-South Arterial[1]	Does not Exist	AM	A (B)	2.3 (12.0)	A (B)	2.3 (12.4)
			PM	A (B)	0.8 (11.7)	A (B)	0.7 (12.0)
17	Elmira Road/ Nut Tree Road	Signal	AM	D	38.7	D	41.9
			PM	Mid-D	46.7	Mid-D	50.2
18	Water Street/ A Street	AWSC	AM	A (A)	6.9 (7.6)	A (A)	6.9 (7.6)
			PM	A (A)	7.9 (8.5)	A (A)	7.9 (8.5)
19	Alamo Drive–Fry Road / A-Meridian	AWSC	AM	B (B)	11.4 (12.3)	B (B)	11.7 (12.8)
			PM	B (B)	13.4 (14.4)	B (B)	13.8 (14.8)

Source: Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable.
1 Intersection does not exist under existing conditions, therefore intersection operations were omitted.
2 Signal = Signalized Intersection, TWSC = Two-Way Stop Control intersection, AWSC = All-Way Stop Control Intersection. The Leisure Town Road / Elmira Road intersection would be signalized with the project.
3 LOS = Level of Service; Parentheses denote the intersection's critical movement LOS.
4 Delay = Average vehicle delay reported in seconds per vehicle. Delays beyond 50 seconds are reported as ">50.0" at unsignalized locations.

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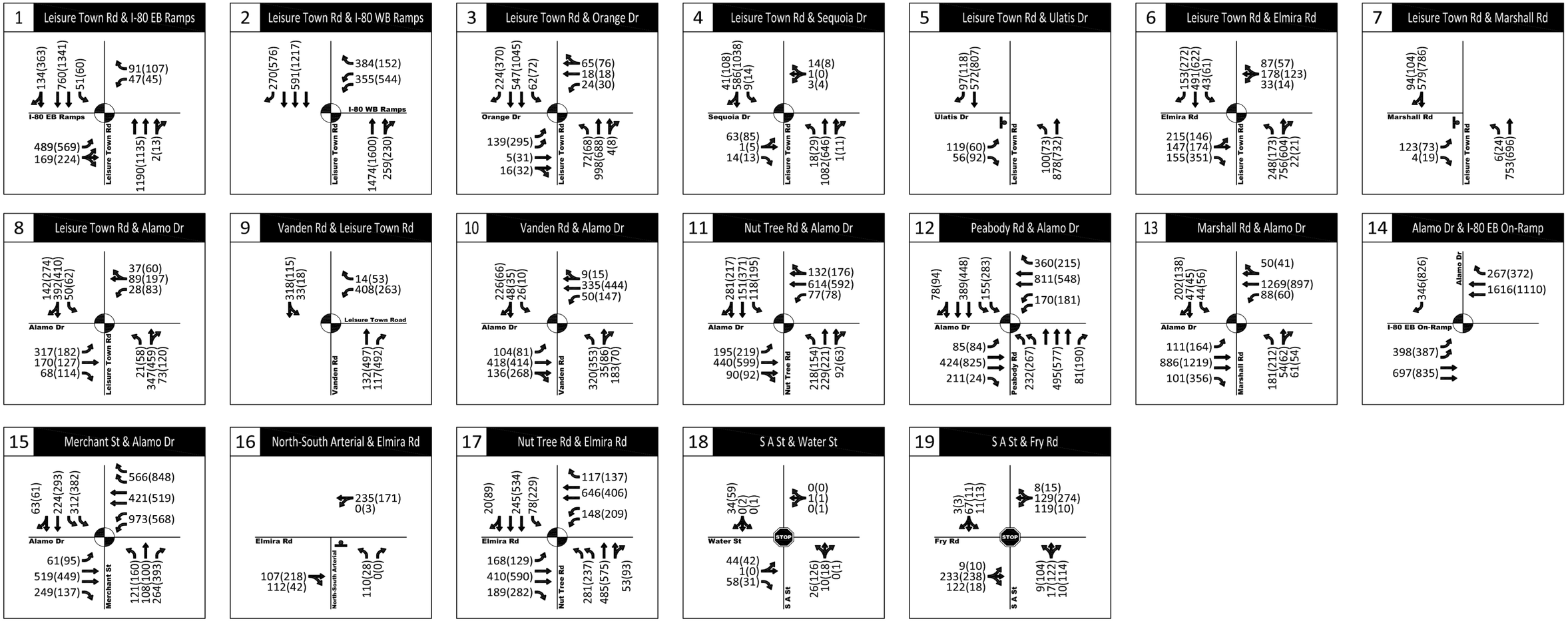

AM(PM) - Traffic Volume
STOP - All-Way Stop
- Stop Sign
- Traffic Signal

SOURCE: Kittelson & Associates, Inc. (2016)

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FIGURE 4.7-8
Existing Plus Approved Intersection Traffic Volumes & Geometry

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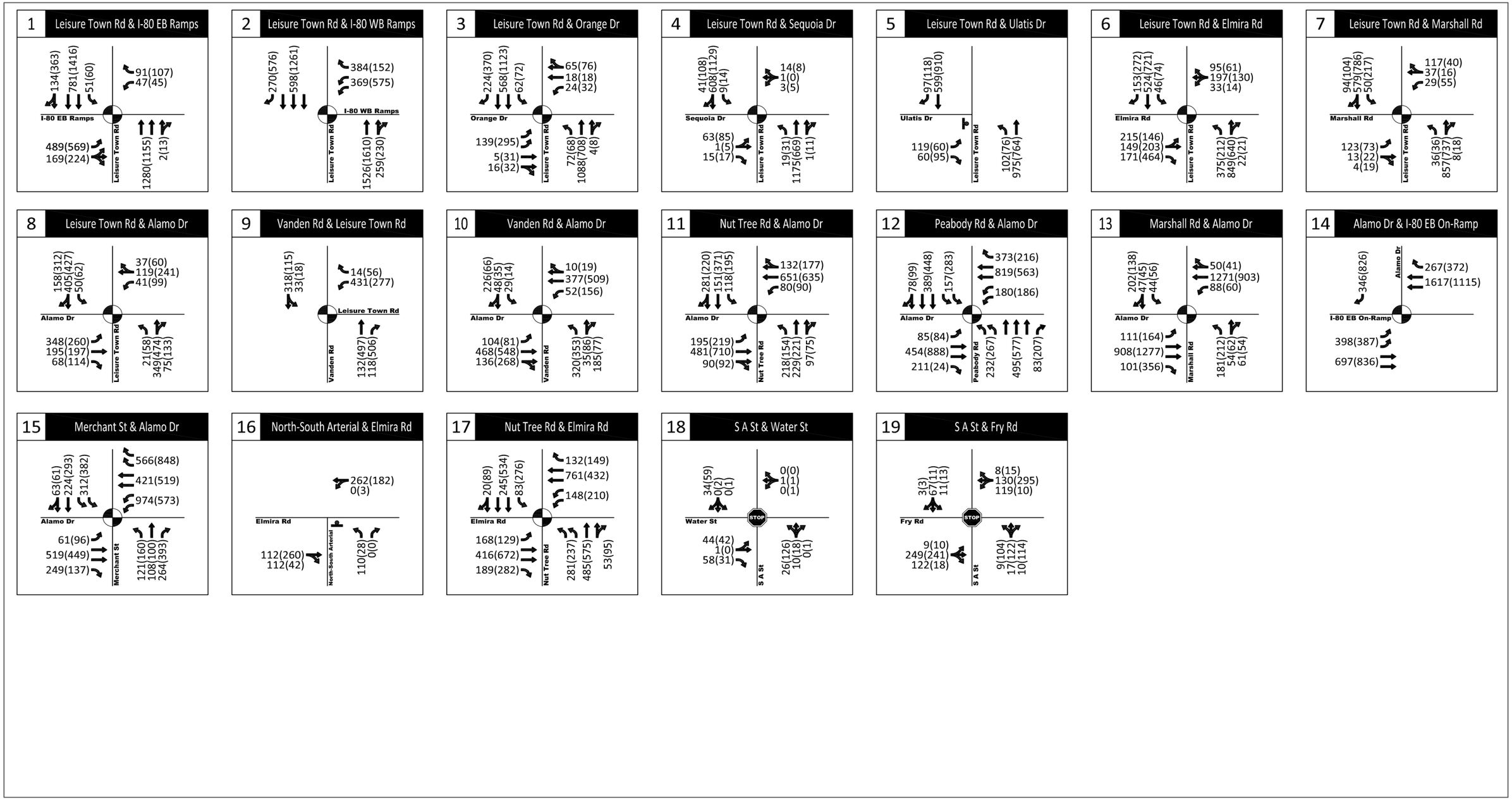

AM(PM) - Traffic Volume

STOP - All-Way Stop

- Stop Sign

- Traffic Signal

SOURCE: Kittelson & Associates, Inc. (2016)

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FIGURE 4.7-9

Existing Plus Approved Plus Project Intersection Traffic Volumes & Geometry

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Mitigation Measures

Implementation of Mitigation Measure TRAFF-5a would allow the Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street intersection to operate above the City's LOS thresholds. Mitigation Measure TRAFF-5f would enable the Elmira Road / Nut Tree Road intersection to operate above the City's LOS thresholds. However, these improvements are either not part of the currently funded portion of the Jepson Parkway Road Widening Project, and therefore right-of-way and funding cannot be ascertained or the feasibility of implementation is not ascertained due to operational, safety and right-of-way restrictions. These impacts would remain significant and unavoidable.

Implementation of Mitigation Measures TRAFF-5b, TRAFF-5c, TRAFF-5d, and TRAFF-5e would ensure the intersections operate above the City's LOS thresholds and impacts would be reduced to less than significant.

TRAFF-5 The City of Vacaville shall implement the following improvements to mitigate operations at the six impacted intersections. The project shall pay in-lieu traffic fees to the City.

TRAFF-5a At the Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street (#4) intersection, the City shall implement the following improvements:

- Add a through lane on southbound Leisure Town Road to provide one left-turn lane, one through lane and one shared through-right lane on the southbound approach.
- Widen the south leg of the intersection to provide a corresponding receiving lane.

This mitigation is consistent with the ultimate configuration of Jepson Parkway, but is not part of the Jepson Parkway Road Widening Project which the City is currently implementing. This is a temporary impact until the ultimate Jepson Parkway is constructed. With the mitigation the intersection would operate at LOS B or better during both peak hours.

TRAFF-5b At the Leisure Town Road (Jepson Parkway) / Ulatis Road (#5) intersection, the City shall implement the following improvements:

- Install a traffic signal.

This mitigation is consistent with the ultimate configuration of Jepson Parkway, but is not part of the Jepson Parkway Road Widening Project which the City is currently implementing. The Jepson Parkway concept will ultimately provide a traffic signal at this location with two through lanes in the northbound and southbound directions. Implementation of the mitigation would improve the intersection operations to LOS B or better in both peak hours.

TRAFF-5c At the Leisure Town Road (Jepson Parkway) / Elmira Road (#6) intersection, the City shall implement the following improvements:

- Northbound – add a second left-turn lane and a second through lane.
- Southbound – add a second through lane to provide one left-turn, two through and one right-turn lane.
- Eastbound – add two left-turn lanes in addition to the existing through lane and right-turn lane.
- Westbound – add a left-turn lane and a right-turn lane to the existing through lane.

This mitigation is consistent with the Jepson Parkway Road Widening Project which the City is currently implementing. Implementation of the mitigation would improve the intersection operations to LOS D in the AM peak hour and LOS C in the PM peak hour.

TRAFF-5d At the Leisure Town Road (Jepson Parkway) / Marshall Road (#7) intersection, the project shall install a traffic signal and the City shall implement the following improvements:

- Northbound – add a second through lane.
- Southbound – add a second through lane.

This mitigation is consistent with the Jepson Parkway Road Widening Project which the City is currently implementing. Implementation of the mitigation would improve the intersection operations to LOS D or better during both peak hours.

TRAFF-5e At the Leisure Town Road (Jepson Parkway) / Alamo Drive (#8) intersection, the City shall implement the following improvements:

- Northbound – add a second through lane.
- Southbound – add a second through lane.

This mitigation is consistent with the Jepson Parkway Road Widening Project which the City is currently implementing. Implementation of the mitigation would improve the intersection operations to LOS D or better during both peak hours. The Jepson Parkway Road Widening Project would also add a southbound right-turn lane and a westbound right-turn lane to provide one left-turn, one through lane and one right-turn lane on the eastbound and westbound approaches.

TRAFF-5f At the Elmira Road / Nut Tree Road (#17) intersection, the City shall implement the following improvements:

- Southbound – restripe the inside southbound through lane to an exclusive left-turn lane, providing two left-turn lanes, one through lane and one shared through-right lane.

Implementation of the changes in lane striping would improve the intersection operations to LOS D or better during both peak hours. However, the proposed geometrics may not be feasible for operational reasons. This intersection was identified as operating unacceptably in the General Plan EIR.

4.7-7: Under Cumulative plus Project conditions, intersection operations would exceed LOS thresholds of significance at one intersection. This is considered a significant impact.

Cumulative traffic volumes are shown in Figurer 4.7-10, Cumulative with Project traffic volumes are shown in Figure 4.7-11, and Cumulative with Project intersection operations are summarized in Table 4.7-15.

The following intersection is expected to exceed the City's LOS thresholds during the weekday AM and/or PM peak hours under Cumulative plus Project conditions:

- **Elmira Road / Nut Tree Road (#17):** This intersection would operate above LOS Mid-D during the weekday PM peak hour with Existing plus Approved traffic levels and the project would add more than 0.02 to the volume/capacity ratio.

Table 4.7-15
Intersection Operations – Cumulative

#	Intersection	Traffic Control[1]	Peak Hour	Cumulative without Project		Cumulative with Project	
				LOS[2]	*Delay*[3]	*LOS*[2]	*Delay*[3]
1	Leisure Town Road (Jepson Parkway) / I-80 EB Ramps	Signal	AM	D	39.1	D	41.9
			PM	D	42.5	D	44.4
2	Leisure Town Road (Jepson Parkway) / I-80 WB Ramps	Signal	AM	B	18.7	C	20.7
			PM	B	19.2	C	20.7

Table 4.7-15
Intersection Operations – Cumulative

#	Intersection	Traffic Control[1]	Peak Hour	Cumulative without Project		Cumulative with Project	
				LOS[2]	*Delay*[3]	*LOS*[2]	*Delay*[3]
3	Leisure Town Road (Jepson Parkway) / Orange Drive	Signal	AM	C	31.5	D	38.1
			PM	C	28.6	C	29.7
4	Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street	Signal	AM	B	11.5	B	11.1
			PM	B	12.3	B	13.2
5	Leisure Town Road (Jepson Parkway) / Ulatis Drive	TWSC	AM	C	26.0	C	30.4
			PM	C	34.1	D	36.6
6	Leisure Town Road (Jepson Parkway) / Elmira Road	Signal	AM	D	38.3	D	43.3
			PM	C	34.1	D	44.7
7	Leisure Town Road (Jepson Parkway) / Marshall Road	Signal	AM	B	15.8	C	23.6
			PM	B	16.0	C	33.2
8	Leisure Town Road (Jepson Parkway) / Alamo Drive–Fry Road	Signal	AM	C	25.4	C	27.7
			PM	C	28.9	D	35.1
9	Leisure Town Road (Jepson Parkway) / Vanden-Foxboro Road	Round-about	AM	A	3.2	A	3.6
			PM	A	5.1	A	5.5
10	Alamo Drive/ Vanden Road	Signal	AM	C	24.9	C	25.4
			PM	C	23.5	C	24.4
11	Alamo Drive/ Nut Tree Road	Signal	AM	C	33.9	C	34.6
			PM	C	34.6	D	35.3
12	Alamo Drive/ Peabody Road	Signal	AM	C	33.3	C	33.4
			PM	C	35.0	D	35.6
13	Alamo Drive/ Marshall Road	Signal	AM	D	39.1	D	39.2
			PM	D	35.9	D	37.3
14	Alamo Drive/ I-80 EB On-Ramp	Signal	AM	A	6.9	A	6.9
			PM	A	4.5	A	4.5

Table 4.7-15
Intersection Operations – Cumulative

#	Intersection	Traffic Control[1]	Peak Hour	Cumulative without Project		Cumulative with Project	
				LOS[2]	*Delay*[3]	*LOS*[2]	*Delay*[3]
15	Alamo Drive/ Merchant Street	Signal	AM	D	39.0	D	39.0
			PM	C	30.6	C	30.6
16	Elmira Road/ North-South Arterial	Signal	AM	A (C)	4.5 (17.6)	A (C)	4.5 (18.3)
			PM	A (C)	2.1 (15.1)	A (C)	2.1 (16.1)
17	Elmira Road/ Nut Tree Road	Signal	AM	D	39.1	D	41.3
			PM	Mid-D	47.3	Mid-D	50.6
18	Water Street/ A Street	AWSC	AM	A (A)	7.1 (7.7)	A (A)	7.2 (7.7)
			PM	A (A)	8.2 (8.8)	A (A)	8.2 (8.8)
19	Alamo Drive–Fry Road / A-Meridian	AWSC	AM	A (A)	8.8 (9.6)	A (A)	8.8 (9.6)
			PM	B (B)	11.0 (12.1)	B (B)	11.3 (12.4)

Source: Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable.
1 Signal = Signalized Intersection, TWSC = Two-Way Stop Control intersection, AWSC = All-Way Stop Control Intersection.
2 LOS = Level of Service; Parentheses denote the intersection's critical movement LOS.
3 Delay = Average vehicle delay reported in seconds per vehicle. Delays beyond 50 seconds are reported as ">50.0" at unsignalized locations. Delays beyond 80 seconds are reported as ">80.0" for signalized locations.

Mitigation Measures

Implementation of Mitigation Measure TAFF-6 would allow the intersection to operate above the City's LOS thresholds. However, the feasibility of implementation is not ascertained due to operational, safety and right-of-way restrictions. Therefore, the project impact would remain significant and unavoidable.

TRAFF-6 The City of Vacaville shall implement the following improvements to mitigate operations at the impacted intersection. The project shall pay in-lieu traffic fees to the City.

At the Elmira Road / Nut Tree Road (#17) intersection, the City shall implement the following improvements:

- Southbound – restripe the inside southbound through lane to an exclusive left-turn lane, providing two left-turn lanes, one through lane and one shared through-right lane.

Implementation of the changes in lane striping would improve the intersection operations to LOS D or better during both peak hours. However, the proposed geometrics may not be feasible for operational reasons.

4.7-8: Traffic volumes under Existing plus Approved plus Project conditions would be above the LOS C threshold on five study road segments. The project would cause traffic volumes to exceed the LOS C threshold on one of the five segments. This is considered a significant impact.

Road segment volumes were assessed for Existing plus Approved conditions and compared to thresholds established by the City of Vacaville. Road segment volumes relative to LOS thresholds for Existing plus Approved and Existing plus Approved plus Project conditions are summarized in Table 4.7-16.

Four segments which exceed LOS C traffic volumes under Existing plus Approved conditions would continue to have traffic volumes above LOS C thresholds with the addition of project traffic:

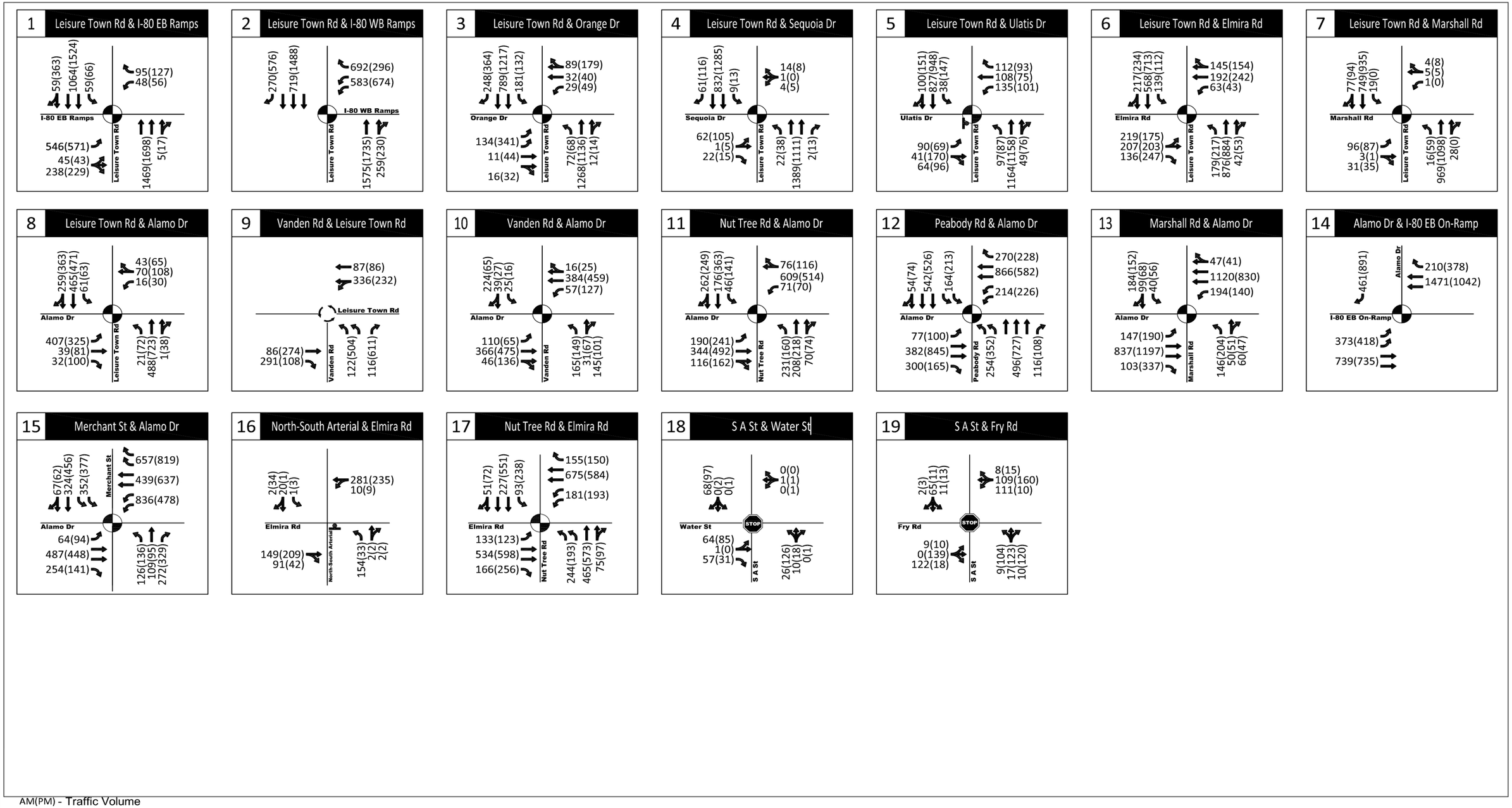
- Vanden Road (Jepson Parkway) south of Leisure Town Road (#14)
- Leisure Town Road (Jepson Parkway) between Marshall and Elmira (#17)
- Leisure Town Road (Jepson Parkway) between Elmira and Ulatis (#18)
- Leisure Town Road (Jepson Parkway) between Ulatis and Orange (#19)

The project would cause one additional segment to exceed LOS C traffic volumes:

- Leisure Town Road (Jepson Parkway) between Alamo and Marshall (#15)

Mitigation Measures

Implementation of Mitigation Measure TRAFF-7a would allow the segments south of the Vanden Road/Leisure Town Road intersection, between Alamo and Marshall and between Marshall and Elmira to operate at an acceptable LOS. These segments are part of the Jepson Parkway Road Widening Project which is funded and currently being implemented. The impact on these three segments would be less than significant.



AM(PM) - Traffic Volume
- All-Way Stop
- Stop Sign
- Traffic Signal
- Roundabout

SOURCE: Kittelson & Associates, Inc. (2016)

DUDEK

FIGURE 4.7-10

Cumulative Without Project Traffic Volumes & Geometry

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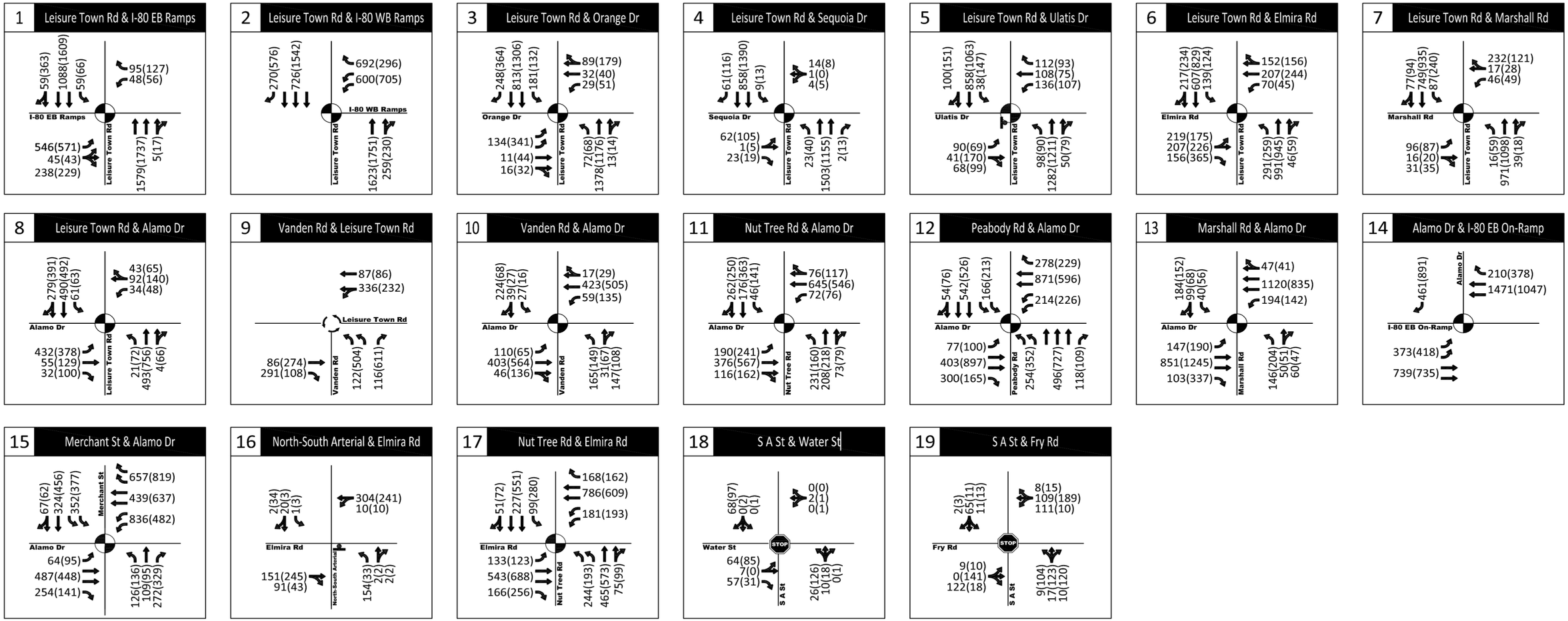

AM(PM) - Traffic Volume
STOP - All-Way Stop
- Stop Sign
- Traffic Signal
- Roundabout

SOURCE: Kittelson & Associates, Inc. (2016)

DUDEK

FIGURE 4.7-11
Cumulative With Project Traffic Volumes & Geometry

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Implementation of Mitigation Measure TRAFF-7b would allow the segments between Elmira and Ulatis and between Ulatis and Orange to operate at an acceptable LOS. However, these segments are not part of the Jepson Parkway Road Widening Project, and therefore right-of-way and funding cannot be ascertained. The impact on these two segments would remain significant and unavoidable.

TRAFF-7a Widen Leisure Town Road (Jepson Parkway) to two lanes in each direction between south of Vanden Road and Elmira Road.

This mitigation is consistent with the Jepson Parkway Road Widening Project which the City is currently implementing. The mitigation would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours.

TRAFF-7b Widen Leisure Town Road (Jepson Parkway) to provide two lanes in each direction between Ulatis Road and Orange Drive.

This mitigation is consistent with the ultimate configuration of the Jepson Parkway Concept Plan but is not part of the Jepson Parkway Road Widening Project which the City is currently implementing. The mitigation would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours.

Table 4.7-16
Road Segment Level of Service Thresholds – Existing plus Approved plus Project

#	Road Segment	Existing plus Approved				Existing plus Approved plus Project			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*
Alamo Drive – Fry Road									
1	W of Nut Tree	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
2	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
3	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
4	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
5	East of N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
Marshall Road									
6	W of Nut Tree								
7	Nut Tree to Vanden								
8	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
9	Leisure Town (Jepson) to N-S Arterial[1]	-	-	-	-	No (No)	No (No)	No (No)	No (No)
10	East of N-S Arterial[1]	-	-	-	-	No (No)	No (No)	No (No)	No (No)
Elmira Road									
11	Nut Tree to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
12	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
13	East of N-S Arterial[1]	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)

Table 4.7-16
Road Segment Level of Service Thresholds – Existing plus Approved plus Project

#	Road Segment	Existing plus Approved				Existing plus Approved plus Project			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*
Leisure Town Road (Jepson Parkway)									
14	South of Vanden	Yes (Yes)	No (No)	No (No)	Yes (Yes)	Yes (Yes)	No (No)	No (No)	Yes (Yes)
15	Vanden to Alamo	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
16	Alamo to Marshall	No (No)	No (No)	No (No)	No (No)	No (No)	Yes (No)	No (No)	No (No)
17	Marshall to Elmira	No (No)	Yes (Yes)	No (No)	No (No)	No (No)	Yes (Yes)	Yes (Yes)	No (No)
18	Elmira to Ulatis	No (No)	Yes (No)	Yes (No)	No (No)	No (No)	Yes (Yes)	Yes (Yes)	No (No)
19	Ulatis to Orange	No (No)	Yes (Yes)	Yes (No)	No (No)	No (No)	Yes (Yes)	Yes (Yes)	No (No)
20	I-80 Overcrossing	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
North-South Arterial[1]									
21	Elmira to Marshall[2]	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
22	Marshall to Alamo-Fry	-	-	-	-	No (No)	No (No)	No (No)	No (No)
23	Alamo-Fry to Leisure Town (Jepson)	-	-	-	-	No (No)	No (No)	No (No)	No (No)

Source: Vacaville Land Use and Development Code: Chapter 14.13, 2015. Kittelson & Associates, Inc. 2016.
Notes: "-" indicates not applicable. 1 Segment does not exist under existing conditions; 2Segment does not exist under existing + project conditions.
NB/EB = northbound/eastbound; SB/WB = southbound/westbound; Shading in cells means results exceed threshold

4.7-9: Traffic volumes under Cumulative plus Project conditions would be above the LOS C threshold on one study road segment. This is considered a significant impact.

Road segment volumes were assessed for Existing plus Approved conditions and compared to thresholds established by the City of Vacaville. Road segment volumes relative to LOS thresholds for Existing plus Approved and Existing plus Approved plus Project conditions are summarized in Table 4.7-17.

One segment which would exceed LOS C traffic volumes under Cumulative without Project conditions would continue to have traffic volumes above LOS C thresholds with the addition of project traffic:

- Vanden Road (Jepson Parkway) south of Leisure Town Road (#14)

The project would not cause any additional segments to exceed LOS C traffic volumes.

Under the Cumulative and Cumulative with Project scenarios, traffic volumes would be above the LOS C and D thresholds on the following segment:

- Vanden Road south of the Leisure Town Road intersection (#14) in the southbound direction during the weekday AM peak hour and northbound during the weekday PM peak hour.

Mitigation Measures

Implementation of Mitigation Measure TRAFF-8 would increase the road capacity and allow the traffic volumes to be at LOS C or better during the AM and PM peak hours. This section of the Jepson Parkway Road Widening Project is funded and currently being implemented. The road segment would operate above City of Vacaville LOS standards and the project impact would be less than significant.

TRAFF-8 The City shall implement the following improvements and the project shall pay in-lieu fees to the City for the acquisition of necessary right-of-way and installation of the improvements:

- Widen Leisure Town Road (Jepson Parkway) to two through lanes in each direction south of the Vanden Road/Leisure Town Road intersection.

Table 4.7-17
Road Segment Level of Service Thresholds – Cumulative

#	Road Segment	Cumulative without Project				Cumulative with Project			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*
Alamo Drive – Fry Road									
1	W of Nut Tree	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
2	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
3	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
4	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
5	East of N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
Marshall Road									
6	W of Nut Tree	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
7	Nut Tree to Vanden	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
8	Vanden to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
9	Leisure Town (Jepson) to N-S Arterial[1]	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
10	East of N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
Elmira Road									
11	Nut Tree to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
12	Leisure Town (Jepson) to N-S Arterial	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
13	East of N-S Arterial[1]	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)

Table 4.7-17
Road Segment Level of Service Thresholds – Cumulative

#	Road Segment	Cumulative without Project				Cumulative with Project			
		AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
		SB/WB	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*	*SB/WB*	*NB/EB*
Leisure Town Road (Jepson Parkway)									
14	South of Vanden	Yes (Yes)	No (No)	No (No)	Yes (Yes)	Yes (Yes)	No (No)	No (No)	Yes (Yes)
15	Vanden to Alamo	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
16	Alamo to Marshall	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
17	Marshall to Elmira	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
18	Elmira to Ulatis	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
19	Ulatis to Orange	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
20	I-80 Overcrossing	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
North-South Arterial									
21	Elmira to Marshall	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
22	Marshall to Alamo-Fry	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)
23	Alamo-Fry to Leisure Town (Jepson)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)	No (No)

Source: Vacaville Land Use and Development Code: Chapter 14.13, 2015. Kittelson & Associates, Inc. 2016.
Notes: NB/EB = northbound/eastbound; SB/WB = southbound/westbound; Shading in cells means results exceed threshold

Table 4.7-18
Freeway Mainline Segment Level of Service – Existing plus Approved

Freeway Mainline Segment / Direction	Existing plus Approved				Existing plus Approved plus Project			
	AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
	Density	*LOS*	*Density*	*LOS*	*Density*	*LOS*	*Density*	*LOS*
I-80 West of Lagoon Valley Road								
Eastbound	19.3	C	34.0	D	19.4	C	34.3	D
Westbound	35.5	E	23.7	C	35.8	E	23.7	C
I-80 West of Alamo Drive								
Eastbound	20.3	C	32.9	D	20.4	C	33.3	D
Westbound	36.7	E	26.9	D	37.2	E	26.9	D
I-80 East of Leisure Town Road								
Eastbound	20.5	C	29.0	D	20.7	C	29.1	D
Westbound	24.5	C	21.3	C	24.6	C	21.5	C
I-80 East of Midway Road								
Eastbound	22.9	C	26.6	D	23.3	C	26.7	D
Westbound	25.9	C	24.1	C	26.1	D	24.4	C

Source: Performance Enhancement Measurement System (PeMS), 2016. Kittelson & Associates, Inc. 2016.
Notes: Density = passenger cars per mile per lane; LOS = Level of Service

4.7-10: Implementation of the proposed project under Existing plus Approved plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance. This would be a less-than-significant impact.

Freeway mainline freeway segment operations for Existing plus Approved conditions are summarized in Table 4.7-18. Study freeway segments on the CMP system would operate within acceptable standards under both the Existing plus Approved and Existing plus Approved plus Project scenarios. This is a **less-than-significant impact.**

Mitigation Measures

None required.

Table 4.7-19
Freeway Mainline Segment Level of Service – Cumulative

Freeway Mainline Segment / Direction	Cumulative without Project				Cumulative with Project			
	AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*	
	Density	*LOS*	*Density*	*LOS*	*Density*	*LOS*	*Density*	*LOS*
I-80 West of Lagoon Valley Road								
Eastbound	21.4	C	35.9	E	21.5	C	36.3	E
Westbound	36.1	E	26.7	D	36.5	E	26.8	D
I-80 West of Alamo Drive								
Eastbound	22.4	C	35.0	E	22.4	C	35.3	E
Westbound	36.3	E	29.5	D	36.8	E	29.5	D
I-80 East of Leisure Town Road								
Eastbound	21.0	C	36.8	E	21.3	C	37.0	E
Westbound	29.5	D	23.0	C	29.6	D	23.1	C
I-80 East of Midway Road								
Eastbound	21.3	C	32.9	D	21.7	C	33.1	D
Westbound	29.8	D	24.1	C	29.9	D	24.4	C

Source: Performance Enhancement Measurement System (PeMS), 2016. Kittelson & Associates, Inc. 2016.
Notes: Density = passenger cars per mile per lane; LOS = Level of Service

4.7-11: Implementation of the proposed project under Cumulative plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance. This would be a less-than-significant impact.

Freeway mainline freeway segment operations for Cumulative conditions are summarized in **Error! Reference source not found.**4.7-19. Study freeway segments on the CMP system would operate within acceptable standards under both the Cumulative without Project and Cumulative with Project scenarios. This is a **less-than-significant impact**.

Mitigation Measures

None required.

4.7.6 References

City of Vacaville, 2035 General Plan Update, 2015.

Roberts' Ranch Specific Plan.

Institute of Transportation Engineers', Trip Generation, Ninth Edition.

Federal Highway Administration, Highway Capacity Manual 2010.

California Department of Transportation and UC Berkeley, Performance Enhancement Measuring System (PeMS), Traffic Volumes Database.

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U.S. Access Board. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (2011). https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines. Accessed October 20, 2016.

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CHAPTER 5
CEQA CONSIDERATIONS

5.0 INTRODUCTION

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the Environmental Impact Report (EIR) must also identify (1) significant environmental effects of the proposed project, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, (4) growth-inducing impacts of the proposed project, and (5) alternatives to the proposed project (evaluated in Chapter 6, Project Alternatives).

5.1 SIGNIFICANT ENVIRONMENTAL EFFECTS

Chapter 2, Executive Summary, and Sections 4.1 through 4.7 of this Draft EIR provide a comprehensive identification of the proposed project's significant environmental effects, including the level of significance both before and after mitigation.

5.2 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed project on various aspects of the environment are discussed in detail in the technical sections contained in Chapter 4, Environmental Analysis, of this Draft EIR. There are six project-specific and cumulative impacts that cannot be avoided if the project is approved in Air Quality and Transportation and impacts will remain significant and unavoidable. In addition, the project would contribute to the significant and unavoidable impacts identified in the General Plan EIR, as further described in Appendix B. The remainder of the impacts can be mitigated to a less-than-significant level through the adoption of recommended mitigation measures.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS

Section 15126.2 (c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental change that would be caused by the proposed project. Generally, a project would result in significant irreversible changes if:

- The primary and secondary impacts would generally commit future generations to similar uses (such as highway improvement that provides access to a previously inaccessible area);
- The project would involve a large commitment of nonrenewable resources (CEQA Guidelines Section 15126.2(c));

- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- The project would involve a large commitment of nonrenewable resources; or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the proposed project would result in the long-term commitment of resources of the project site to urban land use. The development of the proposed project would likely result in or contribute to the following irreversible environmental changes:

- Conversion of undeveloped land, currently used for agriculture. Approximately 248 acres of undeveloped land would be converted to urban uses, thus precluding other alternate land uses in the future.
- Irreversible consumption of energy and natural resources associated with the future use of the site.

Development of the proposed project would result in the commitment of the project site to urban development, thereby precluding other uses for the lifespan of the project. Restoration of the site to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment.

Resources that would be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels. Wood products, asphalt, and concrete would be used in construction along with gas and diesel fuel. With respect to operational activities, compliance with all applicable state and local building codes, as well as mitigation measures, planning policies, and standard conservation features, would ensure that resources are conserved to the maximum extent possible. The project would incorporate a number of sustainable practices that reduce the consumption of energy. Nonetheless, construction activities related to the proposed project would result in irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels, natural gas, and gasoline and diesel for automobiles and construction equipment.

The CEQA Guidelines also require a discussion of the potential for irreversible environmental damage caused by environmental accidents associated with the project. While the project would result in the use, transport, storage, and disposal of minor amounts of hazardous materials during project construction and operation, as described in the Initial Study, all such activities would comply with applicable local, state and federal laws related to the use, storage and transport of

hazardous materials, which significantly reduces the likelihood and severity of accidents that could result in irreversible environmental damage. The project itself does not include any uniquely hazardous uses that would require any special handling or storage. Further, the project does not contain any industrial uses that would use or store acutely hazardous materials.

Implementation of the proposed project would result in the long-term commitment of resources to urban development. The most notable significant irreversible impacts include the use of non-renewable and/or slowly renewable natural and energy resources, such as lumber and other forest products and water resources during construction activities. Operations associated with future uses would also consume natural gas and electricity. These irreversible impacts, which are unavoidable consequences of urban growth, are described in detail in the appropriate sections of this Draft EIR (see Chapter 4).

5.4 GROWTH-INDUCING IMPACTS

As required by Section 15126.2(d) of the CEQA Guidelines, an EIR must discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also, the EIR must discuss the characteristics of the project that could encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Growth can be induced in a number of ways, such as through the elimination of obstacles to growth, the stimulation of economic activity within the region, or the establishment of policies or other precedents that directly or indirectly encourage additional growth. Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence. Induced growth would be considered a significant impact if it can be demonstrated that the potential growth, directly or indirectly, significantly affects the environment.

In general, a project could foster spatial, economic, or population growth in a geographic area if the project removes an impediment to growth (e.g., the establishment of an essential public service, the provision of new access to an area, or a change in zoning or General Plan amendment approval), or economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion). These circumstances are further described below.

- **Elimination of Obstacles to Growth:** This refers to the extent to which a proposed project removes infrastructure limitations or provides infrastructure capacity, or removes regulatory constraints that could result in growth unforeseen at the time of project approval.
- **Economic Effects:** This refers to the extent to which a proposed project could cause increased activity in the local or regional economy. Economic effects can include such effects as the “multiplier effect.” A “multiplier” is an economic term used to describe interrelationships among various sectors of the economy. The multiplier effect provides a

quantitative description of the direct employment effect of a project, as well as indirect and induced employment growth. The multiplier effect acknowledges that the on-site employment and population growth of each project is not the complete picture of growth caused by the project.

Elimination of Obstacles to Growth

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect, though not necessarily a significant one. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines, into areas that are not currently provided with these services would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

Removal of Infrastructure Limitations or Provision of Capacity

The elimination of physical obstacles to growth is considered a growth-inducing effect, though not necessarily a significant one. The physical constraints to growth in the vicinity of the project site include the Southern Pacific Railroad right-of-way on the east, the approved Brighton Landing project in the City of Vacaville to the north, and existing residential development west of the site.

The proposed project includes sizing of on-site infrastructure to serve development approved under the project. The project site is located in the City of Vacaville's planned Sphere of Influence and is proposed for annexation. Due to the location of the project site, existing residential development immediately west of the site and the recently approved Brighton Landing project would preclude development to the north and west; and the Southern Pacific right-of-way borders the project site to the east, which would preclude inducing growth to the east. Undeveloped land in the County is located to the south of the project site, which could feasibly be developed in the future. Land to the south of the project site and west of the Southern Pacific rail lines is included within the City's Urban Growth Boundary, Urban Services Boundary, and Sphere of Influence. Development of on-site infrastructure to accommodate the project could be considered growth inducing because it may hasten new development to the south. Lands to the north and west are either developed or under development, while lands to the east are limited by the rail lines. The proposed project would not eliminate any constraints that are currently obstacles to growth in this portion of the City, with the exception of extending utility infrastructure to serve the project site that could hasten development to the south of the project site.

Economic Effects

The proposed project would affect the local economy by the construction of new residences that would encourage people to live in Vacaville and would help encourage people to stay in the City to take advantage of proximity to local shops, restaurants, and other amenities in nearby downtown Vacaville.

Additional local employment can be generated through the multiplier effect, as discussed previously in this chapter. The multiplier effect tends to be greater in regions with larger, diverse economies due to a decrease in the requirement to import goods and services from outside the region.

Two different types of additional employment are tracked through the multiplier effect. *Indirect* employment includes those additional jobs that are generated through the expenditure patterns of direct employment associated with the project. Indirect jobs tend to be in relatively close proximity to the places of employment and residence.

The multiplier effect also calculates *induced* employment. Induced employment follows the economic effect beyond the expenditures of the residents within the project area to include jobs created by the stream of goods and services necessary to support residences within the proposed project. When a manufacturer buys or sells products, the employment associated with those inputs or outputs are considered *induced* employment.

For example, when an employee of the project goes out to lunch, the person who serves the employee lunch holds a job that is *indirectly* related to the proposed project. When the server then goes out and spends money in the economy, the jobs generated by this third-tier effect are considered *induced* employment.

The multiplier effect also considers the secondary effect of employee expenditures. Thus, it includes the economic effect of the dollars spent by those employees and residents who support the employees of the project.

Increased future employment generated by employee spending ultimately results in physical development of space to accommodate those employees. It is the characteristics of this physical space and its specific location that will determine the type and magnitude of environmental impacts of this additional economic activity. Although the economic effect can be predicted, the actual environmental implications of this type of economic growth are too speculative to predict or evaluate, since they can be spread throughout the City, Solano County, and beyond.

Impacts of Induced Growth

The growth induced directly and indirectly by the proposed project could contribute to the environmental impacts, discussed in Chapter 4, in the City and the County, as well as the

greater regional area. Any such environmental effects, however, are too diffuse and speculative to predict or describe with any particularity.

Indirect and induced population growth in the City would further contribute to the loss of open space because it would encourage the conversion of undeveloped land to urban uses for additional housing and infrastructure. However, it is assumed this new growth would occur within areas of the City designated and zoned for development or planned for potential future urban development within the area planned by the City for such growth. Again, however, the particular open space that might get converted cannot be predicted with any particularity, all such conversions to urban land use would occur within areas planned for growth in the City's General Plan.

In summary, although the proposed project can be said to induce growth, the consequences of such growth-inducement are too speculative to predict and thus cannot be said to contribute meaningfully to any significant environmental effect. Growth-inducing effects are therefore considered **less than significant.**

5.5 ENERGY USAGE

Measures intended to reduce unnecessary or inefficient use of resources or energy consumption are incorporated into the City's adopted Energy & Conservation Action Strategy (ECAS). Implementation of the proposed project, which is consistent with the General Plan and ECAS, would result in the commitment of limited, renewable resources such as lumber and water. In addition, development allowed by the General Plan would irretrievably commit nonrenewable resources for the construction and maintenance of buildings, infrastructure, and roadways. These non-renewable resources include mined materials such as sand, gravel, steel, copper, and other metals. The City recognized that buildout of the General Plan also represents a long-term commitment to the consumption of fossil fuels, natural gas, and gasoline. Increased energy demands would be used for construction, lighting, heating, and cooling of residences, and transportation of people within, to, and from the EIR Study Area. General Plan Goals COS-10 and COS-11 and their associated policies and actions promote energy conservation, which would minimize or incrementally reduce the consumption of these resources. In addition, the ECAS includes measures to promote energy conservation and the development of renewable energy in Vacaville. In particular, Measure GB-1 provides incentives for green building certification, Measure GB-2 requires measures that reduce energy use through solar orientation, and Measures RE-1 and RE-5 include solar-related requirements for new development. The project incorporates features designed to implement these measures and would not result in effects not addressed in the General Plan EIR.

5.6 CUMULATIVE IMPACTS

CEQA requires that an EIR contain an assessment of the cumulative impacts that could be associated with the proposed project. This assessment involves examining project-related effects on the environment in the context of similar effects that have been caused by past or existing projects, and the anticipated effects of future projects. As indicated in the CEQA Guidelines, the discussion of cumulative impacts need not provide the same level of detail as project-related impacts. The discussion should be guided by "standards of practicality and reasonableness" (CEQA Guidelines, Section 15130(b)). Although project-related impacts can be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed (14 CCR 15130(a)). Where a lead agency concludes that the cumulative effects of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable probable future projects are significant, the lead agency then must determine whether the project's incremental contribution to such significant cumulative impact is "cumulatively considerable" (and thus significant in and of itself).

Cumulative Context

To ensure an adequate discussion of cumulative impacts is included in an EIR, CEQA allows the lead agency to use either a list of past, present, and probable future projects (including those projects outside of the control of the lead agency), or projections included in an adopted local, regional, or statewide plan like a general plan (CEQA Guidelines, Section 15130(b)(1)). The general cumulative impact context for evaluating cumulative impacts for the majority of the technical issue areas evaluated in Chapter 4 of this Draft EIR considers development projections identified in the City's General Plan, or evaluates the potential loss of resources on a much broader, regional scale. This cumulative impact analyses in this Draft EIR thus do not rely on any list of specific pending, reasonably foreseeable development proposals in the general vicinity of the proposed project.

It is important to note that the basis of the cumulative analysis varies by technical area. For example, traffic and traffic-related air emissions and noise analyses assume development that is planned and/or anticipated in the City, as well as the surrounding unincorporated area, because each contributes to traffic on local and regional roadways that is quantifiable. Operational air quality impacts are evaluated against conditions in the City and surrounding areas within the Sacramento Federal Nonattainment Area for ozone. The cumulative analysis in each of the technical sections evaluates the proposed project's contribution to the cumulative scenario. A description of the cumulative context for each issue area evaluated is included in the cumulative impacts at the end of each technical section of Chapter 4.

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CHAPTER 6
ALTERNATIVES TO THE PROPOSED PROJECT

6.1 INTRODUCTION

The following discussion is intended to inform the public and decision makers of feasible alternatives to the proposed project that would avoid or substantially lessen any significant effects of the project. Section 15126.6(a) of the CEQA Guidelines states that:

> An EIR shall describe a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternative. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.

Consistent with the CEQA Guidelines, the EIR does not consider every conceivable alternative to the project or multiple variations on the alternative that it does consider. Rather, the EIR considers a reasonable range of potentially feasible alternatives that would mitigate or avoid potentially significant impacts of the proposed project in order to foster informed decision making and public participation.

As described in the City of Vacaville's 2015 General Plan EIR, the residential densities and uses to be developed on the project site were evaluated extensively by the City during its General Plan Update process, between 2010 and 2015. The City specifically evaluated a range of land use alternatives for the East of Leisure Town Road growth area and determined that the project site should be developed at certain residential densities designed to accomplish the City's policies and objectives with respect to housing and planned growth of the City. The low density and low-medium density residential General Plan land use designations of the proposed project are the result of the City's review process and policy determinations. These land use designations are reflected in the proposed zoning and development plan for the Roberts' Ranch Specific Plan area, which was designed following the City's decision on preferred land uses for this site. The City's policy to accommodate anticipated housing growth is reflected in the analysis of project alternatives below. Due to this extensive analysis, incorporated by reference into this EIR, this EIR does not evaluate alternatives involving densities that conflict with the policy decisions made during the recent General Plan Update process.

The alternatives to the project analyzed below include a "No Project" Alternative. A "No Project" Alternative is required under Section 15126.6(e)(1) to allow decision makers to compare the impacts of the proposed project with the impacts of not approving the project. Each

alternative is analyzed against the significance thresholds considered in Chapter 4, Environmental Evaluation. This chapter assesses whether the impacts of the alternatives would be greater than, less than, equal to or similar to those of the proposed project.

This chapter identifies the proposed project objectives, describes the project alternatives, and evaluates the comparative effects of the alternatives relative to the proposed project. All of the project alternatives evaluated do not change the total number of residential units included as part of the proposed project, with the exception of the No Project/No Development Alternative that forgoes development entirely. As required under Section 15126.6(e)(2) of the CEQA Guidelines, the environmentally superior alternative is identified and included at the end of this chapter.

Alternatives to the proposed project are:

- **No Project/No Development Alternative** – Which assumes the project site would remain in its current undeveloped condition.
- **Active Park Alternative** – This alternative assumes that 7.7 acres of the passive open space included along the eastern boundary of the plan area would be developed with active recreation uses, such as basketball courts, play grounds, and other uses for the community which would increase the acreage made available for community park recreational uses. With the project's 7.7 aces of active park uses this alternative would provide active park uses in an area designated as Open Space on the proposed land use plan. Development of the remainder of the site, including the number of residential units, the remaining open space area, infrastructure, utilities and roadways would be the same as the proposed project.
- **No School Alternative** – This alternative assumes the 16.5 acre school site would be zoned for residential uses. For this alternative, no additional residential units would be developed. Instead, the 785 units would be spread across the additional 16.5 acres allowing for some larger lot, lower density residential development. Development of the remainder of the site, including infrastructure, utilities and roadways would be the same as the proposed project.
- **Open Space Alternative** – Under the Open Space Alternative, the 16.5 acre school site would be set aside as open space increasing the amount of open space on the project site to approximately 30 acres. Development of the remainder of the site would be the same as the proposed project.

Significant and Unavoidable Impacts

The project would result in the following significant and unavoidable air quality impacts on both a project level and cumulatively and the following project level and cumulative

traffic impacts. There is no feasible mitigation available to reduce these impacts to less than significant.

- Operation of the proposed project would result in emissions of ROG, NOx, or PM_{10} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions under both project level and cumulative conditions.
- Implementation of the proposed project would increase traffic volumes above the LOS C threshold on Leisure Town Road between Ulatis Road and Elmira Road.
- Under Existing plus Approved plus Project conditions, traffic volumes would exceed intersection LOS operations at Leisure Town Road (Jepson Parkway) / Sequoia-White Pine Street (#4) intersection and at the Elmira Road / Nut Tree Road (#17) intersection.
- Under Cumulative plus Project conditions, intersection operations would exceed LOS at the Elmira Road / Nut Tree Road (#17) intersection.
- Traffic volumes under Existing plus Approved plus Project conditions would cause traffic volumes to exceed the LOS C threshold at Leisure Town Road between Ulatis Road and Orange Drive.

Project Objectives

Pursuant to CEQA Guidelines, Section 15124(b), a clear statement of project objectives is required. The project includes the following project objectives.

- Provide for the orderly, well planned, and balanced development of future projects in the East of Leisure Town Road Growth Area, consistent with the City's growth projections and policies, and consistent with the City's envisioned urban form for the East of Leisure Town New Growth Area, as included in the City's General Plan adopted in August 2015.
- Support the City's long-range growth plans for new growth areas by directing growth to areas identified as priority for urban growth in the General Plan and to support the orderly provision of City services to this new growth area.
- Support the City's General Plan policies, including the encouragement of moderate-density housing and a variety of housing designs.
- Support improvements to Leisure Town Road (Jepson Parkway), including planning and funding for development of frontage roadway features and landscaping.
- Provide public benefits such as stroller parks, schools, multi-use trails, dedicated open space and recreational areas, and pedestrian and bike connectivity to enhance the City's existing recreational opportunities.

- Provide unique open spaces designed to provide compatible recreational opportunities adjacent to agricultural buffers and flood control facilities, to create innovative features within a well-planned residential community.
- Provide infrastructure and services that meet City standards and are integrated with existing and planned facilities and connections.
- Create livable residential neighborhoods through the use of high quality building materials and design standards and through high quality pedestrian and bike facilities within the project.
- Support the implementation of sustainability features to encourage efficient use of the project site through building and landscape designs.

6.2 ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER CONSIDERATION

As noted previously, the purpose of an alternatives analysis is to develop alternatives to the proposed project that substantially lessen at least one of the significant environmental effects identified as a result of the project, while still meeting most, if not all, of the basic project objectives. Project alternatives that would change the mix of uses that would lessen the severity of some of the impacts identified under the project are addressed later in this chapter.

The EIR prepared for the City's General Plan Update evaluated a few different land use alternatives that included the project site. The General Plan Update process began in March 20I0 and included extensive community input including seven City Council study sessions, 17 Steering Committee meetings, and four community workshops, all of which were open to the public and included extensive public comment. Within this process, one community workshop, eleven Steering Committee meetings, and six City Council meetings were specifically devoted to creating, evaluating, and selecting among the various land use alternatives. The Planning Commission also held three hearings on the Draft General Plan (August 5, August 18, and September, 22, 2014) and recommended that several revisions be incorporated into the final plan documents. At its January 13, 2015 meeting, the City Council directed staff to prepare a Final Revised Focused Growth land use plan for the East of Leisure Town Road Growth Area. The City Council then held another hearing on March 24, 2015, to consider the Revised Focused Growth Alternative land use alternative for the East of Leisure Town Road Growth Area. During this process, the land use alternatives were evaluated and compared in relation to market and financing feasibility, utilities and transportation, infrastructure needs, public service needs, and impacts on environmental resources.

At the end of this process, on August 11, 2015, the City Council approved the Revised Focused Growth Alternative for the East of Leisure Town Road Growth Area, including

the project site, which resulted in a reduction in residential scale and density. The approved General Plan includes Policy LU-P17.1, which limits residential development on the project site to 785 residential units. After considering several reduced density alternatives (which includes the project site), according to the General Plan, "the proposed General Plan land use map represents a land use plan that the City believes is most appropriate to accommodate growth projected for 2035 and beyond" (City of Vacaville 2015).

To allow for the approved density, as provided in Section 4.5 of the General Plan Update EIR, the City's General Plan Land Use map (City of Vacaville 2015, Figure LU-6) designates various portions of the project site Residential Low Density (3.1-5 units/acre), Residential Low-Medium Density (5.1-8.0 units/acre), schools, agricultural buffer, and public open space. The proposed project would zone the project site to be consistent with the General Plan land use designations. Consistent with the General Plan designations and the policy of designating land to accommodate growth beyond 2035, the project includes approximately 785 single-family residences with an average density of 3.2 dwelling units/acre (du/ac). As indicated in Table 3.1 in Chapter 3, Project Description, land to be zoned RL would have an average density of between 3.5 and 3.9 du/ac, and land zoned RLM would have an average density of 5.2 du/ac. These proposed densities are already at the lower range indicated by the General Plan for the project site.

As indicated, the City has previously evaluated reduced residential densities and intensity for the project site at length and determined that the project site should be developed at the proposed project's densities to accomplish the City's policies and objectives with respect to housing. A Reduced Density Alternative would fail to conform to the densities set forth by the General Plan's land use designations for the project site, would fail to meet the General Plan policies of encouraging moderate density housing, and would fail to advance the City's stated policy of accommodating a higher amount of projected growth beyond 2035. The City's policy of accommodating growth is also consistent with the Housing Accountability Act and its requirement that jurisdictions "give adequate attention to the economic, environmental, and social costs of decisions that result in disapproval of housing projects, reduction in density of housing projects, and excessive standards for housing projects." Furthermore, because a Reduced Density Alternative would develop the same acreage as the proposed project, just at a lower density, this alternative would fail to avoid the impacts of the project with respect to biological resources, cultural resources, and hydrology, drainage and water quality, and would have only a slight reduction in impacts regarding air quality, traffic, and utilities. Alternately, leaving a portion of the site as agricultural land use would similarly conflict with the General Plan land use determination that this site is appropriate for urban land uses. The project site is also relatively uniform in physical conditions making it less useful to eliminate development on any particular portion of the site as a way to further resource protection considerations.

Thus, the City has considered and rejected the Reduced Density Alternative because it fails to advance policies of the City and of the State to accommodate housing needs, and because this alternative would fail to avoid or lessen many of the environmental impacts of the project.

An Off-Site Alternative was also dismissed because as discussed in *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553 (*Goleta II*), where a project is consistent with an approved general plan, no off-site alternative need be analyzed in the EIR. The EIR "is not ordinarily an occasion for the reconsideration or overhaul of fundamental land-use policy." (*Goleta II, supra*, 52 Cal.3d at p. 573.) In approving a general plan, the local agency has already identified and analyzed suitable alternative sites for particular types of development and has selected a feasible land use plan. "Informed and enlightened regional planning does not demand a project EIR dedicated to defining alternative sites without regard to feasibility. Such ad hoc reconsideration of basic planning policy is not only unnecessary, but would be in contravention of the legislative goal of long-term, comprehensive planning." (*Goleta II, supra*, 52 Cal.3d at pp. 572-573.) The project site is designated consistent with the City's Land Use Map (City of Vacaville 2015, Figure LU-6) and is requesting the site be pre-zoned Residential Low Density (RL-5 & RL-6), Residential Low Medium Density (RLM-3.6) and Community Facilities (CF) with an agricultural buffer overlay zone over portions of the publicly owned lands, consistent with the existing land use designations. Therefore, the EIR need not analyze an offsite alternative.

6.3 ALTERNATIVES TO THE PROPOSED PROJECT CONSIDERED IN THIS EIR

This section provides a description of the alternatives to the proposed project analyzed in this Draft EIR and evaluates how specific impacts differ in severity from those associated with the project. For purposes of this analysis, the potentially significant impacts identified under the alternatives analysis are assumed to be fully mitigated through compliance with mitigation measures identified in Sections 4.1 through 4.7 included in Chapter 4, which contains the environmental analysis of the proposed project.

The project alternatives identified herein address the significant impacts (before mitigation) identified for the project including biological resources, traffic, and air emissions associated with project construction. Thus, the alternatives developed for the project contemplate a change in land uses that include a reduction in development to address these impacts. All of the alternatives evaluated do not change the total number of residential units or stroller parks. The primary change is in the amount of open space and how the 16.5 acre future school site is developed. In many instances, the impacts are virtually identical to the proposed project and are described as such.

This Draft EIR has incorporated a reasonable range of project alternatives that, collectively, attain a majority of the project objectives in a reasonable manner while reducing the severity of the significant impacts (before mitigation) identified under the proposed project.

The alternatives to the proposed project analyzed in this Draft EIR are:

- **Alternative 1:** No Project/No Development
- **Alternative 2:** Active Park
- **Alternative 3:** No School
- **Alternative 4:** Open Space

As noted previously, because the number of residential units would not change under any of the project alternatives the increase in air emissions associated with project construction and operation would only change by a small amount under alternatives 2, 3, and 4. Therefore, air emissions are not quantified. In addition, the demand for wastewater conveyance and treatment, increase in solid waste and energy, and trip generation would essentially not change from the project because the number of residential units and anticipated number of new residents would not change. Therefore, the trip generation, and increase in demand for public utilities is not quantified for each alternative.

Alternative 1: No Project/No Development Alternative

Description

The No Project/No Development Alternative considers the effects of forgoing the project entirely, and leaving the project site in its current, vacant condition. Under the No Project/No Development Alternative, the proposed project would not be adopted. The approved build-out for the Specific Plan area as set forth in the General Plan would not be developed and the project site would not be annexed into the City. In addition to not providing up to 785 residential units, over 25 acres of parks, open space and trails, and improvements to the transportation network, the No Project/No Development Alternative would not provide trail, road, or utility connections to the Brighton Landing project. In addition, a site for a future new school would also not be provided. Under this alternative, the project site would not be zoned and developed in a manner consistent with the General Plan land use designations. This alternative would also not meet the City's policies, General Plan or project objectives, or State policies of promoting the development of new housing. For policy reasons, and because the No Project/No Development Alternative would fail to meet any of the basic objectives of the project or of the City's General Plan, this alternative could be rejected in favor of the proposed project. The No Project/No Development Alternative thus allows decision-makers to compare the impacts of the proposed project to retaining the existing condition of the site. The No Project/No Development Alternative describes the environmental conditions that exist at the time that the environmental analysis commenced (CEQA Guidelines, Section 15126.6 (e)(2)).

Comparative Analysis of Environmental Effects

The No Project/No Development Alternative would produce no changes on the project site, because the site would remain in its current condition, effectively eliminating those project impacts discussed in this Draft EIR. There would be no air emissions associated with project construction and operation and would not increase emissions of ROG, NOx, or PM_{10} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. There would be no land disturbance so there would be no impacts to biological or cultural resources so no mitigation would be required. There would be no increase in the number of vehicles accessing the site and on area roadways and intersections, or increase in demand for public utilities. Mitigation would not be required to address capacity of the wastewater treatment plant or traffic.

Relationship to the Project Objectives

The No Project/No Development Alternative would not achieve any of the project objectives.

Alternative 2: Active Park Alternative

Description

The proposed project would include approximately 21.2 acres of passive open space along the eastern boundary of the plan area as well as approximately 2.5 acres of stroller parks. Under the Active Park Alternative, approximately 7.7 acres of this passive open space would be developed with additional active recreation uses, such as basketball courts, play grounds, athletic fields, and other uses for the community. This alternative would increase the acreage made available for community park recreational uses in the City by an additional 7.7 acres. These park facilities would be placed outside of agricultural buffer areas designated on the site. Therefore, the additional land designated for active park uses would have a beneficial impact on the City's planned park service ratios. These facilities would be designed to serve as Community Park facilities as defined in the City's Park Master Plan and would replace planned facilities that would be deleted from the planned Community Park near the intersection of Leisure Town Road and Elmira Road. Approximately 7 acres within that Community Park has been newly designated as the likely location for recreational facilities that are not part of the City's planned program of uses in Community Parks, thus leading to a loss of potential Community Park use at that location (i.e., the proposed "Play for All" park would use a portion of this planned Community Park, thus eliminating certain community park facilities from the City's planned park master plan).

Comparative Analysis of Environmental Effects

The Active Park Alternative would have the following impacts compared to the proposed project.

Air Quality. The conversion of over 7 acres to active park uses would increase construction activities resulting in a small increase in air emissions in the local air basin caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment. In addition, emissions would be created from off-site trucks hauling materials and from construction workers travelling to and from the site. The Active Park Alternative may also generate some additional vehicle trips within Roberts' Ranch upon completion as people travel to and use the recreational facilities from adjacent neighborhoods. However, having a community park in this part of the City would likely reduce the length of trips to other community park facilities in the City, and, this alternative may also divert some vehicle trips from that intersection toward other local intersections. However, the number of trips would be small and as with the proposed project, implementation of mitigation measure AQ-1 would reduce these impacts to a less-than-significant level, although this impact may be slightly greater than the proposed project. It is anticipated the increase in ROG, NOx, or PM10 associated with project operation would be similar to the proposed project and would remain a significant and unavoidable impact even with mitigation (AQ-2). It is anticipated the cumulatively considerable net increase of criteria pollutants for which the project area is in non-attainment under federal or state ambient air quality standard would also remain a significant and unavoidable impact. The addition of active park uses would not change this significance finding because it is primarily associated with development of the remainder of the project site.

Biological Resources. As passive open space under the proposed project, the 7.7 acres would provide potential foraging or nesting opportunities for wildlife present on the site, resulting in a small reduction of potential impacts to biological resources. By converting the passive open space to active park uses outside the agricultural buffer, the Active Park Alternative would foreclose the use of this portion of the open space area as foraging and/or nesting habitat, this would result in similar impacts as the proposed project, but slightly more intense because the project would not set aside any lands as passive open space. Mitigation Measures BIO-1 through BIO-6 and BIO-8 would still be required to mitigate for the loss of foraging and nesting habitat for Burrowing owl and Swainson's hawk under both project and cumulative conditions during project construction and operation. The amount of land required to mitigate for the loss of foraging habitat for Swainson's hawk and burrowing owl would increase under this alternative and be slightly greater than the project.

Cultural Resources. As identified for the proposed project, ground-disturbing activities associated with construction of the proposed project have the potential to encounter or disturb previously unidentified subsurface archaeological resources or unrecorded human

remains. The Active Park Alternative would further increase this possibility due to the additional grading required for the active recreational facilities. As with the proposed project, impacts of the Active Park Alternative would be mitigated to a less-than-significant level with mitigation measures CUL-1 and CUL-2.

Hydrology, Drainage, and Water Quality. Conversion of 7.7 acres of open space to active park uses would not be the same as developing more residential uses (or any other development) that would result in the contribution of more impervious surface area. The active park uses would include ball fields with some hard surface courts, such as basketball courts. However, the amount of impervious surface area would be minor and should not significantly change the findings of the Storm Drainage Report prepared for the project. It is anticipated no additional drainage facilities would be required and the same mitigation measures (HYDRO-1, HYDRO-2, and HYDRO-3) including preparing a Storm Drain Master Plan, would be required.

Land Use and Planning. The proposed project is consistent with the City of Vacaville General Plan and Zoning Ordinance as well as the Travis Air Force Base Airport Land Use Compatibility Plan land use restrictions and would not result in wildlife attractants. The addition of more recreation space would not result in any inconsistency with the City's General Plan or the Travis Air Force Base Airport Land Use Compatibility Plan. Therefore, land use impacts under this alternative would be the same as the proposed project.

Public Utilities. The addition of 7.7 acres of active park uses would not result in any increase in severity of impacts to public utilities, because the number of residential units is not changing. Mitigation measures WW-1 and WW-2 would still be required for this alternative.

Transportation and Circulation. Traffic is primarily generated by the 785 residential units and the addition of active park uses would only generate a small increase in vehicle trips. Typically these trips would not occur during the AM and PM peak hours, but during the weekends. It is anticipated there could be a small increase in vehicle trips from people driving to access the active park facilities. However, these trips would primarily come from internal roadways and from roadways that connect the project site to Brighton Landing to the north. The small increase in vehicle trips are not anticipated to contribute to a decline in LOS at any of the intersections analyzed, degrade operations at any intersection, significantly increase traffic volumes on the freeway, impede emergency access or adversely affect transit, bicycle or pedestrian movements. The impacts and mitigation measures identified under the proposed project would still be required because the number of residential units would not change. Therefore, mitigation measures TRAFF-1 through TRAFF-8 would still be required under this alternative to address impacts primarily associated with development of the remainder of the project site.

Relationship to the Project Objectives

If the proposed project was not approved and development was to occur consistent with the Active Park Alternative generally all of the project objectives would be met because the type, density and amount of development would not change from what was included in the proposed project. In addition, the Active Park Alternative supports the project objectives of providing for growth consistent with the 2015 General Plan by providing land to fulfill the City's long-range plan for community park facilities that would otherwise not be achieved because of recent changes in the size and design of the existing Community Park site designated north of Elmira Road.

Alternative 3: No School Alternative

Description

The proposed project would provide a site for a future middle school. The project includes 16.5 acres set aside for a future middle school to complement the proposed K-6 school included as part of the Brighton Landing project. Under the No School Alternative, the school site would not be set aside, but would instead be zoned for residential uses. For this alternative, no additional residential units would be developed. Instead, the 785 units would be spread across the additional 16.5 acres made available by the school site, which would allow for some larger lot, lower density residential development. This alternative would not change any of the other project components and would result in the same amount of land disturbance as the proposed project, as discussed below, and would fail to avoid or lessen several of the project's impacts.

Comparative Analysis of Environmental Effects

Air Quality. Under this alternative the same number of residential units would be developed as well as project roadways, utilities, and parks, the same as the proposed project. Construction-related air emissions would be essentially the same or very similar to the proposed project because generally the amount of development has not changed. Mitigation measure AQ-1 would still be required to reduce emissions of ROG, NO_x, or PM_{10} associated with construction activities and equipment. Therefore, construction-related air emissions would not change from what was analyzed as part of the project. Operational air emissions may slightly increase due to more students traveling to the closest middle school via car versus walking or riding their bikes from residences in the neighborhood. However, this increase in emissions would be relatively small and would not likely result in a change in the operational emissions analyzed as part of the project. The project identified a potentially significant impact associated with an increase in ROG and NO_x due to vehicle trips and PM_{10} associated with wood burning fireplaces. Mitigation measure AQ-2 requires additional features be added to the project to encourage use of alternative modes of transportation and to eliminate the use of wood burning devices. This mitigation would still be required for this alternative.

Biological Resources. The amount of land disturbance under this alternative would essentially be the same as the proposed project. Development of the 16.5 acre school site was assumed in the analysis of biological impacts; therefore, under this alternative impacts to biological resources would be the same as the proposed project and mitigation measures BIO-1 through BIO-8 would still be required.

Cultural Resources. Similar to biological resources, future development of this site was assumed in the analysis of Cultural Resources including development of the 16.5 acre school site. Impacts to unknown subsurface archeological and historic resources as well as the potential to unearth human remains would not change under this alternative. Therefore, mitigation measures CUL-1 and CUL-2 would still be required.

Hydrology, Drainage, and Water Quality. Development of the 16.5 acre future school site with residential uses would add more impervious surfaces than what would be anticipated if a school were developed because a school typically includes large athletic fields. Regardless, any change in impervious surface area would be small and would not change the severity of the impact identified for the project or the need for additional detention capacity. Mitigation measures HYDRO-1, HYDRO-2, and HYDRO-3 would still be required for this alternative to ensure impacts associated with an increase in erosion and downstream runoff and detention would be reduced to less than significant.

Land Use and Planning. Similar to the proposed project converting the 16.5 acre school site to residential development would still be consistent with the Travis Air Force Base CLUP. In addition, because the same number of residential units would be developed as the proposed project and a Specific Plan would also be prepared; therefore, this alternative would also be consistent with the City's general plan goals and policies, specifically plans for development in the East of Leisure Town Road Growth Area. The overall density of the project would decrease given the addition of up to 16.5 acres of land allowing for some larger lot, lower density residential development. Because the total number of units would not change, impacts associated with consistency with applicable plans and policies would remain less than significant, the same as the proposed project. However, because this alternative would eliminate a previously identified school site, it would conflict with adopted policies for the provision of adequate school sites in the new growth areas (General Plan Figure PUB-3), and the City as a whole, and would potentially conflict with goals and policies in the General Plan that encourage the location of adequate school facilities near planned residential neighborhoods. Furthermore, residential uses would not be consistent with the current General Plan land use designation and would not support the project's objectives of being consistent with the City's envisioned urban form for the new growth area.

Public Utilities. Similar to biological and cultural resources, future development of this site was assumed in the analysis of public utilities. Because the total number of residential units is not changing the increase in demand for wastewater conveyance and treatment, solid waste collection and disposal, and energy resources would be the same as the project. Therefore, mitigation measures WW-1 and WW-2 would still be required to address wastewater treatment capacity and conveyance capacity.

Transportation and Circulation. Under this alternative the future middle school site would be converted to residential development. Therefore, middle school children in both the project site and the adjacent Brighton Landing project would not be able to walk or ride their bicycles to school resulting in more vehicle trips to drive children to the nearest middle school. The increase in vehicle trips would contribute to degrading the LOS at the Leisure Town Road (Jepson Parkway) / Elmira Road intersection and contributing vehicles to Leisure Town Road (Jepson Parkway) between Marshall Road and Elmira Road and between Elmira Road and Ulatis Road, contributing to a decline in LOS along this portion of Leisure Town Road. The increase in vehicle trips would be small, but would be slightly greater than under the proposed project. Mitigation measures TRAFF-1 through TRAFF-4 would still be required for project level impacts to ensure the impacts are reduced to a less-than-significant level. In addition, under this alternative there would be a small contribution to the significant cumulative effects identified for the project. Mitigation measures TRAFF-5 through TRAFF-8 would still be required to ensure cumulative impacts are reduced to less than significant.

Relationship to the Project Objectives

This alternative would fulfill a number of the project objectives, but by reducing the overall density across the project site and removing the land set aside for a future school, the No School Alternative would not meet the project's objectives of providing a school site as a public benefit andproviding for orderly and well-planned development. In addition, this alternative would conflict with the City's General Plan that calls for the provision of adequate school sites in new growth areas, and the City as a whole, and would potentially conflict with goals and policies in the General Plan that encourage the location of adequate school facilities near planned residential neighborhoods. Furthermore, residential uses would not be consistent with the current General Plan land use designation and would not support the project's objectives of being consistent with the City's envisioned urban form for the new growth area.

Alternative 4: Open Space Alternative

Under this alternative the 16.5 acre future middle school site would not be developed with a school but would be designated as Open Space. Combined with the approximately 21.2 acres of passive open space included as part of the project, this alternative would provide a total of approximately

37.7 acres of open space. The remainder of the site would be developed consistent with the proposed project, including 785 residential units, parks, circulation and site access, and utilities.

Comparative Analysis of Environmental Effects

Air Quality. Under this alternative the same number of residential units would be developed as well as project roadways, utilities, and parks, the same as the proposed project. However, the future middle school would not be constructed leaving the 16.5 acres in passive open space. Overall, construction-related air emissions would be essentially the same or very similar to the proposed project because a majority of the development has not changed. Eliminating construction of the middle school would reduce construction emissions of ROG, NO_x, and PM_{10} in proportion to the size of this site. Mitigation measure AQ-1 would still be required to reduce construction emissions associated with construction activities and equipment. Therefore, construction-related air emissions would be only slightly reduced from what was analyzed as part of the project. Operational air emissions may slightly increase due to more students traveling to the closest middle school via car versus walking or riding their bikes from residences in the neighborhood. However, this increase in emissions would be very small and would not likely result in a change in the operational emissions analyzed as part of the project. The project identified a potentially significant operational impact associated with an increase in ROG and NO_x due to vehicle trips and PM_{10} associated with wood burning fireplaces. Mitigation measure AQ-2 requires additional features be added to the project to encourage use of alternative modes of transportation and to eliminate the use of wood burning devices. This mitigation would still be required for this alternative.

Biological Resources. The amount of land disturbance under this alternative would be less than the proposed project because the middle school would not be developed. The amount of open space would increase to approximately 37.7 acres under this alternative, more than under the proposed project. The decrease in construction activities on this portion of the project site would help reduce construction-related impacts to the Short-eared owl, Burrowing owl and Swainson's hawk, however mitigation measures BIO-1, BIO-2, BIO-4, and BIO-6 would still be required to address development of the remainder of the project site. The increase in open space would also reduce the number of acres required to mitigate the loss of Burrowing owl nesting and foraging habitat and Swainson's hawk foraging habitat. Mitigation measures BIO-3 and BIO-5 would still be required but the amount of acreage needed to mitigate the impact would be less. The loss of 1.7 acres of waters that could be considered jurisdictional would not change under this alternative and mitigation measure BIO-7 would still be required.

Cultural Resources. Under this alternative leaving 16.5 acres in undeveloped open space would reduce the potential for unearthing unknown archeological and historic resources as well as human remains. However, impacts to unknown subsurface archeological and historic

resources as well as the potential to unearth human remains would still occur associated with development of the remainder of the site. Therefore, mitigation measures CUL-1 and CUL-2 would still be required.

Hydrology, Drainage, and Water Quality. Leaving the 16.5 acre future school site as open space would decrease the amount of impervious surface area and would help to reduce the amount of stormwater runoff and any construction-related erosion. However, even though it would reduce the overall severity of the impacts identified for the project mitigation measures HYDRO-1, HYDRO-2, and HYDRO-3 would still be required for this alternative to ensure impacts associated with project construction and an increase in erosion and downstream runoff and detention would be reduced to less than significant for the remainder of the project site.

Land Use and Planning. Similar to the proposed project converting the 16.5 acre school site to open space would still be consistent with the Travis Air Force Base CLUP. In addition, because the same number of residential units would be developed as the proposed project and a Specific Plan would also be prepared; therefore, this alternative would also be consistent with the City's general plan goals and policies, specifically plans for development in the East of Leisure Town Road Growth Area. However, this alternative would conflict with the Public Facilities and Services Element of the General Plan by failing to provide for a middle school site within the growth area. Impacts associated with consistency with applicable plans and policies would remain less than significant, the same as the proposed project.

Public Utilities. The removal of the middle school and conversion of this land to open space would only slightly change the demand for wastewater conveyance and treatment, solid waste collection and disposal, and energy resources. These impacts would be very similar to what was analyzed as part of the project. Therefore, mitigation measures WW-1 and WW-2 would still be required to address treatment capacity and conveyance capacity.

Transportation and Circulation. Under this alternative the future middle school site would be converted to open space. Therefore, similar to alternative 3, middle school children in the project site would not be able to walk or ride their bicycles to school resulting in more vehicle trips to drive children to the nearest middle school. The increase in vehicle trips would contribute to degrading the LOS at the Leisure Town Road (Jepson Parkway) / Elmira Road intersection and contributing vehicles to Leisure Town Road (Jepson Parkway) between Marshall Road and Elmira Road and between Elmira Road and Ulatis Road, contributing to a decline in LOS along this portion of Leisure Town Road. The increase in vehicle trips would be small, but would be slightly greater than under the proposed project. Mitigation measures TRAFF-1 through TRAFF-4 would still be required for project level impacts to ensure the impacts are reduced to a less-than-significant level. In addition, under this

alternative there would be a small contribution to the significant cumulative effects identified for the project. Mitigation measures TRAFF-5 through TRAFF-8 would still be required to ensure cumulative impacts are reduced to less than significant.

Relationship to the Project Objectives

This alternative would fulfill most of the project objectives. It would provide for the orderly, well planned, and balanced development of future projects in the East of Leisure Town Road Growth Area, direct growth to areas identified as priority for urban growth in the General Plan, support the City's General Plan policies consistent with the City's growth projections and housing policies, and provide public amenities, infrastructure, and open spaces to provide for a well-planned community.

By eliminating the middle school site, this alternative does not fully meet the objective to provide public benefits that include a school, as compared to the proposed project. Therefore, the project would conflict with adopted policies for the provision of adequate school sites in the new growth areas (General Plan Figure PUB-3), and the City as a whole, and would potentially conflict with goals and policies in the General Plan that encourage the location of adequate school facilities near planned residential neighborhoods.

6.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines require that an EIR identify the environmental superior alternative (Section 15126.6 (e)(2)). If the environmentally superior alternative is the "No Project" Alternative, the EIR must identify an environmentally superior alternative from among the other alternatives. As shown in Table 5-7, the No Project/No Development Project is the environmentally superior alternative. Therefore, an environmentally superior alternative must be identified from among the other three development alternatives.

After the No Project/No Development Project Alternative, the next most environmentally superior alternative is, Alternative 4, Open Space Alternative, which would reduce several of the project's significant impacts associated with biological resources and utilities.

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
Air Quality					
4.1-1: Construction of the proposed project could result in emissions of ROG, NOx, or PM10 at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	LS/M	NI	LS/M+	LS/M=	LS/M-
4.1-2: Operation of the proposed project would result in emissions of ROG, NOx, or PM_{10} at levels that could substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	SU/M	NI	SU/M+	SU/M=	SU/M=
4.1-3: The proposed project would not result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm).	LS	NI	LS=	LS=	LS=
4.1-4: The proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations.	LS	NI	LS=	LS=	LS=
4.1-5: The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).	SU/M	NI	SU/M=	SU/M=	SU/M=

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
Biological Resources					
4.2-1: Implementation of the proposed project may result in substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	LS/M	NI	LS/M+	LS/M=	LS/M-
4.2-2: Implementation of the proposed project could result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	LS	NI	LS+	LS=	LS=
4.2-3: Implementation of the proposed project may result in placement of fill into potential jurisdictional waters of the U.S and State.	LS/M	NI	LS/M=	LS/M=	LS/M=
4.2-4: Implementation of the proposed project may interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites..	LS	NI	LS=	LS=	LS=

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
4.2-5: Implementation of the proposed project could conflict with applicable land use plans, policies, regulations, or ordinances, of an agency with jurisdiction over the project, including the Solano County Water Agency's draft HCP adopted for the purpose of protecting biological resources or avoiding and mitigating impacts to biological resources.	LS/M	NI	LS/M+	LS/M=	LS/M-
4.2-6: The proposed project could contribute to cumulative impacts to special-status species in the region due to removal of foraging and breeding habitat.	LS/M	NI	LS/M+	LS/M=	LS/M-
Cultural Resources					
4.3-1: Implementation of the proposed project may cause a substantial adverse change in the significance of an archaeological resource.	LS/M	NI	LS/M+	LS/M=	LS/M-
4.3-2: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries.	LS/M	NI	LS/M+	LS/M=	LS/M-
4.3-3: The proposed project could contribute to cumulative impacts to historical, archaeological and paleontological resources in the area..	LS	NI	LS=	LS=	LS=
Hydrology and Water Quality					
4.4-1: Implementation of the proposed project may violate water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.	LS	NI	LS=	LS+	LS-

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
4.4-2: Implementation of the proposed project may alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site.	LS/M	NI	LS/M+	LS/M+	LS/M-
4.4-3: Implementation of the proposed project may substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	LS/M	NI	LS/M+	LS/M+	LS/M-
4.4-4: Implementation of the proposed project may create or contribute to runoff water which would exceed the capacity of the existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff**.**	LS/M	NI	LS/M+	LS/M+	LS/M-
4.4-5: The proposed project, in addition to other projects in the watershed, could result in the generation of polluted runoff that could violate water quality standards or waste discharge requirements for receiving waters.	LS	NI	LS+	LS+	LS-
Land Use and Planning					
4.5-1: Implementation of the proposed project may conflict with an applicable land use plan, policy or regulation.	LS	NI+	LS-	LS+	LS+
Public Utilities					
4.6-1: The proposed project could exceed the treatment requirements of the applicable Regional Water Quality Control Board.	LS	NI	LS=	LS=	LS-

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
4.6-2: The proposed project could require or result in the construction of new wastewater facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	LS	NI	LS=	LS=	LS-
4.6-3: The proposed project could result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.	LS/M	NI	LS/M=	LS/M=	LS/M-
4.6-4: The proposed project could be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs.	LS	NI	LS=	LS=	LS-
4.6-5: The proposed project could require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities.	LS	NI	LS=	LS=	LS-
4.6-6: The proposed project could contribute to a cumulative increase in the demand for wastewater treatment, which could result in inadequate capacity and require the construction of new or expansion of existing wastewater treatment facilities.	LS	NI	LS=	LS=	LS-
4.6-7: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	LS	NI	LS=	LS=	LS-

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
4.6-8: The proposed project could contribute to a cumulative increase in energy demand, which could result in the need for construction of new energy production and/or transmission facilities or expansion of existing facilities.	LS	NI	LS=	LS=	LS-
4.8-10: The proposed project could contribute to a cumulative increase in solid waste, which could result in either the construction of new solid waste facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	LS	NI	LS=	LS=	LS-
Transportation and Circulation					
4.7-1: Implementation of the proposed project would degrade operations at one study intersection.	LS/M	NI	LS/M+	LS/M+	LS/M+
4.7-2: Implementation of the proposed project would increase traffic volumes above the LOS C threshold on two study road segments.	SU/M	NI	SU/M+	SU/M+	SU/M+
4.7-3: Implementation of the proposed project would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	LS	NI	LS=	LS=	LS=
4.7-4: Implementation of the proposed project, including installation of traffic circles and other traffic calming devices, may delay emergency response or impede movement of emergency vehicles.	LS/M	NI	LS/M=	LS/M=	LS/M=

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
4.7-5: Implementation of the proposed project could conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	LS/M	NI	LS/M=	LS/M=	LS/M=
4.7-6: Under Existing plus Approved plus Project conditions, traffic volumes would exceed intersection LOS operations at six intersections.	SU/M	NI	SU/M+	SU/M+	SU/M+
4.7-7: Under Cumulative plus Project conditions, intersection operations would exceed LOS thresholds of significance at one intersection.	SU/M	NI	SU/M+	SU/M=	SU/M=
4.7-8: Traffic volumes under Existing plus Approved plus Project conditions would be above the LOS C threshold on five study road segments. The project would cause traffic volumes to exceed the LOS C threshold on one of the five segments.	SU/M	NI	SU/M+	SU/M+	SU/M+
4.7-9: Traffic volumes under Cumulative plus Project conditions would be above the LOS C threshold on one study road segment.	LS/M	NI	LS/M=	LS/M=	LS/M=
4.7-10: Implementation of the proposed project under Existing plus Approved plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	LS	NI	LS=	LS=	LS=

Table 6-1
Evaluation of Alternatives by Impact Area

Impact	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Active Park	Alternative 3: No School	Alternative 4: Open Space
4.7-11: Implementation of the proposed project under Cumulative plus Project conditions would increase traffic volumes along study freeway segments in the CMP system but would not exceed LOS thresholds of significance.	LS	NI	LS=	LS=	LS=

Notes:
NI = No impact
LS = impacts less than significant
LS/M = Impacts less than significant after mitigation
PS = Potentially significant (mitigation not determined)
SU/M = Significant and unavoidable after mitigation
"+" indicates the impact is more severe than the project impact
"-" indicates that the impact is less severe than the project impact
"=" indicates that the impact is the same as the proposed project

CHAPTER 7
EIR PREPARATION

Report Preparation

Dudek prepared this document under the direction of the City of Vacaville.

City of Vacaville Planning Services

Fred Buderi, City Planner

EIR Preparation	
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Subconsultants	
Kittleson & Associates	Transportation
West Yost Associates	Storm Drainage
NV5	Water Supply

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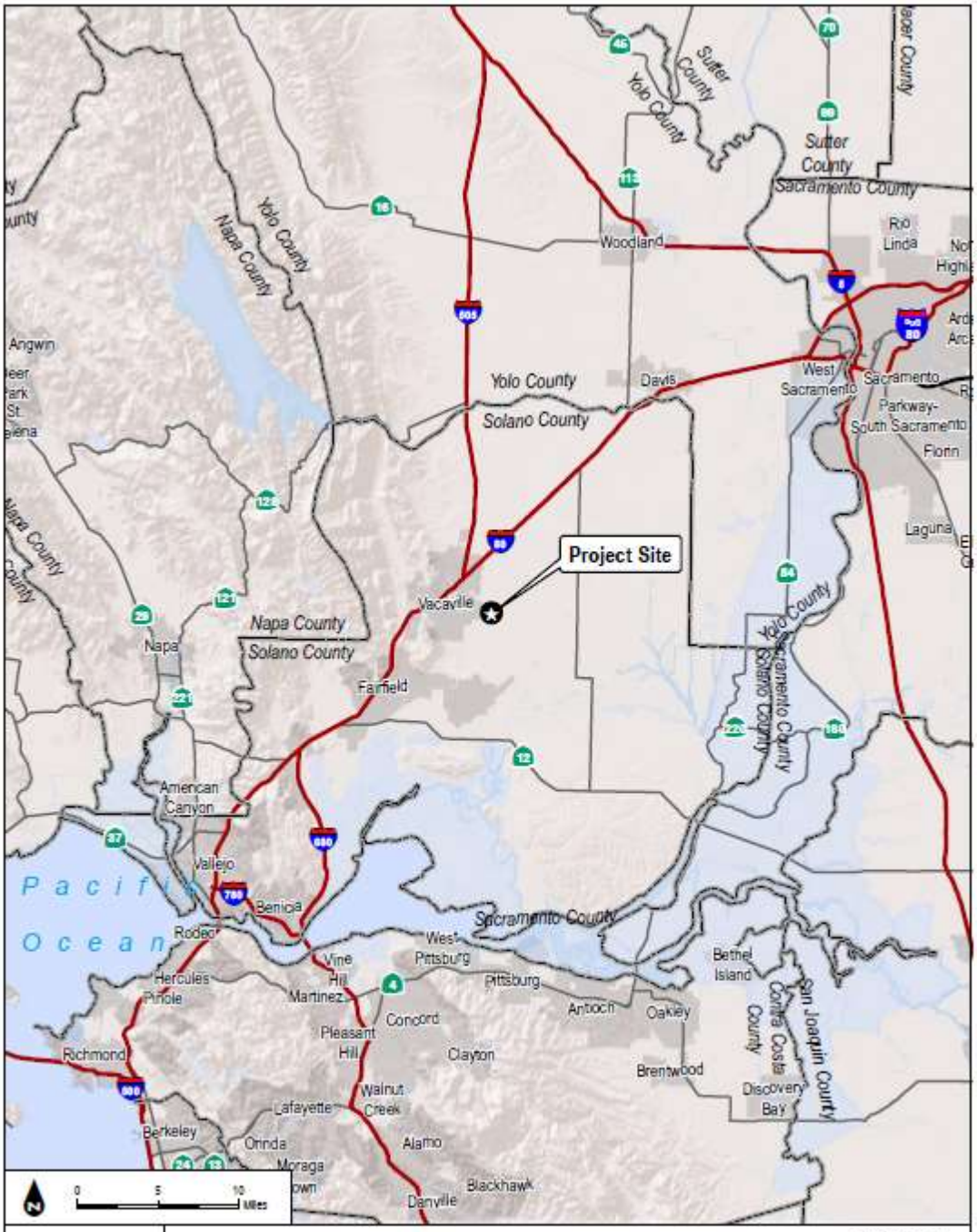
Attachment B Roberts Ranch Location Map



DUDEK

FIGURE 3-1
Regional Location Map

Roberts' Ranch Specific Plan EIR

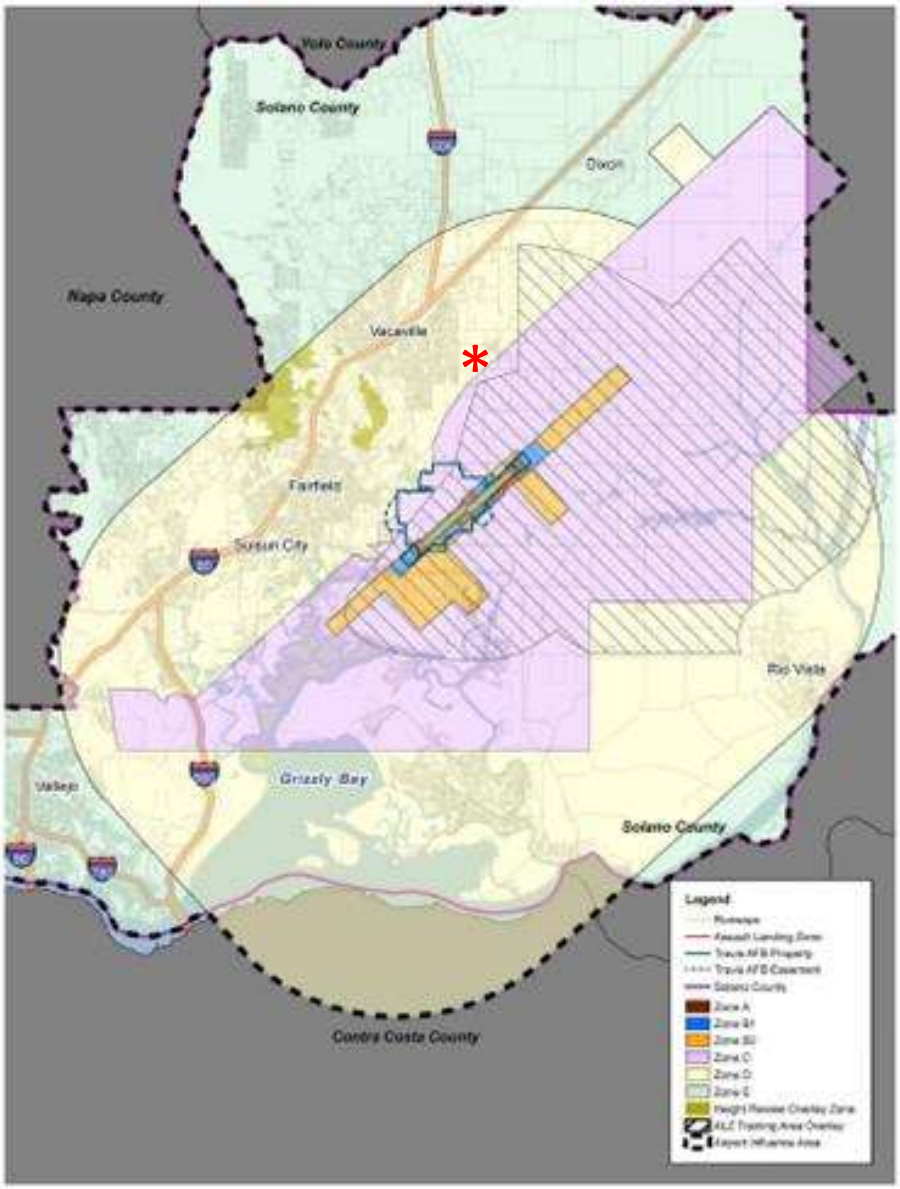
Attachment C Roberts Ranch Land Use Plan

DUDEK

FIGURE 3-3
Land Use Plan

Roberts' Ranch Specific Plan EIR

Attachment D Travis Plan Map



Solano County

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Fairfield, California 94533
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Agenda Submittal

Agenda #:	3	**Status:**	ALUC-Regular-NW
Type:	ALUC-Document	**Department:**	Airport Land Use Commission
File #:	AC 16-030	**Contact:**	
Agenda date:	12/8/2016	**Final action:**	
Title:	Receive an update from staff regarding the progress of the Wildlife Hazards Working Group		

Governing body:

District:

Attachments:

Date	Ver.	Action By	Action	Result

RECOMMENDATION:

Receive an update from staff regarding of the Wildlife Hazards Working Group

Solano County

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Agenda Submittal

Agenda #:	4	**Status:**	ALUC-Regular-NW
Type:	ALUC-Document	**Department:**	Airport Land Use Commission
File #:	AC 16-031	**Contact:**	
Agenda date:	12/8/2016	**Final action:**	
Title:	Receive an update from staff regarding the progress of the Renewable Energy Working Group		

Governing body:

District:

Attachments:

Date	Ver.	Action By	Action	Result

RECOMMENDATION:

Receive an update from staff regarding of the Renewable Energy Working Group

Solano County

675 Texas Street
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Agenda Submittal

Agenda #:	5	**Status:**	ALUC-Regular-NW
Type:	ALUC-Document	**Department:**	Airport Land Use Commission
File #:	AC 16-032	**Contact:**	
Agenda date:	12/8/2016	**Final action:**	
Title:	Receive an update from staff regarding a work plan for the study of potential regulations for Recreational Drones		

Governing body:

District:

Attachments:

Date	Ver.	Action By	Action	Result

RECOMMENDATION:

Receive an update from staff regarding a work plan for the study of potential regulations for Recreational Drones