



INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
OAK GROVE APARTMENTS PROJECT
CITY OF VACAVILLE, CA

DECEMBER 2020

LEAD AGENCY:
City of Vacaville
650 Merchant Street
Vacaville, CA 95688



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Appendix F. Mitigation Monitoring and Reporting Program

1 INTRODUCTION

1.1 PROJECT SUMMARY/ENVIRONMENTAL CHECKLIST FORM

Project Title:	Oak Grove Apartments Project
Lead Agency Name and Address:	City of Vacaville 650 Merchant Street Vacaville, CA 95688
Contact Person and Phone Number:	Albert Enault, Associate Planner (707) 449-5364
Project Location:	The Project Site is located at 475 West Monte Vista Avenue in the City of Vacaville (City) in Solano County, CA. The Project Site is located on the south side of West Monte Vista Avenue and the east side of South Orchard Avenue, surrounded by a mixture of commercial and residential land uses.
Project Sponsor's Name and Address:	Andrea Osgood, Vice President of Real Estate Development Eden Oak Grove, LLC c/o Eden Housing 22645 Grand Street Hayward, CA 94541 Sponsor's Representative: Lihbin Shiao, Principal Mosaic Urban Development, LLC 287 17 th Street, Suite 208 Oakland, CA 94612
General Plan Designation:	Commercial Neighborhood (CN)
Zoning:	Commercial Neighborhood (CN)
Description of the Project:	The Proposed Project involves construction of a residential multifamily 67-unit apartment complex for affordable and supportive rental housing. The Proposed Project will require a zoning map amendment and demolition of the existing Glenbrook Hills Swim Club facilities. A detailed description of the Proposed Project is included in Section 2.3 .

Existing and Surrounding Land Uses:	The Project Site is comprised of two parcels. The northern parcel contains the facilities associated with the former Glenbrook Hills Swim Club, including a pool, clubhouse building, pumphouse/storage building, and parking lot. The southern parcel is vacant land containing trees. The Project Site is surrounded by residential units to the north and east, a commercial area to the west, and Vacaville Fire Station 71 and additional residential units to the south.
Other Public Agencies Whose Approval may be Required:	Central Valley Regional Water Quality Control Board Yolo-Solano Air Quality Management District U.S. Department of Housing and Urban Development California Tax Credit Allocation Committee State Historic Preservation Office
Consultation with California Native American Tribes	The Yocha Dehe Wintun Nation has requested formal notification of proposed projects in the geographical area. On October 1, 2020 and October 5, 2020, AES and the City, respectively, sent a letter to the Yocha Dehe Wintun Nation providing detailed information on the Proposed Project and describing the Assembly Bill (AB) 52 consultation process. The letter requested that the Tribes notify the City within 30 days if they would like to engage in formal consultation regarding possible significant effects that the Proposed Project may have on tribal cultural resources. The Yocha Dehe Wintun Nation stated that the Tribe was unaware of any cultural resources and that a construction monitor was not needed, but asked to be notified if anything is found. Therefore, the requirements of Public Resources Code (PRC) § 21080.3.1 have been satisfied. Refer to the discussion in Section 3.6 regarding outreach to Native American Tribes identified by the Native American Heritage Commission.

1.2 PURPOSE OF STUDY

The City of Vacaville (Lead Agency) has prepared this Initial Study (IS) for the Oak Grove Apartments Project (Proposed Project) in accordance with the California Environmental Quality Act (CEQA) of 1970 (as amended), codified in California PRC § 21000 *et seq.*, and the CEQA *Guidelines* in the Code of Regulations, Title 14, Division 6, Chapter 3. Pursuant to these regulations, this IS is intended to inform City decision-makers, responsible agencies, interested parties, and the general public of the Proposed Project and its potential environmental effects. This IS is also intended to provide the CEQA-required environmental documents for all city, local and state approvals or permits that might be required to

implement the Proposed Project. This IS supports a Mitigated Negative Declaration (MND) as defined under CEQA *Guidelines* § 15070.

1.3 DOCUMENTS INCORPORATED BY REFERENCE

In August 2015, the City of Vacaville certified the City of Vacaville General Plan and the Energy and Conservation Action Strategy (ECAS) Environmental Impact Report (EIR). The General Plan and ECAS EIR was a program-level EIR, prepared pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations [CCR], Sections 15000 et seq.). The General Plan and ECAS EIR analyzed full implementation of the City of Vacaville General Plan and identified measures to mitigate the significant adverse project and cumulative impacts associated with the General Plan. Pursuant to CEQA Guidelines Section 15150(a), the City of Vacaville General Plan and ECAS EIR are incorporated by reference. Both documents are available at the City of Vacaville, 650 Merchant Street, Vacaville, CA 95688.

The impact discussions for each section of this IS/MND are in part based on information in the City of Vacaville General Plan and ECAS EIR.

1.4 ORGANIZATION OF THE INITIAL STUDY

This document is organized into the following sections:

Section 1.0 – Introduction: Describes the purpose, contents, and organization of the document and provides a project summary. Includes the significance determination, which identifies the determination of whether impacts associated with development of the Proposed Project are significant, and what, if any, additional environmental documentation may be required.

Section 2.0 – Project Description: Includes a detailed description of the Proposed Project.

Section 3.0 – Environmental Impact Analysis: Contains the Environmental Checklist from CEQA *Guidelines* Appendix G with a discussion of potential environmental effects associated with the Proposed Project. Mitigation measures, if necessary, are noted following each impact discussion.

Section 4.0 – List of Preparers

Section 5.0 – References

Appendices – Contains information to supplement sections within the IS.

1.5 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the Proposed Project, involving at least one impact requiring mitigation to bring it to a less-than-significant level. Impacts to these resources are evaluated using the checklist included in **Section 3.0**. The Proposed Project was determined to have a less-than-significant impact or no impact without mitigation on unchecked resource areas. A Mitigation Monitoring and Reporting Program, included as **Appendix F**, ensures compliance with mitigation measures during project implementation.

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

1.6 CEQA ENVIRONMENTAL DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



12/3/2020

Date

2 PROJECT DESCRIPTION

2.1 PROJECT SUMMARY

The Proposed Project involves construction of a residential multifamily 67-unit apartment complex for affordable and supportive rental housing within a 2.11-acre infill site in the City of Vacaville (City). The Proposed Project would require a zoning map amendment to include a Residential Overlay (RO), in order to facilitate the development of additional affordable housing opportunities in the community. The Project location and components are described in more detail below.

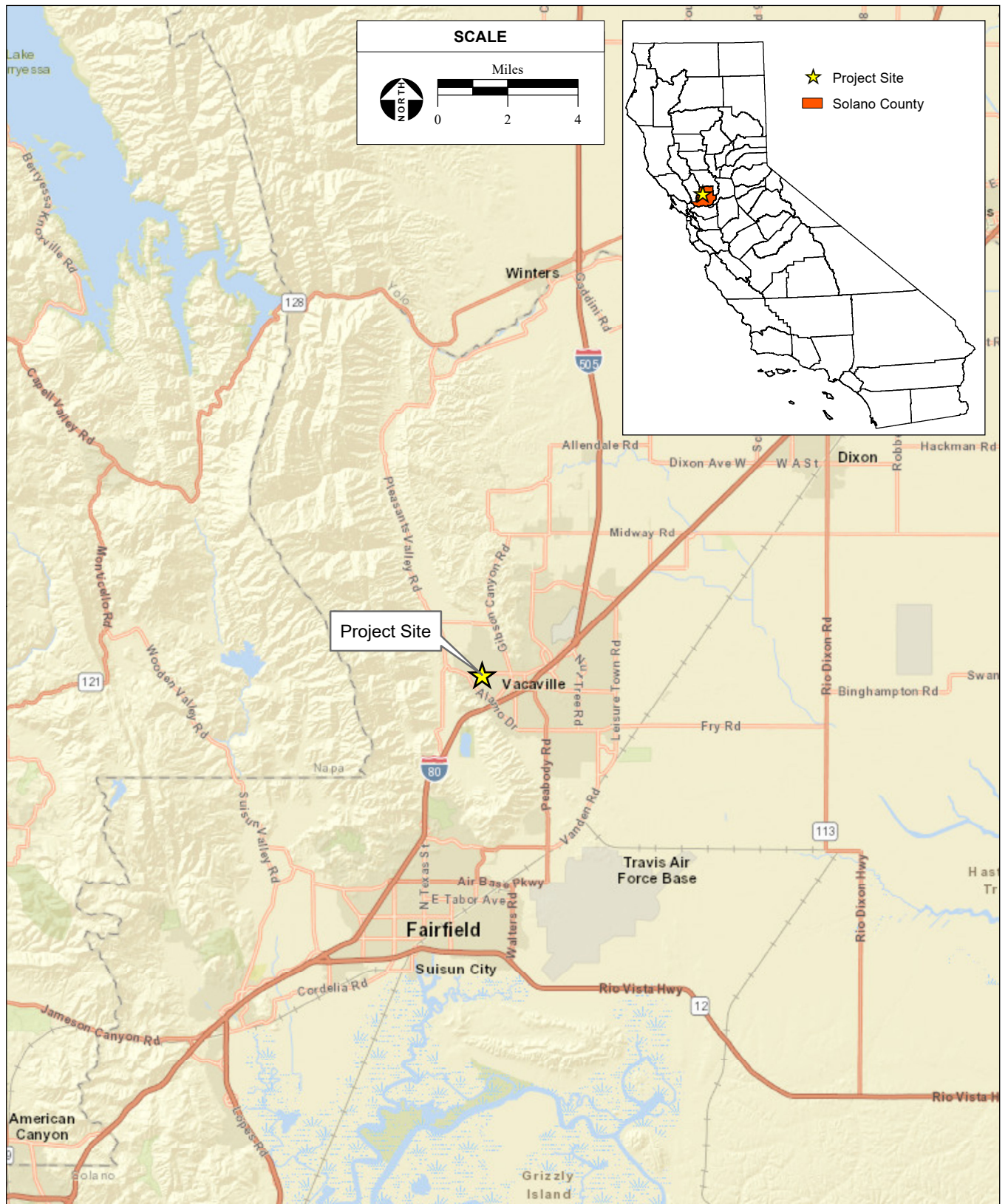
2.2 PROJECT LOCATION AND SETTING

The Project Site is located at 475 West Monte Vista Avenue in the city of Vacaville, in Solano County (County), California (**Figures 2-1** and **2-2**). The 2.11-acre property consists of two parcels with corresponding assessor's parcel numbers (APN) 126-150-050 and 126-160-150. An aerial photograph of the Project Site is provided in **Figure 2-3**. The northern parcel (APN 126-150-050) is currently developed with facilities associated with the Glenbrook Hills Swim Club, which has been non-operational since spring 2020, including a pool, clubhouse building, pumphouse/storage building, and parking lot. The southern parcel (APN 126-160-150) is vacant and unimproved, with the exception of a paved secondary access driveway that extends along the southern border of the site between South Orchard Avenue and the adjacent Orchard Apartments complex. Regional access to the Project Site is provided by Interstate 80. Vehicular access to the Project Site is provided via a driveway from West Monte Avenue to the north, and a driveway from South Orchard Avenue to the west. The Project Site is relatively flat. Trees surround the perimeter of the Project Site on the western and eastern border around the Glenbrook Hills Swim Club. The southern vacant parcel contains non-native grasses and various trees, including Valley Oaks and Sycamores. A Tree Protection and Removal Plan prepared by a licensed arborist is included on Sheet L04 of **Appendix A**.

Surrounding land uses are comprised of commercial and residential uses. At present, land uses adjacent to the Project Site include a Speedway Express gas station and a 7-Eleven convenience store to the northwest, high density residential uses to the north across West Monte Avenue, an apartment complex and associated covered parking to the east, and the City of Vacaville Fire Station 71 and high-density residential housing directly to the south (**Figure 2-3**).

2.3 PROJECT DESCRIPTION

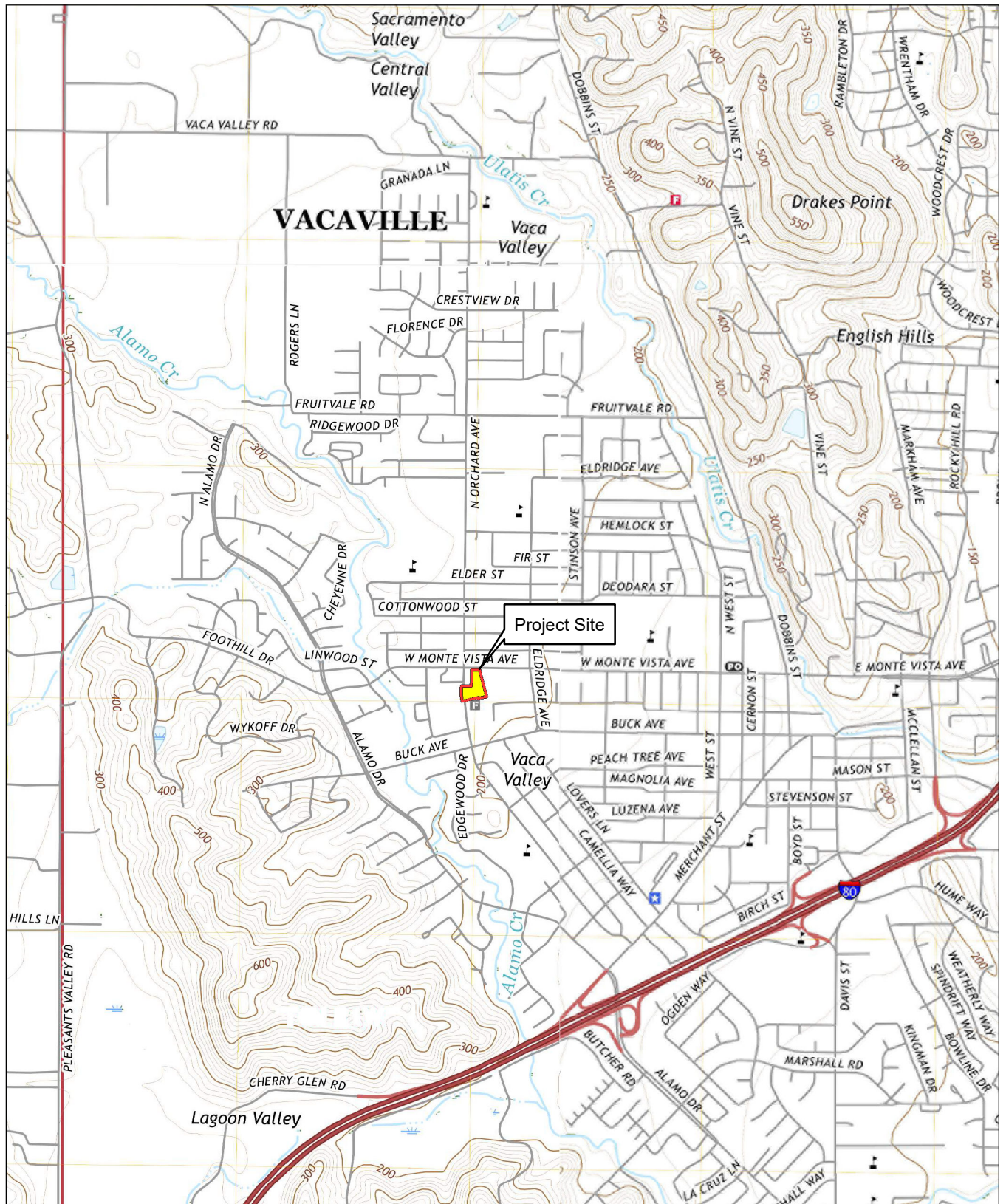
The Proposed Project consists of (1) the demolition of the existing Glenbrook Hills Swim Club facilities, and (2) the construction of a new residential multifamily 67-unit apartment complex for affordable and supportive rental housing, and related property management offices, supportive services offices, and a community room.



SOURCE: ESRI World Street Map, 2020; AES, 11/13/2020

City of Vacaville Oak Grove Apartments Initial Study / 220537 ■

Figure 2-1
Regional Location



SOURCE: "Fairfield North, CA" & "Elmira, CA" USGS 7.5 Minute Topographic Quadrangles, T6N R1W, Unsectioned Areas of Los Puntos, Mt. Diablo Baseline & Meridian; ESRI, 2020; AES, 11/17/2020

City of Vacaville Oak Grove Apartments Initial Study / 220537 ■

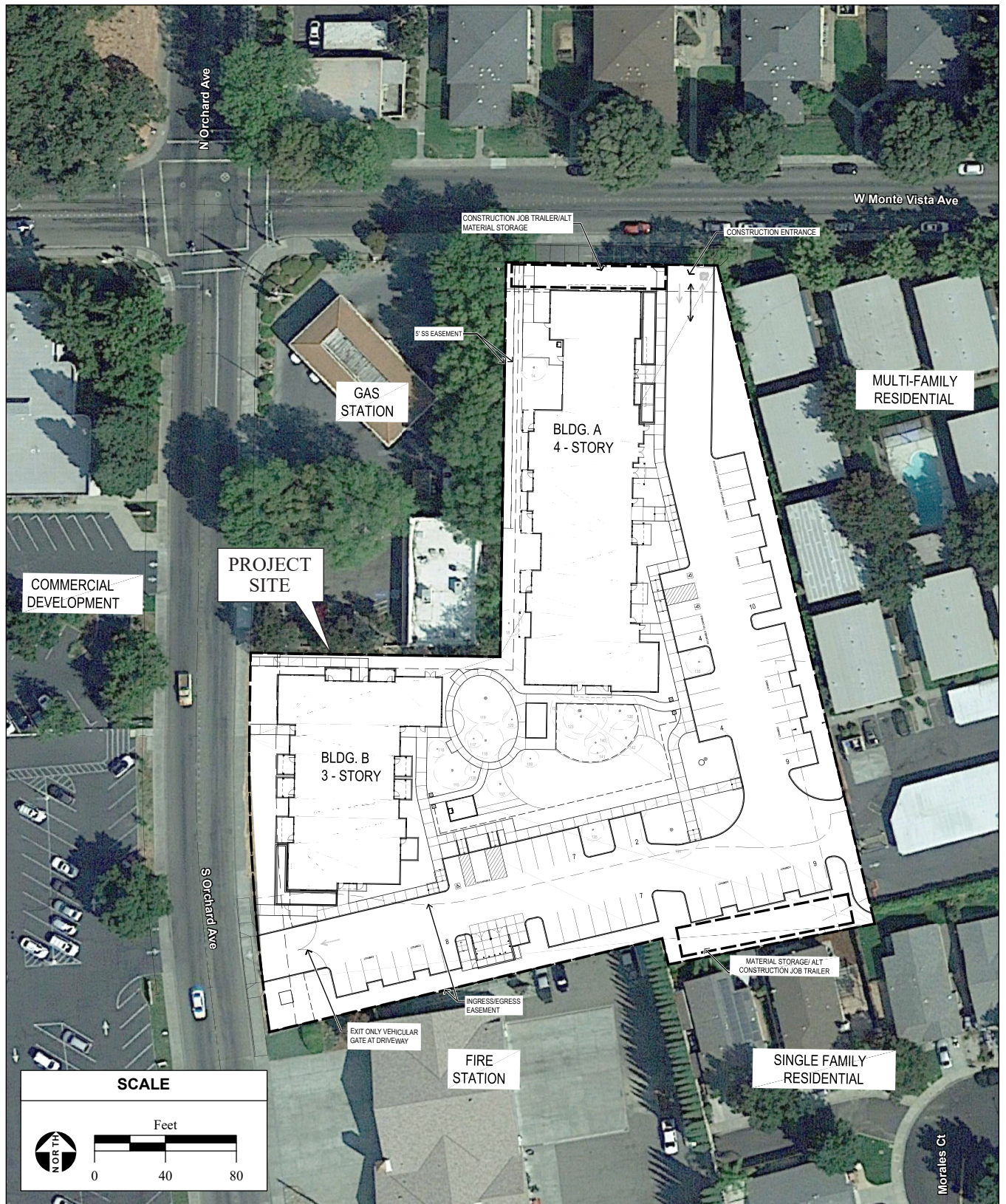
Figure 2-2
Site and Vicinity



SOURCE: DigitalGlobe Aerial Photograph, 9/1/2018; ESRI, 2020; AES, 11/13/2020

City of Vacaville Oak Grove Apartments Initial Study / 220537 ■

Figure 2-3
Aerial Photograph



SOURCE: LPAS Architecture, 8/10/2020; Caltrans, 2020; AES, 11/17/2020

City of Vacaville Oak Grove Apartments Initial Study / 220537 ■

Figure 2-4
Site Plan

2.3.1 AFFORDABLE HOUSING – MULTIFAMILY RESIDENTIAL

The Proposed Project would provide a total of 67 multifamily residential units, including 49 units for low income families and 18 supportive housing units for individuals and families. All supportive housing units would be restricted and regulated at the Extremely Low Income (ELI) level of 25 percent or 30 percent of Area Median Income (AMI). Family housing units would be restricted and regulated at ELI and Low Income (LI) levels of 30 percent and 40 percent of AMI. The qualifying income ranges would be based upon annually published AMI from HUD and would be based on household size. The proposed development includes two buildings. Building A would be an approximately 49,999 square foot (sf) four-story building comprised of 43 residential apartments and a community use component comprising a leasing office, services office, and community room. Building B would be an approximately 23,786 sf three-story building comprised of 24 residential apartment units and associated common use areas. The four-story building would front West Monte Vista Avenue and the three-story building would front South Orchard Avenue, with parking around the eastern and southern perimeters. Common open space, in the form of a central courtyard, would be incorporated within a preserved oak tree grove between the two buildings. The density would be 31.75 units per acre. **Table 2-1** provides a breakdown of the proposed components of the two buildings with associated approximate square footages. A site plan showing the approximate building footprints is included as **Figure 2-4**.

TABLE 2-1. PROPOSED BUILDINGS BY FLOOR

Area	Units	Approximate Square Footage
Building A		
Floor 1	7	5,197
Amenities		3,788
Circulation and Support		3,565
Floor 2	12	9,952
Circulation and Support		2,531
Floor 3	12	9,952
Circulation and Support		2,531
Floor 4	12	9,952
Circulation and Support		2,531
Building A Total	43	49,999
Building B		
Floor 1	8	5,955
Amenities		424
Circulation and Support		1,595
Floor 2	8	6,604
Circulation and Support		1,302
Floor 3	8	6,604
Circulation and Support		1,302
Building B Total	24	23,786
Project Total	67	73,785
Source: Appendix A		

The Proposed Project would be designed and constructed to comply with the applicable requirements of the 2019 CCR Title 24, Part 2 (California Building Code), Part 3 (California Electrical Code), Part 4 (California Mechanical Code), Part 5 (California Plumbing Code), Part 6 (California Energy Code), Part 9 (California Fire Code), and Part 11 (California Green Building Standards Code). Pursuant to Section 14.09.074.094 of the City Municipal Code, the Proposed Project would incorporate energy-efficient design features to include, but not limited to, all electric power, cool roof shingles, all fiberglass-based insulation, photovoltaic panels or the capability to install panels in the future, electric charging stations, energy efficient appliances and fixtures, and drought tolerant landscaping in accordance with the City's Water Efficient Landscaping Ordinance.

As noted above, the project requires a zone change to add the City's RO zoning district. Under the RO district, the project would be required to comply with development standards identified for Residential High Density (RH) zoning districts, including standards for private and common open space. Under Section 14.09.074.056 (Minimum Outdoor Recreation Space) of the Vacaville Municipal Code, the project requires a minimum of 6,700 sf of common open space (100 sf/unit), 100 sf of private patio open space (ground floor units), and 50 sf of private deck open space (upper-story units); the Proposed Project would provide 9,709 sf of common open space, 92.5 sf of private patio open space for the ground floor units, and 75 sf of private deck open space for the upper story units (see Sheet A10 of **Appendix A**). Therefore, the Proposed Project would meet the common open space and private deck open space requirements, but would fail to meet the private patio open space requirements. The project applicant has requested a concession for the ground floor private open space requirement of 100 sf, as common and private deck open space exceed requirements and increasing the area for ground floor patios without violating setback standards would require changing the site plan configuration to a less efficient layout.

The roof height would be 43 feet for Building A and 31 feet for Building B, as shown on Sheet A21 of **Appendix A**, which is within the RH zoning district maximum height of 45 feet.

Parking

The Proposed Project provides 60 parking spaces. Pursuant to Chapter 14.09.128 (Off-Street Parking and Loading) of the Vacaville Municipal Code, projects containing "Special Purpose Housing" such as supportive or affordable housing must provide one space per dwelling unit. Based on this standard, the project is required to provide 67 parking spaces. The project would not meet the City's standard for off-street parking. The project applicant has requested a concession for parking. The proposed location for parking is shown on **Figure 2-4**.

On-Site Operations

The Proposed Project would require on-site employees, including one full time property manager and several part time supportive services staff to serve the tenants of the residential units. The property management office would operate Monday through Friday, 8:00 AM to 5:00 PM. Some resident services may take place during weekday evenings and weekend days. A staff person resident would be available on-site to respond to tenant emergencies outside of regular business hours.

Access Easement

An access easement currently exists on the southern portion of the Project Site (see **Figure 2-4**), allowing vehicular access to the adjacent Orchards Apartments, which is also owned by the project applicant. As part of the Proposed Project, the easement would be removed and a new easement recorded to retain access to the adjacent property's parking lot for the residents of Orchards Apartments. The new easement would follow the proposed driveways running north-south and east-west through the proposed parking lot, as shown on **Figure 2-4**. A new easement would be recorded prior to the end of construction. Access to the adjacent Orchards Apartments would be maintained throughout construction.

2.3.2 CONSTRUCTION

The Proposed Project is anticipated to begin construction by October 2022 and be completed by December 2023. Construction activities would include demolition of the Glenbrook Hills Swim Club facilities (approximately 2,453 sf of buildings and 4,500 sf of pool) located on the northern parcel, construction of Building A (43 units) and Building B (24 units), minor site grading, excavation, trenching and architectural coatings. Equipment associated with these activities generally includes dozers, tractors/loaders/backhoes, cranes, forklifts, welders, pavers and paver equipment, rollers, and air compressors. A detailed breakdown of the estimated equipment use type, hours used, horsepower, and load factors are provided in the California Emissions Estimator Model (CalEEMod) report listed in **Appendix C**.

Construction entrances would be located on the northeast corner of the Project Site boundary along West Monte Vista Ave and on the southwest corner of the Project Site, as shown on **Figure 2-4**. During construction, the construction entrance will shift as needed in order to maintain access for the residents of the adjacent Orchards Apartments. A construction trailer and material storage area would be staged in two locations: along the northern and southern Project Site boundaries. A construction staging plan is included as Sheet A09 of **Appendix A**.

2.3.3 ZONING MAP AMENDMENT

The Project Site is currently zoned CN (Neighborhood Commercial). The City Zoning Code permits the establishment of RO districts over the underlying CN districts by means of a zoning map amendment. The project includes a Zoning Map Amendment to apply a RO district over the CN district. The project would be subject to compliance with standards for RH zoning district. The RO district, which, in conjunction with the requested affordable housing Density Bonus, would allow the higher residential density associated with the 67-unit affordable housing complex. The proposed zoning amendment and Density Bonus are components of the Proposed Project.

2.3.4 UTILITIES

Water Supply

Water supply services for the Proposed Project would be provided by the City of Vacaville. An existing eight-inch water supply line is located under West Monte Vista Avenue. Additionally, an existing eight-inch and an existing 12-inch water line are located under South Orchard Avenue. The Proposed Project would tie into existing water utility lines, which have sufficient capacity to serve the Proposed Project. **Appendix A** contains more detailed information on the location of existing and proposed utilities.

Wastewater Treatment

Wastewater services for the Proposed Project would be provided by the City of Vacaville using an existing eight-inch sewer line located south of the Project Site, on the northeast corner of the parcel that is occupied by the City of Vacaville Fire Station 71 (see Figure 1 of **Appendix B**). A five-foot private sewer easement, as well as a five-foot public utility easement are located along the western border of the northern Project Site parcel. The Analysis of Sewer System Impacts Technical Memorandum (Sewer Analysis) (**Appendix B**) concluded that the Proposed Project could tie into the existing eight-inch sewer line on the parcel occupied by the City of Vacaville Fire Station 71, subject to confirmation of the depth and configuration of the line, as well as availability of an easement to access the line for maintenance. The City of Vacaville Utilities Department found the capacity of this line to be adequate and the Proposed Project would use this connection, contingent on confirming the depth of the line and obtaining a private easement for maintenance access.

2.4 PROJECT REVIEW AND APPROVAL

2.4.1 LEAD AGENCY

In accordance with Sections 15050 and 15367 of the CEQA Guidelines, the City of Vacaville is the 'lead agency' for the Proposed Project, which is defined as the "public agency which has the principal responsibility for carrying out or disapproving a project."

The following discretionary actions would be taken by the City in order to approve the Proposed Project:

- Approval of a Zoning Map Amendment to add a RO district over the existing CN zoning district. No General Plan Amendment is required because the RO district overlay is consistent with the underlying CN district.
- Approval of a Density Bonus to increase density from 24.0 dwelling units per acre (du/ac) to 31.75 du/ac for the Project Site, with concessions for private open space, parking, and tree replacement requirements.
- Approval of a Planned Development to construct 67 units at the Project Site.

The following ministerial actions would be taken by the City after project approval:

- Approval of Improvement Plans for grading, drainage, and utilities
- Encroachment permits for construction of access driveways and utilities
- Building permits

2.4.2 CEQA ACTIONS

Prior to approving the Proposed Project, the City must undertake CEQA review including:

- Adoption of the Mitigated Negative Declaration – pursuant to CEQA and the CEQA Guidelines; and
- Mitigation Monitoring – Adoption of a Mitigation Monitoring and Reporting Program to reflect the measures required to mitigate significant impacts, if any, of the project.

The Mitigated Negative Declaration and Initial Study are intended to provide the CEQA documentation for approval of the Proposed Project.

2.4.3 OTHER AGENCY ACTIONS

The IS/MND prepared for the Proposed Project would be used by Responsible Agencies and Trustee Agencies that may have some approval authority of the Proposed Project. The project applicant would obtain all permits, as required by law. The following agencies, which may be considered Responsible Agencies, have discretionary authority over approval of certain project elements, or alternatively, may serve in a ministerial capacity:

- State Water Resources Control Board (SWRCB) / Central Valley Regional Water Quality Control Board (CVRWQCB):
 - Coverage under the National Pollutant Discharge Elimination System (NPDES) permit for Discharges of Storm Water Runoff associated with Construction Activity (Construction General Permit). Permit coverage may be obtained by submitting a Notice of Intent to the SWRCB. The permitting process requires the development and implementation of an effective Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMP) to reduce pollutants and any additional controls necessary to meet water quality standards. State Construction General Activity Stormwater Permit if grading would exceed 1 acre.
- Yolo-Solano Air Quality Management District (YSAQMD)
 - Verification of compliance with various rules and use of best available mitigation measures
- United States Department of Housing and Urban Development (HUD)
 - Approval of operating subsidy funding to facilitate the Proposed Project
 - Compliance with the National Environmental Policy Act
- California Debt Limit Allocation Committee
 - Administration of the tax-exempt bonds
- California Tax Credit Allocation Committee
 - Administration of the Low Income Housing Tax Credit
- State Historic Preservation Office (SHPO)
 - Consultation pursuant to Section 106 of the NHPA regarding (joint consultation with Indian tribes) potential impacts to cultural resources resulting from the Proposed Project

3 ENVIRONMENTAL ANALYSIS (CHECKLIST)

3.1 EVALUATION OF ENVIRONMENTAL IMPACTS

Pursuant to CEQA *Guidelines* §15063, an IS should provide the lead agency with sufficient information to determine whether to prepare an EIR or negative declaration for a proposed project. The CEQA *Guidelines* state that an IS may identify environmental impacts by use of a checklist, matrix, or other method, provided that conclusions are briefly explained and supported by relevant evidence.

If it is determined that a particular physical impact to the environment could occur, then the checklist must indicate whether the impact is Potentially Significant, Less Than Significant with Mitigation, or Less Than Significant. Findings of No Impact for issues that can be demonstrated not to apply to a proposed project do not require further discussion.

3.1.1 EVALUATION TERMINOLOGY

The following sections contain the environmental checklist form presented in Appendix G of the CEQA *Guidelines*. The checklist form is used to describe the impacts of a proposed project. For this checklist, the following designations are used:

- **Potentially Significant Impact:** An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified and no mitigation is available to reduce the impact to a less-than-significant level, an EIR must be prepared.
- **Less-than-Significant Impact with Mitigation Incorporated:** Impacts that would be reduced to a less-than-significant level by feasible mitigation measures identified in this checklist.
- **Less-than-Significant Impact:** Any impact that would not be considered significant under CEQA relative to existing standards.
- **No Impact:** The Proposed Project would have no impact.

3.1.2 CUMULATIVE IMPACT ANALYSIS

In addition to growth associated with the build-out projections in the City of Vacaville's General Plan, the projects described below were considered in determining whether the impacts of the Proposed Project would be cumulatively considerable in accordance with Section 15064(h) of the CEQA *Guidelines*. Recently completed, proposed, and reasonably foreseeable projects in the vicinity of the Project Site (City of Vacaville, 2020a) are related to growth associated with the build-out projections in the City's General Plan and include:

- **The Farmstead:** The Farmstead at North Orchard is an approved subdivision on approximately 20 acres at the southeast corner of Fruitvale Road and N. Orchard Avenue. The approved plan includes 130 lots for detached single-family homes, a three-acre neighborhood park, and approximately two acres of public open space/pedestrian paths along the entire perimeter of the site.
- **Lower Lagoon Valley:** The Lower Lagoon Valley Policy Plan Implementation Project is an approved development of privately-owned property on and adjacent to the former Hines Nursery site in Vacaville. The project was approved in 2005 and a Development Agreement was approved in March 2016.
- **Rice-McMurtry:** There are several planned or approved development projects in the northern part of the City, in an area called the Rice-McMurtry Development Area.
 - The 221-lot Cheyenne Subdivision includes 60 homes within the subdivision. In December 2013, new house plans were proposed for the remaining lots within the subdivision. The Planning Commission has recommended approval of the new house plans, but the City Council will be taking final action on this proposal in July or August.
 - The Rogers Ranch development consists of 29 residential lots on a 12.97-acre parcel located on the north side of McMurtry Lane to the west of the Cheyenne residential development. This development is dependent on the construction of an upper zone water reservoir. There are currently no proposed or approved house plans for this project.
 - The Knoll Creek development is located on the south side of McMurtry Lane, west of Browns Valley Road, and east of the City of Vacaville Caliguiri Open Space Preserve. Originally approved in 2007, the approved tentative map consisted of 38 residential lots on 22.66 acres.
 - The Reserve at Browns Valley project contains 38 single family lots, including 1 custom home lot adjacent to Browns Valley Road. Standard Pacific Homes purchased this project and has received approval from the City Council for their house plans to be constructed on all lots except the custom home parcel.
- **North Village:** On August 9, 2016, City Council considered and approved the Vesting Tentative Map and Planned Development to subdivide a 175.7-acre parcel and construct a 295-unit single-family subdivision in Planning Areas 19 and 20 of the North Village Development. The project site is located directly east of Interstate 505, approximately 1,400 ft. west of Leisure Town Road.
- **Nut Tree:** The project area occupies approximately 560 acres, and is located adjacent to East Monte Vista Avenue and Interstate I-80 and I-505 Freeways. A Policy Plan is being developed for the site to guide development.
- **The Green Tree:** The owner of the former Green Tree Golf Course and adjacent property are proposing re-use of the property. They would like to propose a mixed-use development that includes commercial, residential, and recreational uses.

- **The Farm at Alama Creek:** The City Council approved the Farm at Alamo Creek Specific Plan on November 13, 2018. The 215.6-acre project site is located in northern Solano County approximately four miles from Downtown Vacaville. The project proposes 584 single-family homes, 184 duet homes (768 units total), two neighborhood commercial parcels totaling 7.4 acres, a 11.2-acre Community Park, an 8.2 acre Play-4-All Park, approximately 7.2 acres of small neighborhood parks, approximately 28 acres of open space and supporting features such as public spaces and trails, a City well site, a detention basin and various off-site utility or roadway improvements.
- **Brighton Landing:** The Brighton Landing Specific Plan update is designed to create development standards and a land use plan for the Brighton Landing area that will satisfy the overall goals of the City while providing a design theme that can be expanded and utilized in projects that will eventually develop to the north and south of Brighton Landing as proposed for the City of Vacaville General Plan Update.
- **Robert's Ranch:** Consistent with the General Plan, the Roberts' Ranch Specific Plan proposed a residential project containing a variety of housing styles connected by trails and landscaped corridors. The project is located on a 248-acre site at the intersection of Leisure Town and Fry roads.
- **Southtown:** Southtown is a development area on Vanden Road south of Alamo Drive. It consists of several separate subdivisions and development projects. Below is information on the portions developing or yet to be developed.
- **Vanden Meadows Specific Plan:** The primary objective of the Specific Plan is to create development standards and a land use plan for the Vanden Meadows area that satisfies the overall goals of the City while recognizing and tying into the Southtown Project and its design theme.
- **Infrastructure:** There is a reasonable likelihood that infrastructure expansion and updates may occur within the City. These projects typically include work within previously developed or disturbed habitat, roadways, and utility right of ways.

3.2 AESTHETICS

3.2.1 ENVIRONMENTAL CHECKLIST

<u>AESTHETICS</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less- Than- Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.2 SETTING

Regulatory Context

California Scenic Highway Program

The California Scenic Highway Program, administered by the California Department of Transportation (Caltrans), intends to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to scenic highways. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been designated. Cities and counties can nominate eligible scenic highways for official designation by identifying and defining the scenic corridor of the highway. The municipality must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes.

City of Vacaville General Plan

Applicable City General Plan goals, policies, and objectives include:

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 for multi-family projects of 10 units or more, consistent with the adopted Planned Development regulations, which is intended to increase flexibility by allowing deviations from typical standards such as setbacks, building height, landscaping, parking, and design.
Policy LU-P1.6	With the exception of Priority Development Areas, require that infill projects be designed to complement 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.

City of Vacaville Municipal Code

Applicable City ordinances include:

Section 14.09.074	This chapter establishes standards for new, or the modification of existing, residential development and for non-residential uses in residential districts. One of the purposes of this section is to improve neighborhood aesthetics by providing standards for architectural design, variety in housing types, and configuration of subdivisions, as well as for site improvements such as landscaping and fencing.
Section 14.09.127.110	Lighting and glare: lighting shall be shielded and directed so as not to create a hazard or nuisance to other properties or impact traffic on adjacent streets. Exterior lighting should be installed to identify building entrances and to promote on-site safety or security.

Environmental Setting

As described in **Section 2.0**, the Project Site is located on approximately 2.11 acres in the City of Vacaville in Solano County. The Project Site is bounded on the north, east, and south by residential development, and on the west by commercial development. The topography of the Project Site is relatively flat, with an average elevation of 205 feet above mean sea level (amsl).

The visual characteristics of the northern parcel of the Project Site consist of the existing Glenbrook Hills Swim Club, including a pool, clubhouse building, pumphouse/storage building, and parking lot (see **Figure 3-1**, View A). The visual characteristic of the southern parcel of the Project Site consists of undeveloped land containing trees (see **Figure 3-1**, View C). The area surrounding the Project Site consists generally of urban development, including multi-family residential complexes and commercial uses. Existing vegetation along the western, eastern, and southern Project Site boundaries provide a partial visual barrier to surrounding residences and commercial areas. Due to the urban nature of the project area and relatively flat topography, there are no long-range views from the Project Site.



View A: Current view from West Monte Vista Avenue facing southwest



View C: Current view from South Orchard Avenue facing northeast



View B: Proposed view from West Monte Vista Avenue facing southwest



View D: Proposed view from South Orchard Avenue facing northeast

Scenic Resources

There is no comprehensive list of specific features that automatically qualify as scenic resources; however, certain characteristics can be identified which contribute to the determination. The following is a partial list of visual qualities and conditions that if present, may indicate the presence of a scenic resource:

- A tree that displays outstanding features of form or age.
- A landmark tree or a group of distinctive trees accented in a setting as a focus of attention.
- An unusual planting that has historical value.
- A unique, massive rock formation.
- An historic building that is a rare example of its period, style, or design, or which has special architectural features and details of importance.
- A feature specifically identified in applicable planning documents as having a special scenic value.
- A unique focus or a feature integrated with its surroundings or overlapping other scenic elements to form a panorama.
- A vegetative or structural feature that has local, regional, or statewide importance.

The Project Site is located in an urban area of commercial and residential uses. There are no unique scenic resources on or in the vicinity of the Project Site. Furthermore, there are no State Scenic Highways in the vicinity of the Project Site. The nearest State Scenic Highway is State Route 128, approximately 9.5 miles north of the Project Site, which does not provide views of the Project Site (Caltrans, 2018).

Nighttime Lighting Conditions

The Project Site experiences low to medium nighttime ambient light levels, with light primarily sourcing from the commercial development directly west of the Project Site, surrounding residential uses, as well as the City of Vacaville Fire Station 71 located directly south of the Project Site.

3.2.3 DISCUSSION OF IMPACTS

The Proposed Project would introduce buildings fronting both West Monte Vista Avenue and South Orchard Avenue with parking around the perimeter (see **Figure 3-1**, Views B and D). Common open space would be incorporated within an existing oak tree grove between the two proposed buildings. The project's architectural style consists of simple architectural forms. The primary building walls would be finished with a combination of smooth, light gray plaster contrasted with vertical textured, charcoal blue siding. Copper-colored accents would be incorporated into the building trim, balcony railings and accent tile. **Figure 3-1** depicts current images of the Project Site from West Monte Vista Avenue and South Orchard Avenue, as well as architectural renderings of the Proposed Project from these same vantage points. Additional details and renderings of the Proposed Project can be viewed in **Appendix A**.

Question A

Would the project: Have a substantial adverse effect on a scenic vista?

Less than Significant. There are no direct views of scenic resources at ground level on the Project Site that would potentially be blocked due to construction of the Proposed Project. Therefore, impacts to scenic vistas would be less than significant.

Question B

Would the project: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less than Significant. No, the Proposed Project would not substantially damage scenic resources. As described above, the Project Site is not located near a designated State Scenic Highway or other designated scenic corridor. Several trees exist on the Project Site. While some trees would be removed as part of the Proposed Project, the proposed building footprints were designed to preserve a significant grove of oak trees as part of the central courtyard (see Tree Protection and Removal Plan - Sheet L04 of **Appendix A**). Furthermore, a Landscape Plan has been developed for the Proposed Project, which would enhance the visual character of the site by adding additional trees and vegetation (see Sheet L01 of **Appendix A**). Therefore, impacts to scenic resources would be less than significant.

Question C

Would the project: In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant. No, the Proposed Project would not substantially degrade the existing visual character of the Project Site and surroundings. Although the Proposed Project would convert undeveloped land to housing units on the southern parcel, this use would be consistent with the residential visual character of the surrounding area and would not degrade the scenic quality of the area. As described in **Section 2.3.3**, a Zoning Map Amendment is a component of the Proposed Project, which would allow the Proposed Project to comply with zoning regulations for the RH zoning district. The height of Buildings A and B, as well as the chosen colors/materials of the buildings, would comply with applicable City policies and zoning. The roof height of Building A would be 43 feet and the height of Building B would be 31 feet and six inches, which would comply with the RH zoning district maximum building height of 45 feet (see Sheets A21 and A22 of **Appendix A**). Furthermore, the Proposed Project would comply with the City's Development Standards listed in Chapter 14.09.074 of the City's Municipal Code, including compliance with exterior elevations and design guidelines. As shown on Sheet L04 of **Appendix A**, existing trees on the Project Site would be protected to the extent feasible. Based on all of the reasons listed above, impacts to the visual character and quality of the Project Site and vicinity would be considered less than significant.

Question D

Would the project: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Less than Significant. No, the Proposed Project would not create a new source of substantial light or glare. The northern parcel of the Project Site and the surrounding area is fully developed. Existing sources of light adjacent to the Project Site include street lighting, lighting from commercial areas and residential units, security lighting, and lighting from vehicles. The Proposed Project would introduce new sources of light on the Project Site for similar purposes, including site and building lighting. Consistent with the City's Municipal Code Performance Standards for lighting and glare (Section 14.09.127.110), exterior lighting would be designed to not result in significant light or glare. Lighting would be shielded and cast downwards to reduce glare, and outdoor lighting would primarily be for the purposes of security and safety. The proposed apartment buildings would be constructed out of a mix of materials, including copper metal, powder-coated metal, plaster, and tile (see Sheet A23 of **Appendix A**); none of the surfaces or building materials proposed for the project are reflective or would produce glare. Potential impacts to day and nighttime views associated with lighting on the Project Site would be considered less than significant.

Cumulative Impacts

Less than Significant. Potential cumulative projects in the vicinity of the Project Site include growth within the City and County limits according to the build out projections in the City's and County's General Plans. According to the City's General Plan, an Urban Growth Boundary (UGB) was adopted in 2008; land outside the boundary cannot be designated for anything other than agriculture, park, open space, public facility, and utility uses until 2028. The Proposed Project lies within the UGB, is expected by the City to experience development, and would have to adhere to all General Plan and Municipal Code policies, as with all other proposed development within the City. The Proposed Project would not change the general visual character of the project area and new project-related light sources would not negatively affect the ambient light in the project area due to light reduction strategies that would be implemented consistent with the City's General Plan and Municipal Code. Therefore, the Proposed Project's contribution to aesthetic impacts, including new light sources, would not be cumulatively considerable.

3.2.4 MITIGATION MEASURES

None required.

3.3 AGRICULTURE/FORESTRY RESOURCES

3.3.1 ENVIRONMENTAL CHECKLIST

<u>AGRICULTURE/FORESTRY RESOURCES</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.3.2 SETTING

Regulatory Context

Federal

Farmland Protection Policy Act

The Farmland Protection Policy Act is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that federal programs are administered in a matter that is compatible with state and local units of government, and private programs and policies to protect farmland (7 United States Code [USC] § 4201).

State

California Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP), which monitors the conversion of the State's farmland to and from agricultural use, was established by the California Department of Conservation (DOC), under the Division of Land Resource Protection. The program maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years.

Williamson Act

The Williamson Act is a State program that was implemented to preserve agricultural land. Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract with the county to maintain agricultural or open space use of their lands in return for reduced property tax assessments (DOC, 2020b).

Forestry Resources

Forestry Resources are defined in the California PRC Section 12220(g) as "land that can support 10-percent native tree cover of a species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits". The California Government Code Section 51104(g) defines "timberland" as "privately owned land, or land acquired for State forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre".

Environmental Setting

According to the FMMP, the entire Project Site and vicinity is classified as "Urban and Built-Up Land" (DOC, 2020d). No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance exists on or in the vicinity of the Project Site. Furthermore, the Project Site is not under a Williamson Act contract and is not classified as forest land (City of Vacaville, 2020b).

3.3.3 DISCUSSION OF IMPACTS

Question A

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

No Impact. The Project Site is classified by the FMMP as “Urban Built-Up Land” and does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the Proposed Project would not result in the conversion of farmland to a non-agricultural use. The Proposed Project would have no impacts on agricultural resources.

Question B

Would the project: Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project Site is not zoned for agricultural use and is not under a Williamson Act contract. Therefore, the Proposed Project would have no impacts on existing zoning for agricultural use.

Question C

Would the project: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The Project Site is not zoned Forest Land, Timberland, or Timberland Production. Therefore, the Proposed Project would not cause rezoning of forest land or timberland. The Proposed Project would have no impacts on zoning.

Question D

Would the project: Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The Project Site does not contain forest land or timberland. Therefore, the Proposed Project would not result in the conversion of forest land or timberland. The Proposed Project would have no impacts on forestry resources.

Question E

Would the project: Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The Project Site does not contain land classified as farmland or forest land. Therefore, the Proposed Project would not convert farmland to a non-agricultural use or convert forest land to a non-forest use.

Cumulative Impacts

No Impact. The Proposed Project would not result in the conversion of agriculture or forest land; therefore, it would not contribute to cumulative impacts to agricultural resources.

3.3.4 MITIGATION MEASURES

None required.

3.4 AIR QUALITY

3.4.1 ENVIRONMENTAL CHECKLIST

<u>AIR QUALITY</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.4.2 SETTING

Environmental Setting

The City of Vacaville is located in the Sacramento Valley Air Basin (SVAB) and the majority of the City, including the Project Site is under the jurisdiction of the YSAQMD.

The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB. 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. Average annual rainfall is about 20 inches, and the rainy season generally occurs from November through March. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells cover the Sacramento Valley. The ozone season in the SVAB (May

through October) is characterized by stagnant morning air or light winds with the Delta sea breeze arriving from the southwest in the afternoon. Usually the evening breeze transports the airborne pollutants to the north out of the SVAB (YSAQMD, 2007).

Sensitive Receptors

Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality related health problems. Residential areas are considered sensitive to poor air quality, because people usually stay home for extended periods of time increasing the potential exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The land surrounding the Project Site is primarily residential and commercial land uses. The nearest residences are located immediately east of the Project Site. Vacaville High School is located approximately 1,500 feet east of the Project Site. There are no hospitals in the vicinity of the Proposed Project.

Regulatory Context

Ambient Air Quality Standards

The U.S. Environmental Protection Agency (USEPA), under the Clean Air Act (CAA) establishes maximum ambient concentrations for the six criteria air pollutants (CAP), known as the National Ambient Air Quality Standards (NAAQS). The six CAPs are ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), lead (Pb), and particulate matter 10 and 2.5 microns in size and smaller (PM₁₀ and PM_{2.5}, respectively).

The California CAA (CCAA) establishes maximum concentrations for the six CAPs, as well as four additional air pollutants in California (visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride). These maximum concentrations for the State are known as the California Ambient Air Quality Standards (CAAQS). Concentrations above these time-averaged limits are anticipated to cause adverse health effects to sensitive receptors.

The California Air Resources Board (CARB) is part of the California EPA and has jurisdiction over local air districts and has established their own standards and violation criteria for each CAP under the CAAQS. Refer to **Table 3-1** for the standards and violation criteria for the various averaging times for criteria pollutants of concern in the YSAQMD under the NAAQS and CAAQS.

NAAQS and CAAQS Attainment Designations

As shown in **Table 3-2**, the YSAQMD has been designated nonattainment under the federal and State ozone standards. The YSAQMD has also been designated nonattainment under State PM₁₀ and federal PM_{2.5} standards. The YSAQMD either meets the federal and California standards or is unclassifiable for all other CAPs.

**TABLE 3-1. NATIONAL AND CALIFORNIA AMBIENT AIR
QUALITY STANDARDS AND VIOLATION CRITERIA**

Pollutant	Averaging Time	Standard (parts per million)		Standard (microgram per cubic meter)		Violation Criteria	
		CAAQS	NAAQS	CAAQS	NAAQS	CAAQS	NAAQS
Ozone (O ₃)	1 hour	0.09	N/A	180	N/A	If exceeded	N/A
	8 hours	0.070	0.070	137	137	N/A	If exceeded on more than 3 days in 3 years
Carbon Monoxide (CO)	8 hours	9	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
	1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
Nitrogen Dioxide (NO ₂)	Annual arithmetic mean	0.030	0.053	57	100	N/A	If exceeded
	1 hour	0.18	0.100	470	188	If exceeded	N/A
Sulfur Dioxide (SO ₂)	Annual arithmetic mean	N/A	0.030	N/A	N/A	N/A	If exceeded
	24 hours	0.04	0.14	105	N/A	If exceeded	If exceeded on more than 1 day per year
	1 hour (primary)	0.25	0.075	655	196	N/A	N/A
	3 hours (secondary)	N/A	0.5	N/A	N/A		If exceeded on more than 1 day per year
Respirable Particulate Matter (PM ₁₀)	Annual arithmetic mean	N/A	N/A	20	N/A	If exceeded	If exceeded
	24 hours	N/A	N/A	50	150	If exceeded	If exceeded on more than 1 day per year
Fine Particulate Matter (PM _{2.5})	Annual arithmetic mean (primary)	N/A	N/A	12	12	If exceeded	If exceeded
	Annual arithmetic mean (secondary)	N/A	N/A	N/A	15	If exceeded	If exceeded
	24 hours	N/A	N/A	N/A	35	If exceeded	If exceeded on more than 1 day per year
Lead (Pb)	30 day Average	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A
	Rolling 3-month Average	N/A	N/A	N/A	0.15	N/A	If exceeded

Source: CARB, 2016.

TABLE 3-2. YSAQMD ATTAINMENT STATUS

Pollutant	Averaging Time	CAAQS	NAAQS
Ozone (O ₃)	8 hour	Nonattainment	Nonattainment
	1 hour	Nonattainment	Nonattainment
Carbon Monoxide (CO)	8 hour	Attainment	Attainment
	1 hour	Attainment	Attainment
Respirable Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	Nonattainment	Not Applicable
	24 Hour	Nonattainment	Unclassifiable/Attainment
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	Unclassifiable	Attainment
	24 Hour	Not Applicable	Nonattainment
Nitrogen Dioxide (NO ₂)	1 hour	Attainment	Attainment
	Annual Arithmetic Mean	Attainment	Attainment
Sulfur Dioxide (SO ₂)	24 Hour	Attainment	Attainment
	1 Hour	Attainment	Attainment
Lead (Pb)	30 Day Average	Attainment	Attainment
	Calendar Quarter	Not Applicable	Attainment
Source: YSAQMD, 2019.			

California State Implementation Plan

California's State Implementation Plan (SIP) is comprised of the State's overall air quality attainment plans to meet the NAAQS, as well as the individual air quality attainment plans of each AQMD and Air Pollution Control District (APCD). The items included in the California SIP are listed in 40 CFR Chapter I, Part 52, Subpart F §52.220. The California SIP is a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), AQMD and APCD rules, State regulations, and federal controls for each air basin and California's overall air quality.

Due to the nonattainment designations, YSAQMD, along with the other air districts in the SVAB region, periodically prepare and update air quality plans that provide emission reduction strategies to achieve attainment of the federal AAQS, including control strategies to reduce air pollutant emissions via regulations, incentive programs, public education, and partnerships with other agencies.

Toxic Air Contaminants

In addition to the above-listed California CAPs, Toxic Air Contaminants (TAC) are another group of pollutants regulated under the CCAA. TACs are less pervasive in the urban atmosphere than the CAPs, but are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are 244 chemicals listed by the State as TACs with varying degrees of toxicity.

Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), grading (asbestos), and diesel motor vehicle exhaust. Public exposure to TACs can result from

emissions from normal operations, as well as accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death.

Ambient air quality standards have not been set for TACs. Instead, these pollutants are typically regulated through a technology-based approach for reducing TACs. This approach requires facilities to install Maximum Achievable Control Technology on emission sources.

Yolo-Solano Air Quality Management District

Due to the nonattainment designations of the area, YSAQMD has developed plans to attain the State and federal standards for ozone and particulate matter. The plans include the 2013 Ozone Attainment Plan, the PM_{2.5} Implementation/Maintenance Plan, and the 2015 Triennial Assessment and Plan Update.

Adopted YSAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with applicable air quality plans. Thus, by exceeding the YSAQMD's mass emission thresholds for operational or construction emissions of reactive organic gas (ROG), NO_x, or PM₁₀, a project would be considered to conflict with or obstruct implementation of the YSAQMD's air quality planning efforts. The YSAQMD mass emission thresholds for operational and construction emissions are shown in **Table 3-3** below.

TABLE 3-3. YSAQMD CEQA THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction	Operational
ROG	10 tons/yr	10 tons/yr
NO _x	10 tons/yr	10 tons/yr
PM ₁₀	80 lbs/day	80 lbs/day
Source: YSAQMD, 2007.		

3.4.3 DISCUSSION OF IMPACTS

Methodology

CalEEMod was used to estimate emissions from all construction and operational-related sources. CalEEMod provides default values when site-specific inputs are not available. The default values are provided in **Appendix C**. The following site-specific inputs and assumptions were used for the purposes of air quality modeling:

- Emissions from construction were calculated based on all construction related activities, including but not limited to grading, use of construction equipment, material hauling, building, and site preparation.
- Construction would occur over a period of 14 months, starting October 2022 and ending December 2023.
- A detailed discussion of trip generation estimates is provided in **Section 3.18.3**. As stated therein, trips were estimated based on Institute of Traffic Engineer's (ITE) Trip Generation Handbook rates. In accordance with the 2018 Caltrans Technical Report on Affordable

Housing Trip Generation Strategies and Rates, Institute of Transportation Engineer's (ITE) trip generation rates were reduced by 30 percent to account for lower trip generation in affordable housing (Refer to the discussion in **Section 3.18.3**).

- The Proposed Project would comply with YSAQMD rules and regulations (i.e., low volatile organic compound cleaning supplies and paint).

The results of the CalEEMod modeling are discussed below and output files are provided in **Appendix C**. Resulting emission estimates are compared to applicable YSAQMD thresholds to evaluate the effects of construction activities on regional air quality.

Question A

Would the project: Conflict with or obstruct implementation of the applicable air quality plan?

Construction

Less than Significant with Mitigation. As stated above, the Project Site is under the jurisdiction of the YSAQMD. Emissions generated from grading and building construction activities resulting from the Proposed Project would be short-term, intermittent, and temporary in nature. Grading and construction activities associated with the Proposed Project would result in the generation of ROG, NOx, and PM₁₀ emissions. PM₁₀ is generally the direct result of site grading, excavation, road paving, and exhaust associated with construction equipment. PM₁₀ emissions are largely dependent on the amount of ground disturbance associated with site preparation activities. Emissions of NOx and ROG are generally associated with employee vehicle trips, delivery of materials, and construction equipment exhaust. **Table 3-4** shows emissions from construction activities and compares these to YSAQMD thresholds to determine if the construction emissions of the Proposed Project would have a significant impact on regional air quality, thereby conflicting with or obstructing YSAQMD air quality plans.

TABLE 3-4. CONSTRUCTION EMISSIONS

Year	Pollutants of Concern		
	ROG (tons/yr)	NOx (tons/yr)	PM ₁₀ (lbs/day)
Unmitigated			
2022	0.06	0.54	113.6
2023	0.64	1.36	47.7
Highest Emission Year	0.64	1.36	113.6
YSAQMD Thresholds	10	10	80
Exceed YSAQMD Threshold	No	No	Yes
Mitigated			
2022	0.06	0.54	69.9
2023	0.64	1.36	26.6
Highest Emission Year	0.64	1.36	69.9
YSAQMD Thresholds	10	10	80
Exceed YSAQMD Threshold	No	No	No
Source: Appendix C .			

As shown in **Table 3-4**, construction emissions of ROG and NO_x would not exceed the YSAQMD applicable significance thresholds. However, emissions of PM₁₀ would exceed the YSAQMD significance threshold during the 2022 construction year. This is a potentially significant impact.

Implementation of **Mitigation Measure AQ-1** would require that construction of the Proposed Project implement control measures for fugitive dust and vehicle exhaust. As shown in **Table 3-4**, construction emissions of PM₁₀ would not exceed the YSAQMD significance thresholds after implementation of **Mitigation Measure AQ-1**. Therefore, construction of the Proposed Project would not result in a cumulatively considerable net increase of any CAP for which the Proposed Project region is in nonattainment under an applicable federal or State ambient air quality standard, and would not conflict with or obstruct implementation of applicable air quality plans. Construction of the Proposed Project would have a less than significant impact on regional air quality after mitigation.

Operation

Less than Significant. Operation of the Proposed Project would result in emissions from area, energy, and mobile sources. The primary operational emissions associated with new development projects include PM₁₀, and ozone precursors (ROG and NO_x) that are emitted as vehicle exhaust. All operational emissions are summarized in **Table 3-5**.

TABLE 3-5. OPERATIONAL EMISSIONS

Source	Pollutants of Concern		
	ROG (tons/yr)	NO _x (tons/yr)	PM ₁₀ (lbs/day)
Area	0.35	0.006	0.03
Energy	0.003	0.03	0.01
Mobile	0.07	0.12	58.48
Total	0.42	0.16	58.52
YSAQMD Thresholds	10	10	80
Exceed YSAQMD Threshold	No	No	No
Source: Appendix C			

Table 3-5 shows that Project emissions would be below YSAQMD thresholds of significance. Therefore, operation of the Proposed Project would have a less-than-significant impact on regional air quality and would not conflict with applicable air quality plans.

Question B

Would the project: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant with Mitigation. As discussed in Question A above, construction emissions of PM₁₀ would not exceed the YSAQMD significance thresholds after implementation of **Mitigation Measure AQ-1**. Furthermore, operational Project emissions would be below YSAQMD thresholds of significance (see **Table 3-5**). Therefore, the Proposed Project would have a less-than-significant impact on regional air quality after mitigation.

Question C

Would the project: Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant with Mitigation. Sensitive receptors are individuals or groups of people that are more affected by air pollution than others, including young children, the elderly, and individuals weakened by disease or illness. Locations that may contain high concentrations of sensitive receptors include residential areas, schools, playgrounds, childcare centers, hospitals, convalescent homes, and retirement homes. As stated above, the Proposed Project does not contain any components that would result in long-term stationary emissions.

The Proposed Project includes construction activities adjacent to existing multi-family residences east of the Project Site. As discussed above, the Proposed Project would generate PM₁₀ and other pollutants during construction. Although these emissions would cease with completion of construction work, sensitive uses adjacent to the construction area could be exposed to elevated dust levels and other pollutants. This is a potentially significant impact. **Mitigation Measure AQ-1** would reduce emissions from construction activities by controlling fugitive dust and limiting idling times for construction equipment. Further, as discussed above, CAP emissions would be below the applicable YSAQMD thresholds. Therefore, with mitigation, construction and operation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations.

Question D

Would the project: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant. No, the Proposed Project would not result in emissions adversely affecting a substantial number of people because the Proposed Project does not include any components that would result in the generation of long-term odors or similar emissions. Construction activities that have the potential to emit odors and similar emissions include operation of diesel equipment, generation of fugitive dust, and paving (asphalt). Odors and similar emissions from construction are intermittent and temporary, and generally would not extend beyond the construction area. Due to the temporary and intermittent nature of construction odors, impacts during construction would be less than significant.

Cumulative Impacts

Less than Significant with Mitigation. Past, present, and future development projects contribute to a region's air quality conditions on a cumulative basis; therefore, by its very nature, air pollution is largely a cumulative impact. If a project's individual emissions contribute toward exceedance of the NAAQS or the CAAQS, then the project's cumulative impact on air quality would be significant. In developing attainment designations for criteria pollutants, the USEPA considers the region's past, present, and future emission levels.

AQMDs determine suitable significance thresholds based on an area's designated nonattainment status. These thresholds provide a tool by which the districts can achieve attainment for a particular criteria pollutant that is designated as nonattainment. Therefore, the YSAQMD's significance thresholds consider the region's past, present, and future emissions levels.

Implementation of the Proposed Project combined with future development within the Project area could lead to cumulative impacts to air quality. Construction of the Proposed Project would result in the generation of CAPs that when combined with future growth within the Project area could lead to cumulative impacts to air quality. As discussed in detail above, emissions resulting from the Proposed Project would not exceed the YSAQMD's thresholds, and construction would be in conformance with the applicable SIP developed to address cumulative emissions of CAPs in the SVAB. Therefore, the Proposed Project would have a less-than-significant cumulative impact on local and regional air quality with implementation of **Mitigation Measure AQ-1**.

3.4.4 MITIGATION MEASURES

AQ-1 Construction Control Measures

The following control measures will be implemented during construction.

- a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- b. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- c. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- d. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR).

3.5 BIOLOGICAL RESOURCES

Information in this section is summarized from the Biological Resources Assessment (BRA), dated October 2020 (**Appendix D**).

3.5.1 ENVIRONMENTAL CHECKLIST

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

3.5.2 SETTING

Regulatory Context

Clean Water Act

The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. (including wetlands), under Section 404 of the Clean Water Act (CWA). Section 404 of the CWA regulates the discharge of dredged or fill material into wetlands or waters of the U.S. The USACE requires that a permit be obtained if a project proposes impacts to a surface water resource that qualifies as a wetland or water of the U.S.

Projects impacting waters of the U.S. that require a CWA Section 404 permit additionally require a CWA Section 401 Water Quality Certification Permit. Authority to issue a Section 401 permit has been delegated by the USEPA to the Regional Water Quality Control Board (RWQCB). Under the CWA, beneficial uses lost from impacts due to a project must be replaced by a mitigation project of at least equal function, value, and area. In instances where a surface water resource is not identified as a water of the U.S., but is identified as a water of the State by the RWQCB, jurisdiction falls to the Porter-Cologne Act discussed below.

Federal Endangered Species Act

The U.S. Fish & Wildlife Service (USFWS) and the National Marine Fisheries Service are tasked with implementation of the Federal Endangered Species Act (FESA) of 1973 (16 USC § 1531 et seq.).

Threatened and endangered species on the federal list (50 Code of Federal Regulations [CFR] Subsections 17.11, 17.12) are protected from “take” (direct or indirect harm) by individuals, unless a Section 10 Incidental Take Permit is granted to an individual or a Section 7 Incidental Take Permit is granted to a federal Lead Agency for potential take occurring during otherwise lawful activities. The USFWS also designates species of concern. While species of concern are not afforded legal protection under the FESA, the USFWS may still recommend specific management actions or publish guiding documents for these species. Project-Related impacts to such species, either as individuals or populations, would also be considered significant and require mitigation. Under the FESA, loss of habitat for listed species is considered a significant impact.

Critical Habitat

Critical Habitat is defined under the FESA as specific geographic areas within a listed species range that contain features considered essential for the conservation of the listed species. Designated Critical Habitat for a given species supports habitat determined by the USFWS to be important for the recovery of the species.

Migratory Bird Treaty Act

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 703 712). The MBTA makes it unlawful to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR § 10. This includes feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR § 21).

California Fish and Game Code

California Fish and Game Code §§ 1600-1616 regulate impacts to State waters and stream and lake beds. Section 1602 requires California Department of Fish and Wildlife (CDFW) notification before beginning any activity that may obstruct or divert the natural flow of a river, stream, or lake; change or use any material from the bed, channel, or bank of a river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. California Fish and Game Code § 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State.

In addition to protections for habitat, California Fish and Game Code includes provisions that protect individuals of certain species. California Fish and Game Code §§ 2582, 3511, 4700, 5050, and 5515 include provisions against the take of any CDFW Fully Protected Species without a permit. Prior to implementation of the FESA and California Endangered Species Act (CESA), the California Department of Fish and Game (now CDFW) maintained a list of those species believed to be rare or in peril of extinction, classified as “Fully Protected.” While most species currently identified by CDFW as Fully Protected are listed under FESA and/or CESA, those species that are not formally listed, but are designated as Fully Protected, are still considered special-status species. Therefore, take of a Fully Protected Species is prohibited. CDFW additionally maintains a list of “Species of Special Concern,” which are similarly afforded protection under California Fish and Game Code and are evaluated under CEQA. Under the Code, “take” is defined as attempting to “hunt, pursue, catch, capture, or kill, or attempt” to perform such an action. California Fish and Game Code § 3503 also includes provisions against the needless destruction of eggs and nests of any bird.

California Endangered Species Act

The CDFW implements state regulations pertaining to fish and wildlife and their habitat. The CESA of 1984 (California Fish and Game Code § 2050 et seq., and CCR Title 14, §§ 670.2, 670.51) prohibits the take (interpreted to mean the direct killing of a species) of species listed under CESA (California Fish and Game Code § 2080; 14 CCR §§ 670.2, 670.5). A CESA permit (Individual Take Permit) must be obtained if a project would result in the “take” of listed species, either during construction or over the life of the project. California Fish and Game Code § 2081 allows CDFW to authorize take prohibited under Section 2080 provided that: (1) the take is incidental to an otherwise lawful activity; (2) the take will be minimized and fully mitigated; (3) the applicant ensures adequate funding for minimization and mitigation; and (4) authorization will not jeopardize continued existence of listed species (California Fish and Game Code § 2081).

Under CESA, the CDFW is responsible for maintaining a list of threatened and endangered species designated under State law (California Fish and Game Code § 2070). In addition to the list of threatened and endangered species, CDFW also maintains lists of species of special concern, which serve as “watch lists.” Pursuant to requirements of the CESA, an agency reviewing a project within its jurisdiction must determine whether any State-listed species may be present in the project area and determine whether the project would have a potentially significant impact upon such species.

Porter-Cologne Act

In instances where a surface water resource is not identified as a water of the U.S., the RWQCB may still classify the resource as a water of the State under the Porter-Cologne Act. Projects that impact waters of the state that do not meet the definition of waters of the U.S. general require a Waste Discharge Requirement Permit (WDR) from the RWQCB, or a waiver from this requirement. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including dredge or fill, that could affect the quality of the waters of the state. The WDR permit is obtained through the RWQCB that has jurisdiction over the site on which impacts occur. The Project Site falls within the jurisdiction of the CVRWQCB.

City of Vacaville General Plan

The Open Space and Conservation Element of the City's General Plan identifies goals, policies, and actions related to biological resources. The following goals are identified in the General Plan related to biological resources and form the foundation for the City's policies and actions related to preservation and management of such resources:

- Goal COS 1 Protect and enhance habitat for sensitive species and natural communities.
- Goal COS 2 Preserve and restore Vacaville's creeks.

Draft Solano County Multi-Species Habitat Conservation Plan

The Solano County Multi-Species Habitat Conservation Plan is a regional plan with 14 current participants, including the City of Vacaville. The draft plan, which has not been adopted, is intended to protect special-status species and sensitive habitats as well as to streamline the regional permitting process. Once adopted, participating entities can utilize the guidelines within the plan to comply with incidental take provisions under the FESA and CESA. Additionally, the plan provides streamlined permitting under the CWA, Porter-Cologne Act, and Fish and Game Code §1602.

City of Vacaville Tree Protection Ordinance

Chapter 14.09.131 of the City's Municipal Code provides preservation and permitting requirements for the removal of trees during land development. Per this ordinance, a tree removal permit is necessary for the removal of trees within City limits. This code additionally states that, "Approval of a development project by the decision-maker shall constitute a permit to remove any trees when removal of such trees is clearly designated as part of the project application." Permit conditions may require compensatory plantings of trees as a condition of approval.

Environmental Setting***Special-Status Species***

For the purposes of this assessment, special-status has been defined to include those species that are:

- Listed as endangered or threatened under the FESA (or formally proposed for, or candidates for, listing);
- Listed as endangered or threatened under the CESA (or proposed for listing);

- Designated as endangered or rare, pursuant to California Fish and Game Code (§ 1901);
- Designated as fully protected, pursuant to California Fish and Game Code (§ 3511, § 4700, or § 5050);
- Designated as species of concern by the CDFW (*CEQA Guidelines* § 15380); or,
- Defined as rare or endangered under CEQA.

Methodology

A biological resources survey was conducted on the Project Site on September 24, 2020. The survey was conducted by walking transects throughout the Project Site. Survey goals consisted of identifying habitat types, sensitive habitats, wetlands and waters of the U.S., and special-status species. Sensitive habitats include those that are designated as sensitive by CDFW, considered by local experts to be communities of limited distribution, or likely to be waters of the U.S. or State by the appropriate regulatory agencies. Binoculars were used to assist in surveying efforts and in identifying birds. Data was collected via a Trimble Geo XH hand-held GPS receiver. In addition to the survey, biological information was obtained from the following sources:

- Aerial photographs of the project site and surrounding area;
- USFWS Information for Planning and Conservation (IPaC) list of species listed or proposed for listing under FESA that occur in the vicinity of the Project Site (Attachment A of **Appendix D**);
- California Natural Diversity Database (CNDDB) list of special-status species with the potential to occur within the Elmira U.S. Geological Survey quadrangle (quad) (Attachment A of **Appendix D**);
- California Native Plant Society (CNPS) list of special-status species known to occur in the Elmira quad (Attachment A of **Appendix D**);
- USFWS National Wetlands Inventory map of wetland features (USFWS, 2020); and
- Natural Resources Conservation Services (NRCS) custom soils report (Attachment A of **Appendix D**).

Surveys were conducted consistent with the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018). Plants were identified using *The Jepson Manual: Vascular Plants of California* (Hickman, 1993), and *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al., 2012). Additionally, *A Manual of California Vegetation: Second Edition* (Sawyer et al., 2009), *Preliminary Descriptions of the Terrestrial Communities of California* (Holland, 1986), and *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) were consulted. Habitat requirements of special-status species were compared to habitats on the Project Site. Results of the survey are included in **Appendix D**.



SOURCE: DigitalGlobe Aerial Photograph, 9/1/2018; ESRI, 2020; AES, 11/16/2020

City of Vacaville Oak Grove Apartments Initial Study / 220537 ■

Figure 3-2
Habitat Types

Habitats

The Project Site consists of developed and ruderal/disturbed habitat. These habitat types are summarized below and explained in greater detail within **Appendix D**. A habitat map is included as **Figure 3-2**.

Developed

The northern parcel is developed and contains the Glenbrook Hills Swim Club, including a pool, clubhouse building, pumphouse/storage building, and parking lot. The southern portion of the Project Site is developed with an access driveway along the southern boundary. This habitat type comprises one acre (47.6 percent) of the Project Site.

Ruderal/Disturbed

The majority of the Project Site consists of ruderal/disturbed habitat. Vegetation within this habitat type is dominated by weedy, non-native species. A group of oak trees is located within this habitat type on approximately 0.6 acres of the southern parcel. Oak species observed include valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), and blue oak (*Quercus douglasii*). Possible oak hybrids were also observed. The vegetation beneath the oak trees was dominated by weedy, non-native species and is subject to routine maintenance and management. Ruderal/disturbed areas comprise 1.1 acres (52.4 percent) of the Project Site.

Special-Status Species

The BRA, included as **Appendix D**, summarizes the regionally occurring special-status species identified in the USFWS, CNPS, and the CNDDB lists (Table 1 of **Appendix D**) and provides an analysis of the potential for these species to occur within the Project Site based on the presence or absence of suitable habitat.

Preliminary data review and special-status species searches list 21 special-status plant species and 20 special-status animal species with the potential to occur in the region (Attachment A of **Appendix D**). The name, regulatory status, distribution, habitat requirements, period of identification, and potential to occur on the Project Site for each species are listed in Table 1 of **Appendix D**.

Based on survey results and the review of regionally occurring special-status species and associated habitat requirements, the Project Site does not provide suitable habitat for special-status plant species. However, trees on the Project Site may provide suitable habitat for nesting birds, including the special-status Swainson's hawk (*Buteo swainsoni*). Regionally occurring species with no potential to occur on the Project Site were ruled out based on lack of suitable habitat, soils, elevation, necessary substrate, and/or other environmental indicators. Special-status species were not observed during the survey.

Critical and Essential Fish Habitat

No USFWS designated or proposed Critical Habitat occurs on the Project Site (Attachment A of **Appendix D**). Additionally, no Essential Fish Habitat occurs on the Project Site.

3.5.3 DISCUSSION OF IMPACTS

Question A

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

Less than Significant with Mitigation.

Special Status Species

As described in **Appendix D**, queries were generated from CNDDDB, CNPS, and IPaC to determine whether the Project Site contains or has the potential to contain special-status plant and/or animal species. Based on an analysis of the habitat requirements associated with regionally occurring special-status species, it was determined that the Project Site contains marginally suitable habitat for one special-status species: Swainson's hawk. The Swainson's hawk typically forages in agricultural row-crops and grasslands. Urban areas, such as the Project Site, do not provide optimal foraging habitat for Swainson's hawk. Although the Project Site does not provide optimal foraging habitat, it is possible, although unlikely, that Swainson's hawk could nest within trees present on the Project Site. Disruption of nesting Swainson's hawks during construction activities could result in nest abandonment or forced fledging, and is considered a potentially significant impact. **Mitigation Measure BIO-1** includes a pre-construction nesting bird survey to identify active nests should construction commence during the general nesting season, and a disturbance-free buffer around active nests during construction until a qualified biologist determines that the nest is no longer active. With implementation of **Mitigation Measure BIO-1**, impacts to nesting Swainson's Hawk would be less than significant.

Migratory Birds

Suitable habitat for nesting birds protected under California Fish and Game Code, as well as the Migratory Bird Treaty Act occurs on and within 500 feet of the development footprint. Nesting migratory birds and raptors could be affected if vegetation removal or loud noise-producing activities associated with construction commence during the general nesting season (February 15 through September 15). Disturbance of an active nest would constitute a significant impact. **Mitigation Measure BIO-1** includes a pre-construction nesting bird survey to identify active nests should construction commence during the general nesting season, and a disturbance-free buffer around active nests during construction until a qualified biologist determines that the nest is no longer active. With implementation of **Mitigation Measure BIO-1**, impacts to nesting birds would be less than significant.

Question B

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

Less than Significant. No, the Proposed Project would not have a substantial adverse effect on any riparian habitat or sensitive natural community because the developed and ruderal/disturbed habitats on the Project Site are not considered sensitive. In general, oaks are afforded protection under California PRC §21083.4. However, affordable housing projects within an urbanized area are exempt from these protections as stated in §21083.4(d)(2). However, oaks and other native trees on the Project Site are protected under Chapter 14.09.131 of the City Municipal Code. In order to maintain compliance with City Municipal Code, the Applicant is required to obtain a tree removal permit, or an exemption from such a requirement. As stated in **Section 2.4.1**, the Applicant intends to apply for a concession to tree replacement, as allowed by the affordable housing Density Bonus law, as described in Section 14.09.116 of the City's Municipal Code. Because the Project is legally required to obtain appropriate City permits or exemptions prior to tree removal, impacts to habitats or other sensitive natural communities would be less-than-significant.

Question C

Would the project: Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No impact. There are no aquatic habitats on or adjacent to the Project Site. The Proposed Project does not include activities that would generate an adverse effect to wetlands or waters of the state or U.S. There would be no impact.

Question D

Would the project: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No impact. The northern parcel of the Project Site is developed and disturbed. The area surrounding the Project Site consists of urban development, including roadways, commercial land use, and residences. Wildlife access to the Project Site is extremely limited. No wildlife corridors were identified within the Project Site. Additionally, the Project Site does not support wildlife nurseries or access to wildlife nurseries. There would be no impact.

Question E

Would the project: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than Significant. While some trees would be removed as part of the Proposed Project, the proposed building footprints were designed to preserve a significant grove of oak trees as part of the central courtyard. This preservation of oak trees complies with the City's General Plan Policy COS-P1.14 to reduce tree removal and impacts to trees to the maximum extent feasible.

The City of Vacaville has a tree protection ordinance that requires a tree permit prior to removal. As stated above, 14 valley oak trees would be removed as part of the Proposed Project. In addition, 17 ornamental trees associated with landscaping of the Glenbrook Hills Swim Club would be removed. Oaks

and other native trees on the Project Site are protected under Chapter 14.09.131 of the City's Municipal Code. In order to maintain compliance with City Municipal Code, the Applicant is required to obtain a tree removal permit, or an exemption from such a requirement. A Tree Protection and Removal Plan has been prepared by a certified arborist that identifies trees that would require a permit to remove (Sheet L04 of **Appendix A**). At this time the City's Municipal Code does not specify requirements for tree replacement. However, Action COS-A1.9 of the City's General Plan identifies a plan to amend the tree protection ordinance to require compensatory tree plantings for removal of trees. The proposed amendment would require compensatory plantings ranging from two to eight for native trees and one to four for non-native trees, depending upon the diameter at breast height of the tree. As stated in **Section 2.4.1**, the Applicant intends to apply for a concession to tree replacement, as allowed by the affordable housing Density Bonus law, as described in Section 14.09.116 of the City's Municipal Code. Because the Proposed Project is legally required to obtain appropriate City permits or exemptions prior to tree removal, impacts to local policies or ordinances protecting biological resources would be less-than-significant.

Question F

Would the project: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Less than Significant with Mitigation. The Project Site is within the boundaries of the draft Solano County Multi-Species Habitat Conservation Plan (SMSHCP), which is a guidance document for regional conservation and environmental permitting for private and public development projects. The SMSHCP has not yet been adopted. The Proposed Project could conflict with this plan if it resulted in activities that would result in the take of special-status species covered under the plan. Of the species identified in the SMSHCP, the Project Site could provide nesting habitat for Swainson's hawk. The Project Site does not provide habitat for other species covered under the SMSHCP. However, with implementation of **Mitigation Measure BIO-1**, the Proposed Project would avoid potential impacts to this species by ensuring active nests are provided with a disturbance-free buffer. As such, in the event that the SMSHCP is adopted prior to submittal of improvement plans for the Proposed Project, applicable mitigation measures consistent with the SMSHCP would be implemented. Therefore, with implementation of **Mitigation Measure BIO-1**, the Proposed Project would not conflict with an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

Cumulative Impacts

Less than Significant with Mitigation. The context for determining cumulative impacts considers past, present, and reasonably foreseeable projects in the vicinity of the Proposed Project. Past development in the vicinity of the Project Site is largely associated with the larger City of Vacaville, including residential development, transportation infrastructure, commercial and industrial uses, and agricultural uses. Future development is guided by the City's General Plan.

The Proposed Project would not contribute to cumulative impacts to wetlands or waters of the U.S. or state, as those habitat types do not occur on or adjacent to the Project Site. Additionally, the Project Site lacks wildlife corridors and nursery sites and would therefore not contribute to cumulative impacts to

these resources. The Project Site does not offer habitat suitable to support special-status plants and would therefore not contribute to cumulative impacts related to special-status plants.

With implementation of **Mitigation Measure BIO-1**, the Proposed Project would avoid potential impacts to special-status wildlife. Because potential impacts would be avoided, the Proposed Project would not cumulatively contribute to impacts to special-status wildlife. Additionally, removal of 14 oaks is not cumulatively considerable when considering the cumulative context of oak removal in the region.

As required by the City Municipal Code, the Proposed Project would obtain a permit under the City's tree protection ordinance, or an exemption from this ordinance, prior to impacts. Cumulatively considered projects in the City would be required to be compliant with local regulation and plans and would therefore require the appropriate permits, as necessary. Because the Proposed Project is compliant with City ordinance and permitting requirements through the Habitat Conservation Plan, and because other projects would need to be compliant, cumulative impacts are less than significant.

Overall, the Proposed Project would not contribute a significant level of cumulative, direct, or indirect impacts to sensitive habitats, special-status species and their habitat, or migratory birds. Additionally, the Proposed Project would not conflict with local plans or policies protecting biological resources. Other cumulatively considerable projects would be required to implement measures to protect biological resources consistent with federal, state, and local policies. Therefore, the Proposed Project's contribution to cumulative regional impacts associated with biological resources would be less than significant with implementation of **Mitigation Measures BIO-1**.

3.5.4 MITIGATION MEASURES

BIO-1 Swainson's Hawk and Other Special-Status Bird Species Protected Under the MBTA

If groundbreaking is scheduled to begin during the general nesting season (February 1 through August 31), a qualified biologist shall conduct a preconstruction nesting bird survey of the Project Site and publicly-accessible areas within 500 feet of the Project Site within 5 days prior to site disturbance. Results of the preconstruction survey shall be submitted to the City of Vacaville. If nesting birds are not observed, then further mitigation is not required.

If an active nest is identified, the following shall occur:

- The biologist shall establish a minimum 100-foot Environmentally Sensitive Area (ESA) around the nest. The ESA may be reduced if the biologist determines that a smaller ESA would still adequately protect the nest. Similarly, the ESA may be enlarged if the biologist determines a larger buffer is necessary to protect the nest.
- The City of Vacaville Development Department shall be notified.

Work may not occur within the ESA until the biologist determines that the nest is no longer active.

3.6 CULTURAL RESOURCES

Information in this section is summarized from a Cultural Resources Survey Report prepared for the Proposed Project (**Confidential Appendix E**). The Cultural Resources Survey Report is also being used for consultation between HUD and the State Historic Preservation Officer pursuant to the requirements of Section 106 of the NHPA.

3.6.1 ENVIRONMENTAL CHECKLIST

<u>CULTURAL RESOURCES</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.6.2 SETTING

Cultural Context

Prehistoric Setting

The project region is known to contain numerous traces of past human activity ranging from early Native American sites and artifacts to the remains of historic-era agricultural activities. The following chronological periods have been defined based on cultural changes in the Proposed Project region: Paleo-Indian (13,500 to 10,550 Before Present [B.P.]), Lower Archaic (10,550 to 7550 B.P.), Middle Archaic (7550 to 2550 B.P.), Upper Archaic (2550 to 900 B.P.), and Emergent (900 to ca. 200 B.P.).

The Paleo-Indian Period (10,000 B.C. to 6000 B.C.) saw the first demonstrated entry and spread of humans into California with most known sites situated along lakeshores. A developed milling tool technology may have been present at this time. Characteristic artifacts noted in the lithic assemblages include fluted projectile points and flaked crescents.

Generally, the Middle Archaic Period (7550 to 2550 B.P.) is seen as a shift from the highly mobile Paleo Indian and Lower Archaic peoples to a semi-sedentary pattern. Grinding tools, including mortars and

pestles, become common in the Middle Archaic and reflect a greater reliance on acorn and other nuts and seeds. Fish and other aquatic resources become a large part of the diet as seen through the variety of new technologies devised for fishing, such as hooks and spears, and a plethora of fish remains. A variety of new artifact types were introduced in the Middle Archaic Period such as basketry awls, baked clay objects, and cordage. Artifacts used for personal adornment, such as plummet stones, bird bone tubes, and shell beads also became common in Middle Archaic assemblages (Moratto, 1984).

The Upper Archaic Period (2550 to 900 B.P.) is better understood than any of the preceding periods. Technology became specialized during this period, resulting in innovations within bone tools, shell beads, charmstones, and ceremonial blades. The abundance of grinding tools and archaeobotanical remains indicates a heavy dependence upon acorns.

The Emergent Period (900 to ca. 200 B.P.) in the Central Valley was also a period of technological adaption. A number of cultural innovations shaped the Emergent Period, including replacement of dart and atlatl technology by the bow and arrow. Burial-associated artifacts become more elaborate, suggesting an increase in social stratification and complexity. Subsistence during this period is based on plant foods and aquatic resources.

Ethnographic Setting

Prehistorically, the project area was inhabited by the Patwin. Patwin are members of the California Penutian linguistic stock and are the southernmost division of the Wintun group, a distinction based primarily on linguistic variation. The core Patwin territory included lands in the southern Sacramento Valley west of the Sacramento River from the town of Princeton, north of Colusa, south to San Pablo and Suisun bays (Johnson, 1978).

The Patwin made full use of the various environments within their territory, emphasizing different areas depending on the season and availability of resources. Game was hunted either by the individual or in community drives. Salmon runs and other food resources available along Sacramento River also contributed significantly to Patwin subsistence. Acorns represented one of the most important foods. Some Patwin communities claimed possession of specific resource gathering areas such as valuable fishing holes and oak groves.

The “tribelet” village community formed the primary social unit among the Patwin. Tribelets were autonomous social units generally composed of a central village site, with outlying hamlets, and sometimes shared a common dialect. Patwin houses were conical in shape and were made of bark stretched over a skeleton frame; ceremonial structures were the same shape but constructed on a larger scale. Traditional Patwin culture was significantly disrupted during the historic period as a result of introduced diseases, forced labor, religious conversion, violence, and loss of traditional lands.

Historic Setting

Following the settlement of San Diego in 1769, the Spanish made steady progress in the exploration and settlement of the coastal regions of Alta (Northern) California. By 1776, the Spaniards established the Presidio of San Francisco and by 1798 Mission San Jose. However, the Central Valley would remain largely uncharted in the first decades of Spanish settlement, until the early 19th Century. Between 1804

and 1823 the Spanish made numerous trips into the Central Valley prospecting for new mission sites, attempting to recover stolen horses and cattle, or making punitive raids against natives believed responsible for the theft of livestock. Chief among the earliest Spanish explorers in the Central Valley was Pedro Fages, who led at least 46 expeditions into the interior between 1805 and 1820 (Hoover et al., 2002).

In 1821, Mexican forces prevailed in their struggle for independence and declared California part of the Mexican empire. This event marked the beginning of the short-lived Mexican Period in California history. In 1833, the formal process of secularizing the missions began and Mission lands were divided among the Californios. The grants, known as ranchos, enriched those individuals fortunate enough to receive one, while effectively subjugating the native tribes as an indentured labor force.

The Project Site is located within the Mexican Land Grant known as Rancho Los Potos, which was granted to Juan Manuel Vaca and Juan Felipe Pena in 1842 by Governor Micheltorena (Hoover et al., 2002). However, the description of grant boundaries was vague and it was soon discovered that the boundaries overlapped a neighboring rancho granted to John Wolfskill. Eventually, the courts ruled in favor of Wolfskill but Vaca, determined to stay in the area, built an adobe structure roughly 2 miles south of the modern City of Vacaville.

In 1850, William McDaniel purchased 9 square miles of land within the Rancho Los Potos from Manuel Vaca for the sum of \$3,000, and developed a town. The town was recorded as Vacaville in December of 1851 and was incorporated in 1892. The first Euro-American settlers to live in Vacaville besides McDaniel toiled on the land cutting wild oats for transport to the Sacramento River.

Record Search

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System by NWIC staff, on September 17, 2020 (NWIC File No.: 20-0464). The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historic records and reports for a 15-county area that includes Solano County, and is housed at Sonoma State University. Additional research was conducted using the files and literature maintained at Analytical Environmental Services (AES).

The records search revealed that the Proposed Project Site has not been previously surveyed for cultural resources, and that there is one archaeological resource, site P-48-118, a combined historic and prehistoric multicomponent site, that has been identified within ½-mile. Results also indicate that eight targeted archaeological surveys have been completed within the ½-mile radius while another seven overview surveys have included elements of the Proposed Project region (**Appendix E**).

Native American Contacts

AES sent a record search request to the Native American Heritage Commission (NAHC) on September 23, 2020 and received a reply on September 30, 2020. The reply noted that there were no sites listed in the Sacred Lands file. The NAHC also included a list of individuals who might have information regarding cultural resources on the Project Site. On October 1, 2020, AES sent letters via Certified Mail to those individuals including a description of the Proposed Project and a map, and made follow-up telephone calls on October 12, 2020. Voice messages were left for all individuals identified by the NAHC. AES

received a written response from the Yocha Dehe Wintun Nation dated October 9, 2020. In that response, Yocha Dehe stated that the Tribe was unaware of any cultural resources and that a monitor was not needed, but asked to be notified if anything is found. Yocha Dehe also recommended that the Tribe be contacted to schedule and complete cultural sensitivity training for project personnel. This request has been acknowledged in **Mitigation Measure CR-3** below.

Field Survey

AES Senior Archaeologist Charlane Gross, M.A., RPA, who meets the Secretary of the Interior's Standards and Guidelines for Archaeology, conducted a cultural resources field survey of the Project Site on September 24, 2020. At the time of the survey, APN 0126-160-150 (the southern parcel) was thickly covered in grasses and forbs and tree duff, with some patches of road gravel in the southwestern quadrant of the parcel; the parcel also extends across the driveway immediately to the south, but this was paved. Informal foot trails crossed the property, leading to the commercial buildings just to the north, and there was one linear bulldozer push pile, also covered in grasses and forbs. Ground surface visibility was less than one percent, except along the footpaths.

APN 0126-150-050 (the northern parcel) included facilities related to the Glenbrook Hills Swim Club; a wooden fence blocked access between the two parcels. Facilities included a full-sized pool, a smaller kiddie pool, a small, painted brick building, two metal sheds, picnic tables, a volleyball net, swing set, and outdoor grill. The only unpaved areas were located immediately west, south, and east of the building; where unpaved, ground surface visibility was obscured by grasses and forbs, ivy, and tree duff. Average ground surface visibility was approximately 10 percent. No other prehistoric or historic-period cultural resources were identified as a result of the field survey and no paleontological resources were observed within the Project Site (**Appendix E**).

Regulatory Context

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA, as amended, and its implementing regulations found at 36 CFR Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting actions. The City is applying for federal grant funding for the Proposed Project through HUD; therefore, the Proposed Project is subject to Section 106 review.

The significance of the resources must be evaluated using established criteria outlined at 36 CFR 60.4, as described below. If a resource is determined to be a *historic property*, Section 106 of the NHPA requires that effects of the undertaking on the resource be determined. A historic property is:

...any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property...(NHPA Sec. 301[5])

Section 106 of the NHPA prescribes specific criteria for determining whether an undertaking would adversely affect an historic property, as defined in 36 CFR 800.5. An impact is significant when the following occurs to prehistoric or historic archaeological sites, structures, or objects that are National Register of Historic Places (NRHP) listed, or eligible for NRHP listing:

- physical destruction or damage to all or part of the property;
- alteration of a property;
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; and
- neglect of a property that causes its deterioration; and the transfer, lease, or sale of the property.

If it is determined that a historic property will be adversely affected by implementation of a proposed action, prudent and feasible measures to avoid or reduce adverse impacts must be taken. The SHPO must be provided an opportunity to review and comment on these measures prior to implementation of the proposed action.

National Register of Historic Places

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 CFR 60.4 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history;
- B. That are associated with the lives of persons significant in our past;
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That has yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP. In addition to meeting at least one of the criteria outlined above, the property must also retain enough integrity to enable it to convey its historic significance. The National Register recognizes seven aspects or qualities that, in various combinations, define integrity (National Park Service, 1990). These seven elements of integrity are location, design, setting, materials, workmanship, feeling, and association. To retain integrity a property will always possess several, and usually most, of these aspects.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (Criteria A, B, and C), the significance of most prehistoric and historic-period archaeological properties is usually assessed under Criterion D. This criterion stresses the importance of the information contained in an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or event. It places importance not on physical appearance, but rather on information potential.

California Environmental Quality Act

CEQA requires that, for projects financed by or requiring the discretionary approval of public agencies in California, the effects that a project has on historical and unique archaeological resources be considered (PRC § 21083.2). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC § 50201). The *CEQA Guidelines* (§ 15064.5) define three cases in which a property may qualify as a historical resource for the purpose of CEQA review:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
- The resource is included in a local register of historic resources, as defined in section 5020.1(k) of the PRC, or is identified as significant in a historical resources survey that meets the requirements of section 5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- The lead agency determines that the resource may be a historical resource as defined in PRC §§ 5020.1(j), 5024.1, or significant as supported by substantial evidence in light of the whole record. Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:
 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, 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.

Resources must retain integrity to be eligible for listing on the CRHR. Resources that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR, and thus are significant historical resources for the purposes of CEQA (PRC § 5024.1(d)(1)).

PRC § 21083.2 governs the treatment of a unique archaeological resource, which is defined as “an archaeological artifact, object, or site about which it can be clearly demonstrated” that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information.

- It has a special and particular quality such as being the oldest of its type or the best example of its type.
- It is directly associated with a scientifically recognized important prehistoric or historic event or person.

3.6.3 DISCUSSION OF IMPACTS

Question A

Would the project: Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

No Impact. As described above, the records search revealed that no historical resources have been recorded within the Proposed Project Site, and no CRHR-eligible resources were identified during the field survey. No impact would occur.

Question B

Would the project: Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less than Significant with Mitigation. Based on the results of the records search, literature review, Native American consultation, and field survey, there are no known cultural resources within the Proposed Project Site, and the potential for unknown NRHP/CRHR-eligible resources within the Proposed Project area is considered to be low. There is always the potential, however remote, that previously unknown archaeological resources could be encountered during subsurface construction activities. This is a potentially significant impact. Implementation of **Mitigation Measure CR-1** presented in **Section 3.6.4** would ensure that inadvertently discovered resources that may be eligible for the NHRP or CRHR would be investigated and evaluated for eligibility to the NRHP and CRHR. **Mitigation Measure CR-1** would reduce potential impacts to previously unidentified archaeological resources to a less-than-significant level.

Question C

Would the project: Disturb any human remains, including those interred outside of dedicated cemeteries?

Less than Significant with Mitigation. There is always the potential, however remote, that previously unknown human remains could be encountered during subsurface construction activities. This is a potentially significant impact. Implementation of **Mitigation Measure CR-2** presented in **Section 3.6.4** would ensure the appropriate treatment of human remains. **Mitigation Measure CR-2** would reduce potential impacts to previously unidentified human remains to a less-than-significant level.

Cumulative Impacts

Less than Significant with Mitigation. Potential cumulative projects in the vicinity of the project area have the potential to impact cultural resources. Archaeological and historic resources are afforded special legal protections designed to reduce the cumulative effects of development. Potential cumulative projects and the Proposed Project would be subject to the protection of cultural resources afforded by the CEQA

Guidelines Section 15064.5 and related provisions of the PRC. In addition, projects with federal involvement would be subject to Section 106 of the NHPA. Given the non-renewable nature of cultural resources, any impact to protected sites could be considered cumulatively considerable. As discussed above, no known protected archaeological or historic resources were identified within the Proposed Project's Development Footprint. **Mitigation Measures CR-1** and **CR-2** provide for the protection of unanticipated finds made during ground disturbing activities. With the implementation of these mitigation measures, the Proposed Project's incremental contribution to cumulative impacts to cultural resources is considered to be less than significant.

3.6.4 MITIGATION MEASURES

CR-1 Inadvertent Resource Discovery

In the event of any inadvertent discovery of archaeological or paleontological resources, all such finds shall be subject to 36 CFR 60.4, PRC 21083.2, and CEQA *Guidelines* § 15064.5. Procedures for inadvertent discovery include the following:

- All work within a 100-foot radius of the find shall be halted, and the City shall be notified. Workers should avoid altering the materials until a professional archaeologist or paleontologist if the find is of a paleontological nature, can evaluate the significance of the find in accordance with NRHP and CRHR criteria. The Applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement.
- The qualified archeologist shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but not limited to, culturally appropriate temporary and permanent treatment, which may include avoidance of cultural resources, in-place preservation, and/or re-burial on project property so the resource(s) are not subject to further disturbance in perpetuity. If avoidance is determined to be infeasible, pursuant to CEQA *Guidelines* Section 15126.4(b)(3)(C), a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. If necessary, excavation and evaluation of the finds shall comply with Section 15064.5 of the CEQA *Guidelines*.
- If the find represents a prehistoric resource, representatives of the Native American community shall be consulted as well under the provisions of AB 52 or Section 106 of the NHPA. Construction shall not resume in the vicinity of the find until consultation is concluded or until a reasonable good-faith effort has failed to provide a resolution to further impacts that is acceptable to the consulting parties.

CR-2 Human Remains Discovery

In the event that human remains are encountered during construction activities, the City shall comply with Section 15064.5 (e) (1) of the CEQA *Guidelines* and Health and Safety Code Section 7050.5. All project-related ground disturbance within 100 feet of the find shall be halted until the county coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the

NAHC to identify the most likely descendants of the deceased Native Americans. Project-Related ground disturbance in the vicinity of the find shall not resume until the process detailed in Section 15064.5 (e) has been completed.

CR-3 Cultural Sensitivity Training

Prior to the beginning of Proposed Project construction, the City shall contact the Yocha Dehe Wintun Nation to schedule and complete cultural sensitivity training for construction project machinery operators and supervisory personnel.

3.7 ENERGY

3.7.1 ENVIRONMENTAL CHECKLIST

<u>ENERGY</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.7.2 SETTING

Regulatory Context

Warren-Alquist Act

The 1974 Warren-Alquist Act (PRC § 25000 et seq.) established the California Energy Commission (CEC) and created a State policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The California Legislature continues to amend the Act to address pressing energy needs and issues, and the CEC publishes an updated version of the Act each year. The 2019 edition of the Warren-Alquist Act was published in February of 2019.

State of California Integrated Energy Policy Report

Senate Bill (SB) 1389 requires the CEC to adopt an Integrated Energy Policy Report (IEPR) every two years. The IEPR contains an assessment of major energy trends and issues facing the electricity, natural gas, and transportation fuel sectors within California. The Report provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the economy of California; and protect public health and safety.

The IEPR calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the IEPR identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The Draft 2019 IEPR was submitted for public comment on November 8, 2019 and covers a broad range of topics including decarbonizing buildings, integrating renewables, energy efficiency, energy equity, electricity reliability, climate adaptation activities for the energy sector, a natural gas assessment, a transportation energy demand forecast, and the California Energy Demand Forecast. The 2019 IEPR provides the results of the CEC assessments on a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, clean energy, air quality, and other environmental goals while maintaining reliability and controlling costs.

California Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Non-Residential Buildings (California Building Energy Efficiency Standards) specified in Title 24, Part 6 of the CCR was established in 1978 in response to a legislative mandate to reduce energy consumption in California. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The most recent standards were adopted in 2019 and took effect on January 1, 2020 (for building permit applications submitted on or after that date). These standards are updated every three years. The new standards require better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses. Non-Residential buildings are expected to use about 30 percent less energy compared to the 2016 Energy Efficiency Standards, primarily due to lighting upgrades.

California Green Building Standards Code

The California Green Building Standards Code (CALGreen), specified in CCR, Title 24, Part 11, is a State-wide regulatory code for all buildings, residential and commercial included. The regulations are intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. The standards require that all new residential and non-residential development implement various energy conservation measures, including ceiling, wall, and concrete slab insulation; weather stripping on doors and windows; closeable doors on fireplaces; insulated heating and cooling ducts; water heater insulation blankets; and certified energy efficient appliances. CALGreen is updated periodically and the latest update, CALGreen 2019, became effective on January 1, 2020.

Renewables Portfolio Standard Program

The California Renewables Portfolio Standard (RPS) program was established in 2002 by SB 1078 and requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide a certain percentage of their supply from renewable sources. The initial requirement was that at least 20 percent of electricity retail sales had to be served by renewable resources by 2017. The RPS program was accelerated in 2015 with SB 350 that mandated a 50 percent RPS by 2030. In 2018, SB 100 was signed into law, increasing the RPS to 60 percent by 2030 and requiring all electricity in California to come from carbon-free resources by 2045.

Assembly Bill 1007 (Pavley)-Alternative Fuel Standards

AB 1007, (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a State plan to increase the use of alternative fuels in California; therefore, the CEC prepared the State Alternative Fuels Plan in

partnership with CARB and in consultation with other local, State, and federal agencies. The final State Alternative Fuels Plan, published in December 2007, attempts to achieve an 80 percent reduction in greenhouse gas (GHG) emissions associated with personal transportation, even as the population of California increases.

City of Vacaville General Plan

Applicable City General Plan goals, policies, and objectives related to energy include:

Policy COS-P10.1	Encourage the development of energy generated by renewable fuel sources within the city, provided that significant adverse environmental impacts associated with such development can be successfully mitigated.
Policy COS-P10.3	Encourage the installation of solar voltaic panels on new homes and businesses through reduced building permit fees or other incentives.
Policy COS-P10.4	Encourage the use of solar water and pool heaters.
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 heating, ventilation, and air conditioning (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.

Environmental Setting

The project site is located within the city limits of Vacaville and is surrounded by residential and commercial use. Energy would be supplied to the Proposed Project Site by Pacific Gas and Electric (PG&E).

PG&E Electric Utility Operations

PG&E provides “bundled” services (i.e., electricity, transmission, and distribution services) to most of the six million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. Customers also can obtain electricity from alternative providers such as municipalities or Customer Choice Aggregators, as well as from self-generation resources like rooftop solar installations. In 2018, PG&E generated and/or procured a total of 48,832 gigawatt hours of electricity. Of this total, PG&E owns 7,686 megawatts (MW) of generating capacity (**Table 3-6**). The remaining electrical power is purchased from other sources in and outside of California.

TABLE 3-6. PG&E-OWNED ELECTRICITY GENERATING SOURCES

Source	Generating Capacity (MW)
Nuclear	2,240
Hydroelectric	3,891
Fossil Fuel-Fired	1,400
Fuel Cell	3
Photovoltaic	152
Total	7,686
Source: PG&E, 2018.	

Renewable Energy Resources

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers. SB 350 became effective on January 1, 2016, increasing the amount of renewable energy that must be delivered by most load-serving entities, such as PG&E, to their customers from 33 percent of their total annual retail sales by the end of the 2017-2020 compliance period to 50 percent of their total annual retail sales by the end of the 2028-2030 compliance period. In September 2018, the California Governor signed SB 100 into law, increasing the California electricity portfolio that must come from renewables from 50 percent to 60 percent by 2030; and establishing a State policy that 100 percent of all retail electricity sales must come from RPS-eligible or carbon-free resources by 2045.

Renewable generation resources, for the purposes of the RPS program, include bioenergy such as biogas and biomass, certain hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. During 2018, 38.9 percent of energy deliveries from PG&E were from renewable energy sources, exceeding the annual RPS target of 28 percent (**Table 3-7**).

TABLE 3-7. PG&E RENEWABLE ENERGY DELIVERIES

Source	Percent of Total Energy Portfolio
Biopower	4.4
Geothermal	3.7
Wind	10
RPS-Eligible Hydroelectric	2.7
Solar	18.1
Total	38.9
Source: PG&E, 2018.	

Electricity Transmission

As of December 31, 2018, PG&E owned approximately 18,000 circuit miles of interconnected transmission lines operating at voltages ranging from 60 kilovolts (kV) to 500 kV (PG&E, 2018). PG&E also operated 84 electric transmission substations with a capacity of approximately 65,000 megavolt amperes (MVA). The PG&E electric transmission system is interconnected with electric power systems in

the Western Electricity Coordinating Council, which includes many western U.S states; Alberta and British Columbia, Canada; and parts of Mexico.

Electricity Distribution

The PG&E electric distribution network consists of approximately 107,000 circuit miles of distribution lines (approximately 20 percent underground and 80 percent overhead), 50 transmission switching substations, and 769 distribution substations, with a capacity of approximately 32,000 MVA (PG&E, 2018).

These distribution substations serve as the central hubs of the PG&E electric distribution network. Emanating from each substation are primary and secondary distribution lines connected to local transformers and switching equipment that link distribution lines and provide delivery to end users. In some cases, PG&E sells electricity from its distribution facilities to entities, such as municipal and other utilities, that resell the electricity. PG&E operates electric distribution control center facilities in Concord, Rocklin, and Fresno, CA; these control centers are a key component of the PG&E effort to create a smarter, more resilient grid.

3.7.3 DISCUSSION OF IMPACTS

Question A

Would the project: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

Less than Significant. No, the Proposed Project would not result in a potentially significant environmental impact due to consumption of energy resources. Construction of the Proposed Project would consume energy primarily from fuel consumed by construction vehicles and equipment. Fossil fuels used for construction vehicles and other equipment would be used during site clearing, grading, paving, and building. Fuel consumed during construction would be temporary in nature and would not represent a significant demand on available fuel. There are no unusual characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or State.

Additionally, project-related design features and mitigation measures would provide fuel and energy reduction during construction. Overall fuel and energy reductions are difficult to quantify; however, certain air quality emission reduction measures would also reduce fuel and electricity use during construction of the Proposed Project. **Mitigation Measure AQ-1** would reduce energy consumption by requiring the contractor to minimize equipment idling time. Additionally, all diesel-fueled construction vehicles would be required to meet the latest emissions standards. These measures would further reduce fuel and energy use during all stages of construction and avoid the wasteful, inefficient, or unnecessary consumption of fuel energy. Therefore, construction of the Proposed Project would not result in inefficient, wasteful, or unnecessary consumption of fuel energy as it would comply with relevant standards.

Operation

Less than Significant. As described in **Section 2.3**, the Proposed Project would be designed and constructed to comply with the applicable requirements of the California Building Code and CALGreen. Additionally, pursuant to Section 14.09.074.094 of the City Municipal Code, the Proposed Project would incorporate energy-efficient design features to include, but not limited to, all electric power, cool roof shingles, all fiberglass-based insulation, photovoltaic panels or the capability to install panels in the future, electric charging stations, energy efficient appliances and fixtures, and drought tolerant landscaping in accordance with the City's Water Efficient Landscaping Ordinance. Further, as explained in **Section 3.18.3**, the Proposed Project would result in high density affordable housing on an infill site within the City, and as result is not expected to increased vehicles miles traveled and associated consumption of fuel energy resources. Accordingly, the Proposed Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, this impact would be less than significant.

Question B

Would the project: Would the project: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. As described above, the Proposed Project would comply with applicable state and local energy standards, such as the California Building Code, CALGreen, and the City Municipal Code. Therefore, the Proposed Project would not conflict with a State or local plan for renewable energy or energy efficiency. No impact would occur.

Cumulative Impacts

Less than Significant. With regard to energy usage, the California Public Utilities Commissions' Long Term Procurement Plan (LTPP) proceedings were established to ensure a safe, reliable, and cost-effective electricity supply in California. A major component of the LTPP proceeding addresses the overall long-term need for new system reliability resources, including the adoption of system resource plans. These resource plans will allow the California Public Utilities Commission to comprehensively assess the impacts of state energy policies on the need for new resources. As discussed above, several aspects of the Proposed Project would help manage the amount and efficiency of energy consumption and would ensure that the related consumption is not inefficient, wasteful or unnecessary, or place a significant demand on regional energy supplies. Therefore, impacts to energy resources resulting from the Proposed Project, combined with other past, present, or reasonably foreseeable future projects, would not result in a cumulative impact to which the proposed project would have a cumulatively considerable contribution.

3.7.4 MITIGATION MEASURES

None required.

3.8 GEOLOGY/SOILS

3.8.1 ENVIRONMENTAL CHECKLIST

<u>GEOLOGY/SOILS</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less- Than- Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: <ul style="list-style-type: none"> 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? 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.8.2 SETTING

Regulatory Context

Federal Earthquake Hazards Reduction Act

In October 1997, the U.S. Congress passed the National Earthquake Hazards Reduction (NEHR) Act to “reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program.” To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the NEHR Act, which refined the description of agency responsibilities, program goals, and objectives.

NEHRP’s mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities, improvement of building codes and land use practices, risk reduction through post-earthquake investigations and education, development and improvement of design and construction techniques, improvement of mitigation capacity, and accelerated application of research results. The NEHR Act designates Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Other NEHR Act agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey (USGS).

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed by the California Legislature to mitigate the hazard of surface faulting to structures. The Act’s main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local agencies must regulate most development in fault zones established by the State Geologist. Before a project can be permitted in a designated Alquist-Priolo Fault Study Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

California Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (PRC §§ 2690–2699.6) addresses seismic hazards other than surface rupture, such as liquefaction and induced landslides. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

National Pollutant Discharge Elimination System Permit

The SWRCB administers regulations and permitting for the USEPA (55 CFR 47990) for pollution generated from stormwater under the NPDES. There are nine RWQCBs that implement the SWRCB’s jurisdiction and require that an operator of any construction activities with ground disturbances of 1.0 acre or more obtain a General Permit through the NPDES Stormwater Program. The Project Site is within the jurisdiction of the CVRWQCB. The Construction General Permit requires that the implementation of BMPs be employed to reduce sedimentation into surface waters and control erosion. The preparation of a SWPPP addresses control of water pollution that includes the effects of sediments in the water during

construction activities. These elements are further explained within **Section 3.11, Hydrology and Water Quality**.

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (CBC) (CCR Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The CBC also applies to building design and construction in the state and is based on the International Building Code used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with numerous more detailed and/or more stringent regulations.

Environmental Setting

Regional Geology

The Project Site is located near the eastern boundary of the Coast Ranges geomorphic province (Province) of California, near the margin of the Great Valley Province (California Geological Survey [CGS], 2002). The Province lies between the Pacific Ocean and the Great Valley of California and stretches from the Oregon border to the north and continues south to the Santa Ynez River near Santa Barbara. The northern and southern portions of the Province are divided by a depression containing the Bay. Much of the Province is characterized by northwest trending mountain ranges, ridges, and valleys composed of the Franciscan Complex. According to CGS's Geologic Map of California, the dominant rock type in the project vicinity is Type Q, which is a Pleistocene-Holocene period type characterized by alluvium, lake, playa, and terrace deposits (CGS, 2015).

Site Topography

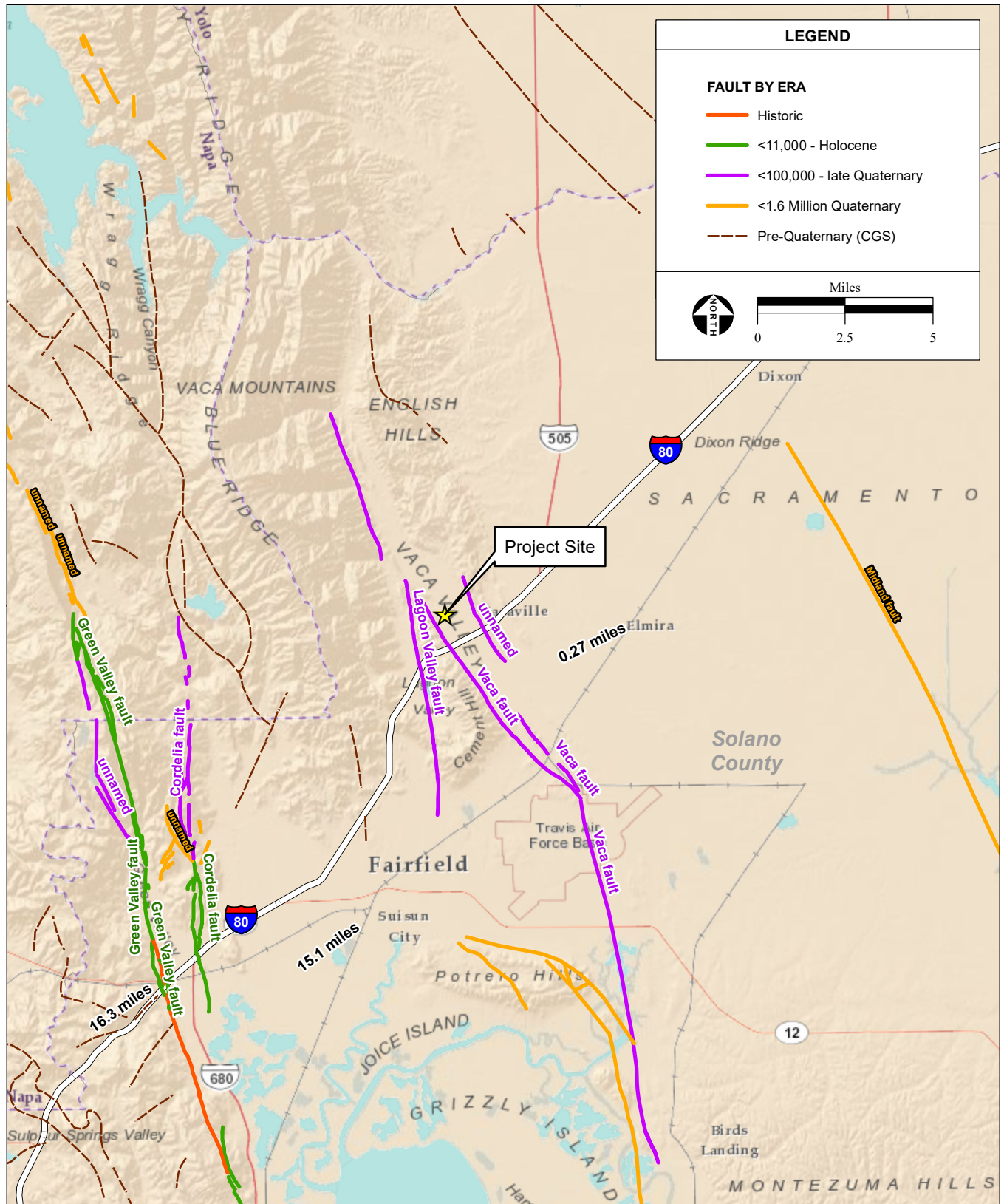
The topography of the Project Site is relatively flat, with an average elevation of 205 feet amsl. There are no mapped landslides or landslide features on the Project Site (DOC, 2015).

Regional Seismicity and Fault Zones

The City is located in a relatively high seismic hazard area (USGS, 2018). The Alquist-Priolo Act defines active faults as those that have shown seismic activity during the Holocene period, approximately the past 11,000 years, while potentially active faults are those that have shown activity within the Quaternary period, or the past 1.8 million years (CGS, 2019). As shown in **Figure 3-3**, the largest known fault in the vicinity of the Project Site is the Vaca Fault directly west from the Project Site.

Seismic Shaking Intensity

The combined probability of a major quake in the Bay Area is 72 percent over the next 30 years (USGS, 2020b). Therefore, future seismic shaking is anticipated at the Project Site. Ground shaking severity at the Project Site would depend on the distance from the fault rupture, the magnitude of the earthquake, and the site-specific soil conditions.



SOURCE: USGS Quaternary Fault and Fold Database of the U.S., 2018; California Geologic Survey, 2010; AES, 10/23/2020

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Figure 3-3
Regional Fault Map

Soils

Soil types on the Project Site primarily consist of Brentwood clay loam and Yolo silty clay loam, which are soil types typical of areas with low slopes and are well-drained (**Figure 3-4**; NRCS, 2020). A soil type's potential to induce electrochemical or chemical action that corrodes or weakens concrete is known as "risk of corrosion." The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Both soil types on the Project Site have a low corrosion rating.

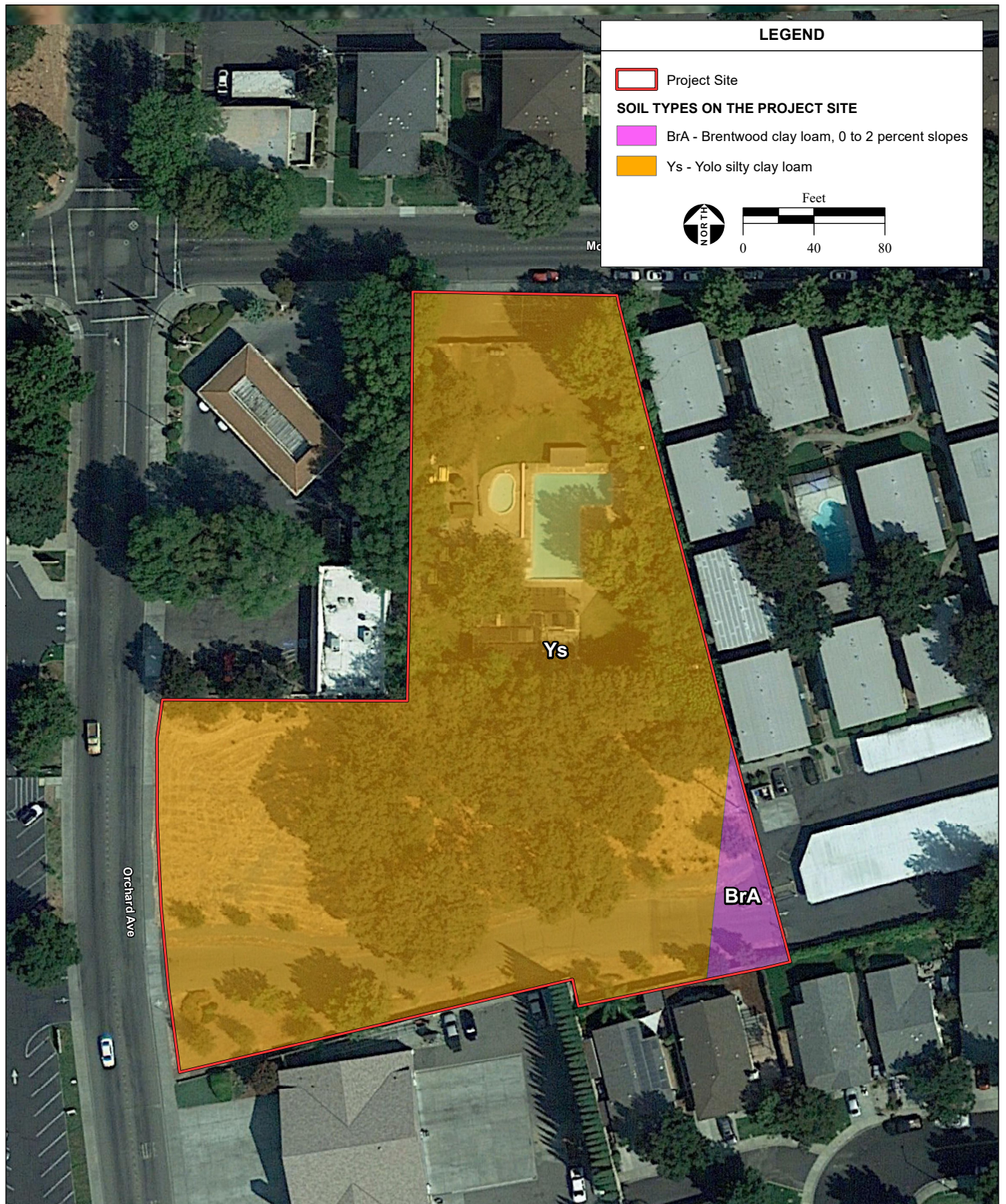
Liquefaction is the sudden loss of soil strength caused by seismic forces acting on water-saturated, granular soil, leading to a "quicksand" condition generating various types of ground failure. Soils comprised of sand and sandy loams that are in areas with high groundwater tables or high rainfall are subject to liquefaction. The soils on the Project Site are well drained and the groundwater table is deep; therefore, there is a low risk of liquefaction at the Project Site (NRCS, 2020). The soils on the Project Site have a plasticity index between twenty and twenty-four percent, which suggests that the soils are not expansive (NRCS, 2020).

3.8.3 DISCUSSION OF IMPACTS

Question A

Would the project: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42; ii) Strong seismic ground shaking; iii) Seismic-related ground failure, including liquefaction; iv) Landslides?

Less than Significant. Although the Project Site is located in an area that may be subject to seismic ground shaking in the future, there are no mapped surface faults on the Project Site that would have the potential to rupture. The nearest Alquist-Priolo faults are the Cordelia fault and the Green Valley fault, over five miles west of the Project Site. Although potential damage to people or structures from seismic ground shaking could occur, compliance with the CBC would require the seismic-design response spectrum to be established and incorporated into the design of all new structures. Any new structures and utilities would be designed to withstand seismic forces per CBC requirements. Therefore, these construction standards would minimize the seismic ground shaking effects on developed structures to a less-than-significant level.



SOURCE: USDA NRCS Soil Survey of Solano County, Websoil Survey, updated 5/29/2020;
 DigitalGlobe Aerial Photograph, 9/1/2018; ESRI, 2020; AES, 11/16/2020

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Figure 3-4
 Soils Map

Question B

Would the project: Result in substantial soil erosion or the loss of topsoil?

Less than Significant with Mitigation. Construction of the Proposed Project would involve grading and earth moving activities, as well as construction of project components. Construction would result in the temporary disturbance of soil and would expose disturbed areas to potential storm events, which could generate accelerated runoff, localized erosion, and sedimentation. Construction activities could exacerbate soil erosion and result in the loss of topsoil; this is a potentially significant impact. Implementation of **Mitigation Measure HYD-1** would require construction activities to comply with the California NPDES General Permit, as discussed in **Section 3.11**. This includes limiting ground disturbance areas, restoring disturbed areas to pre-construction contours, erosion control measures, and revegetation. Implementation of **Mitigation Measure HYD-1** would ensure that potential impacts resulting from soil erosion or the loss of topsoil would be reduced to a less-than-significant level.

Question C

Would the project: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

No Impact. As described above, the soils on the Project Site are well-drained and the groundwater table is deep; therefore, there is a low risk of liquefaction at the Project Site. Furthermore, the Project Site is not located on an unstable geologic unit or soil (NRCS, 2020). Therefore, the Proposed Project would not expose people or structures to substantial adverse effects from liquefaction, landslides, or unstable geologic units or soils; no impact would occur.

Question D

Would the project: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact. As described above, the soils on the Project Site have a plasticity index between twenty and twenty-four percent, which suggest that the soils are not expansive (NRCS, 2020). Therefore, the Proposed Project would not create a substantial direct or indirect risk to life or property due to expansive soils; no impact would occur.

Question E

Would the project: Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. Soil types on the Project Site primarily consist of Brentwood clay loam and Yolo silty clay loam, which are soil types typical of areas with low slopes and are well-drained (NRCS, 2020). Loamy soils are typically suitable for on-site wastewater disposal systems. However, no new onsite wastewater disposal system is being proposed; no impact would occur.

Question F

Would the project: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant with Mitigation. As described in **Section 3.6**, no paleontological resources were observed within the Project Site. However, there is always the potential, however remote, that previously unknown unique paleontological resources or sites could be encountered during subsurface construction activities. This is a potentially significant impact. In the event that paleontological resources or sites are found, **Mitigation Measures CR-1** and **CR-2**, as described in **Section 3.6.4** would ensure that the Proposed Project would not directly or indirectly destroy a unique paleontological resource, site, or human remains. Furthermore, no unique geological features are present on the Project Site. After implementation of **Mitigation Measures CR-1** and **CR-2**, impacts to paleontological resources would be less than significant.

Cumulative Impacts

Less than Significant with Mitigation. Implementation of the Proposed Project and other potential cumulative projects in the region, including growth resulting from build-out of the City and County General Plans could result in increased erosion and soil hazards, expose additional structures and people to seismic hazards, and potentially damage unique paleontological resources or sites. These impacts are mitigable with implementation of construction-period erosion control programs, standard seismic safety measures incorporated in building design, and procedures for inadvertent paleontological discoveries. The Proposed Project would incorporate **Mitigation Measures HYD-1, CR-1, and CR-2** to ensure a less than significant effect; therefore, the Proposed Project's contribution to potential cumulative impacts be less than significant.

3.8.4 MITIGATION MEASURES

Implement **Mitigation Measures HYD-1, CR-1, and CR-2**.

3.9 GREENHOUSE GAS EMISSIONS

3.9.1 ENVIRONMENTAL CHECKLIST

<u>Greenhouse Gas Emissions</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.9.2 SETTING

Regulatory Setting

The following regulatory background gives context to the issues of climate change and importance to reducing GHGs in California.

State and Local

Assembly Bill 1493

Signed by the California Governor in 2002, AB 1493 requires that CARB adopt regulations requiring a reduction in GHG emissions emitted by cars in the State. AB 1493 is intended to apply to 2009 and newer vehicles. On June 30, 2009, the USEPA granted a necessary CAA waiver for California to implement AB 1493.

Executive Order S-3-05

Executive Order (EO) S-3-05 was signed by the California Governor on June 1, 2005 and established the following statewide emission reduction targets:

- Reduce GHG emissions to 2000 levels by 2010,
- Reduce GHG emissions to 1990 levels by 2020, and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

EO S-3-05 created a Climate Action Team (CAT) headed by the California Environmental Protection Agency that included several other State agencies. The CAT is tasked by EO S-3-05 with outlining the

effects of climate change on California and recommending an adaptation plan, as well as creating a strategy to meet the emission reduction targets.

California Global Warming Solutions Act of 2006 (AB-32)

Signed by the California Governor on September 27, 2006, AB 32 codifies a key requirement of EO S-3-05, specifically the requirement to reduce GHG emissions in California to 1990 levels by 2020. AB 32 tasks CARB with monitoring State sources of GHGs and designing emission reduction measures to comply with emission reduction requirements. However, AB 32 also continues the efforts of the CAT to meet the requirements of EO S-3-05 and states that the CAT should coordinate overall State climate policy.

To accelerate the implementation of emission reduction strategies, AB 32 requires that CARB identify a list of discrete early action measures that can be implemented relatively quickly. In October 2007, CARB published a list of early action measures that it estimated could be implemented and would serve to meet about 25 percent of the required 2020 emissions reductions (CARB, 2007). To assist CARB in identifying early action measures, the CAT published a report in April 2007 that updated their 2006 report and identified strategies for reducing GHG emissions (USEPA, 2007). In its October 2007 report, CARB cited the CAT strategies and other existing strategies that can be utilized to achieve the remainder of the emissions reductions (CARB, 2007). AB 32 requires that CARB prepare a comprehensive “scoping plan” that identifies all strategies necessary to fully achieve the required 2020 emissions reductions. Consequently, in December 2008, CARB released its scoping plan to the public; the plan was approved by CARB on December 12, 2008. An update to the Climate Change Scoping Plan occurred on May 22, 2014, and included new strategies and recommendations to ensure reduction goals of near-term 2020 are met with consideration of current climate science.

A second update to the Climate Change Scoping Plan was adopted on December 14, 2017. The 2017 Scoping Plan Update addresses the 2030 target established by SB 32, as discussed below, and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG by 2030 compared to 1990 levels. The key programs that the 2017 Scoping Plan Update builds on include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, an increase in the use of renewable energy in the State, and a reduction of methane emissions from agricultural and other wastes (CARB, 2017).

Executive Order S-01-07

EO S-01-07 was signed by the California Governor on January 18, 2007. It mandates a State-wide goal to reduce the carbon intensity of transportation fuels by at least 10 percent by 2020. This target reduction was identified by CARB as one of the AB 32 early action measures in the October 2007 report (CARB, 2007).

Senate Bill 375

SB 375 was approved by the California Governor on September 30, 2008. SB 375 provides for the creation of a new regional planning document called a “Sustainable Communities Strategy” (SCS). An SCS is a blueprint for regional transportation infrastructure and development that is designed to reduce GHG emissions from cars and light trucks to target levels set by CARB for 18 regions throughout California. Each of the various metropolitan planning organizations must prepare an SCS that is included

in their respective regional transportation plan. An SCS influences transportation, housing, and land use planning. CARB then determines whether the SCS will achieve regional GHG emissions reduction goals.

Senate Bill 605

On September 21, 2014, the California Governor signed SB 605 that requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the State no later than January 1, 2016. As defined in the statute, short-lived climate pollutant means "an agent that has a relatively short lifetime in the atmosphere, from a few days to a few decades, and a warming influence on the climate that is more potent than that of carbon dioxide." SB 605, however, does not prescribe specific compounds as short-lived climate pollutants or add to the list of GHGs regulated under AB 32. In developing the strategy, CARB completed an inventory of sources and emissions of short-lived climate pollutants in the State based on available data, identified research needs to address any data gaps, identified existing and potential new control measures to reduce emissions, and prioritized the development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other air pollutants that impact community health and benefit disadvantaged communities.

The final strategy released by CARB in March 2017 focuses on methane (CH₄), black carbon, and fluorinated gases, particularly hydrofluorocarbons (HFC), as important short-lived climate pollutants. The final strategy recognizes emission reduction efforts implemented under AB 32 (e.g., refrigerant management programs) and other regulatory programs (e.g., in-use diesel engines, solid waste diversion). The measures identified in the final strategy and their expected emission reductions will feed into the update to the CARB Scoping Plan.

Executive Order B-30-15

EO B-30-15 was signed by the California Governor on April 29, 2015. It sets interim GHG targets of 40 percent below 1990 by 2030, to ensure California will meet its 2050 targets set by EO S-3-05. It also directs the CARB to update the Climate Change Scoping Plan. The 2030 Target Scoping Plan Concept Paper was released on June 17, 2016.

Senate Bill 350

SB 350 codifies the GHG targets for 2030 set by EO B-30-15. To meet these goals, SB 350 also raises the California RPS from 33 percent renewable generation by 2020 to 50 percent renewable generation by December 31, 2030.

Senate Bill 32

Additionally, SB 32, signed in 2016, further strengthens AB 32 with goals of reducing GHG emissions to 40 percent below 1990 levels by 2030. Based on GHG emissions inventory data compiled by CARB through 2017 and the emission limit of 431 million metric tons (MT) of carbon dioxide equivalents (CO₂e) established in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, California emission reduction goals for near-term 2020 will be met.

California Renewable Portfolio Standards - SB 1078, SB 350, and SB 100

The California RPS program was established in 2002 by SB 1078 and requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide a certain percentage of

their supply from renewable sources. The initial requirement was for at least 20 percent of electricity retail sales to be served by renewable resources by 2017. The RPS program was accelerated in 2015 with SB 350 which mandated a 50 percent RPS by 2030. In 2018, SB 100 was signed into law, which again increased the RPS to 60 percent by 2030 and requires all electricity in the State to come from carbon-free resources by 2045.

Title 20 Appliance Efficiency Regulations

California's Appliance Efficiency Regulations, CCR Title 20, contain standards for both federally regulated appliances and non-federally regulated appliances. The regulations are updated regularly to allow consideration of new energy efficiency technologies and methods. The current standards were adopted by the CEC in 2018. The standards outlined in the regulations apply to appliances that are sold or offered for sale in California. More than 23 different categories of appliances are regulated, including refrigerators, freezers, water heaters, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings.

California Energy Efficiency Standards (Title 24)

The State regulates energy consumption under Title 24 Building Standards Code, Part 6 of the CCR (also known as the California Energy Code). The Title 24 Building Energy Efficiency Standards were developed by the CEC and apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and non-residential buildings. The California Energy Code is updated every three years, with the most recent iteration (2016) effective as of January 1, 2017, and the next version (2019) planned to go into effect on January 1, 2020. The CEC's long-term vision is that future updates to the California Energy Code will support zero-net energy for all new single-family and low-rise residential buildings by 2020 and new high-rise residential and non-residential buildings by 2030. Refer to **Section 3.7** for additional information on Title 24 requirements.

California Green Building Standards Code

Title 24 Building Standards Code, Part 11 of the CCR is referred to as the CALGreen Code. The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality. Refer to **Section 3.7** for additional information on Title 24 requirements.

CEQA Guidelines

Under CEQA, GHG impacts are exclusively cumulative impacts because no single project could, by itself, result in a substantial change in climate (CEQA *Guidelines* § 15064.4(b)). Therefore, the evaluation of cumulative GHG impacts presented below evaluates whether the Proposed Project would make a considerable contribution to cumulative climate change effects. Additionally, YSAQMD has not established quantitative thresholds relative to GHG emissions.

Plan Bay Area 2040

The Association of Bay Area Governments (ABAG) and the MTC are jointly responsible for regional planning for the nine county, 101 city, Bay Area. ABAG/MTC jointly adopted a second Regional

Transportation Plan/SCS in 2017 known as Plan Bay Area 2040, which serves as a limited and focused update to the previous SCS issued by ABAG/MTC and maintains a similar set of land use and transportation strategies. The regional GHG reduction targets for the ABAG/MTC region beginning on October 1, 2018, are 10 percent per capita passenger vehicle GHG emission reductions by 2020 and 19 percent per capita passenger vehicle GHG emission reductions by 2035 from 2005 levels.

City of Vacaville General Plan

Applicable City General Plan goals, policies, and objectives related to GHG emissions include:

Policy COS-P9.8	Promote green building practices in new development.
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.
Policy H.1-I17	Implement California energy conservation standards.
Policy H.1-I18	Implement CALGreen.
Policy H.1-I19	Encourage energy-conserving development patterns.
Policy H.1-I20	Encourage energy conservation through energy-reducing landscaping, orientation and configuration of buildings, site, and other factors affecting energy use.

City of Vacaville Energy and Conservation Action Strategy

In 2015, the City adopted ECAS in compliance with State requirements to 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.

The ECAS sets targets consistent with AB 32, the Global Warming Solutions Act of 2006, and establishes measures to reduce GHG emissions in Vacaville. The ECAS identifies baseline GHG emissions and includes measures to help reduce future emissions that result from land use, transportation, energy, water, wastewater, and solid waste. The ECAS implements the General Plan and its general policies and actions supporting the reduction of GHG emissions.

Environmental Setting

“Global warming” and “climate change” are common terms used to describe the increase in the average temperature of the earth’s near-surface air and oceans since the mid-20th century. Natural processes and human actions have been identified as impacting climate. The IPCC has concluded that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. Since the 19th century however,

increasing GHG concentrations resulting from human activity such as fossil fuel combustion, deforestation, and other activities are believed to be a major factor in climate change. GHGs in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space—a phenomenon sometimes referred to as the “greenhouse effect.” Some GHGs occur naturally and are necessary to keep the earth’s surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have trapped solar radiation and decreased the amount that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Carbon dioxide (CO₂), CH₄, nitrous oxide (N₂O), HFC, perfluorocarbons (PFC), and sulfur hexafluoride (SF₆) are the principal GHGs. When concentrations of these gases exceed historical concentrations in the atmosphere, the greenhouse effect is intensified. CO₂, CH₄, and N₂O occur naturally and are also generated through human activity. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers and other industrial facilities. Other human-generated GHGs include fluorinated gases such as HFCs, PFCs, and SF₆, which have much higher heat-absorption potential than CO₂, and are byproducts of certain industrial processes.

CO₂ is the reference gas for climate change, and is the GHG emitted in the highest volume. The effect that each GHG has on global warming is the product of the mass of their emissions and their global warming potential (GWP). GWP indicates how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO₂. For example, CH₄ and N₂O are substantially more potent GHGs than CO₂, with GWPs of approximately 30 and approximately 275 times that of CO₂, which has a GWP of 1.

In emissions inventories, GHG emissions are typically reported as MT of CO₂e. CO₂e is calculated as the product of the mass emitted by a given GHG and its specific GWP. While CH₄ and N₂O have much higher GWPs than CO₂, CO₂ is emitted in higher quantities and accounts for the majority of GHG emissions in CO₂e, both from commercial developments and human activity.

3.9.3 DISCUSSION OF IMPACTS

Given the global nature of climate change impacts, individual project impacts are most appropriately addressed in terms of the incremental contribution to global cumulative impacts. This approach is consistent with the view articulated by the IPCC *Change Fifth Assessment Report* (IPCC, 2014). Therefore, this analysis is of the cumulative impacts related to climate change.

Methodology

The Proposed Project’s short-term construction-related GHG emissions were estimated using the CalEEMod. CalEEMod is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify GHG emissions from land use projects. The model quantifies direct GHG emissions from construction and operation (including vehicle use), as well as indirect GHG emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The site-specific inputs and assumptions used for the purposes of GHG emissions modeling are listed in **Section 3.4.3**.

The City and YSAQMD have not developed quantitative GHG thresholds for project-level analysis; however, YSAQMD has allowed projects to use the BAAQMD GHG emissions thresholds while the YSAQMD develops its own GHG standards and criteria (City of Vacaville, 2013). As such, the impact of the proposed project is deemed less than significant if it:

- Complies with a qualified GHG emissions reduction strategy, or
- Results in emissions less than 6.6 MT CO₂e per service population, per year, where service population is the total number of employees and residents within the city.

It should be noted that the 6.6 MT CO₂e per service population per year metric was developed specifically for cities located in the Bay Area because it is based on the Bay Area's GHG emissions inventory that achieves the 2020 targets. While this analysis does quantify the service population emissions of the Proposed Project and compares to the BAAQMD service population threshold, the evaluation of significance considers the whether the Proposed Project complies with a qualified GHG emissions reduction strategy.

Questions A and B

Would the project: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction

Construction of the Proposed Project would emit GHG emissions from the combustion of diesel fuel in heavy equipment. As shown in **Table 3-8**, GHG emissions associated with construction of the Proposed Project are estimated to be approximately 329 MT of CO₂e. Construction GHG emissions are a one-time release and are typically considered separate from operational emissions, as global climate change is inherently a cumulative effect that occurs over a long period of time and is quantified on a yearly basis. As discussed earlier, the City and YSAQMD have not established a quantitative threshold relative to construction-related emissions. Accordingly, construction emissions have been amortized over the estimated life of the Proposed Project and added to operational emissions.

TABLE 3-8. CONSTRUCTION GHG EMISSIONS

Source	GHG
	MT of CO ₂ e
2022 Construction Activities	84.20
2023 Construction Activities	244.60
Construction-Related GHG Emission	328.80
<i>Amortized over Life of the Project¹</i>	<i>10.96</i>
¹ Life of the project is estimated to be 30 years based on air district recommendations (SCAQMD, 2008). Source: Appendix C	

Operation

Operation of the Proposed Project would result in GHG emissions from area, energy, and mobile sources. As shown in **Table 3-9**, the Proposed Project would result in approximately 316 MT of CO₂e per year.

TABLE 3-9. OPERATIONAL GHG EMISSIONS

Source	GHG
	MT of CO ₂ e/year
Area	0.83
Energy	111.85
Mobile	160.85
Waste	15.50
Water	15.65
<i>Operational Subtotal</i>	<i>304.69</i>
<i>Amortized Construction Emissions</i>	<i>10.96</i>
Total Project-Related GHG Emissions	315.65
Service Population Emissions	1.72
Source: Appendix C	
*Assumes a service population of 184 based on average household occupancy of 2.74 (City of Vacaville, 2013).	

Findings

Less than Significant. No, the Proposed Project would not generate greenhouse gas emissions that may have a significant impact on the environment. As shown in **Table 3-9**, the combined amortized construction emissions and operational GHG emissions would be approximately 316 MT of CO₂e per year, with 1.72 MT of CO₂e per year per service population. Project emissions would be far below the BAAQMD service population threshold of 6.6 MT of CO₂e per year. GHG emissions in the City through buildout of the General Plan (2035) are projected to be 1,519,040 MT CO₂e. Including state and federal measures to reduce GHG emissions, the amount would be reduced to 1,131,010 MT CO₂e (City of Vacaville, 2013). As compared to the city-wide emissions forecasted for 2020 (1,202,710 MT CO₂e), project-related GHG emissions would represent approximately 0.0002 percent of the 2020 city-wide emissions.

The ECAS EIR concluded that the proposed ECAS is a qualified GHG emissions reduction strategy because it contains the elements required by the BAAQMD, including a GHG emissions inventory and Business as Usual projection, a GHG emissions reduction target consistent with AB 32, a review of relevant local and state policies, quantitative emissions projections demonstrating target achievement, and strategies for implementation, monitoring and environmental review (City of Vacaville, 2013).

The Proposed Project would comply with the GHG reduction measures included in the ECAS. As described in **Section 2.3** and **Section 3.18**, the Proposed Project would increase the allowable density on the Project Site and increase access to nearby transit stops, which would support ECAS measures LU-8 Minimum Densities on Infill Site and LU-9 Pedestrian and Bicycle Connections for Infill Development. The Proposed Project would also incorporate photovoltaic panels, or the capability to install panels in the future, and electric charging stations, which would support the following ECAS measures: TR-15 Electric Vehicle Parking Stations in High Traffic Areas, TR-16 Solar Power for Electric Vehicle Charging Stations, and RE-1 Renewable Energy Generation in Projects. Additionally, the Proposed Project would include energy efficient appliances and drought tolerant landscaping further supporting ECAS measures EC-1 Energy-Efficient Appliance and Lighting and WW-1 Water Conservation. Therefore, the Proposed Project would be consistent with the ECAS and would incorporate features that

would reduce GHG emissions. Additionally, because the ECAS implements the City's General Plan policies and actions supporting the reduction of GHG emissions, the Proposed Project would also be consistent with the City's General Plan.

Additionally, as discussed above, Plan Bay Area 2040, the state-mandated SCS for the Bay Area, integrates long-range transportation and land use planning with the State GHG reduction targets set by CARB. The stated goals of Plan Bay Area 2040 include climate protection, adequate housing, and transportation system effectiveness. Accordingly, implementation of the Proposed Project would support Plan Bay Area's goals including but not limited to: increasing the share of affordable housing, directing development with the exiting urban footprint, and increasing non-auto mode share.

Therefore, because the Proposed Project is consistent with the goals and policies of General Plan, the ECAS, and Plan Bay Area 2040, the Proposed Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. The Proposed Project's contribution to cumulative effects associated with climate change is considered less than significant.

Cumulative Impacts

Under CEQA, GHG impacts are exclusively cumulative impacts because no single project could, by itself, result in a substantial change in climate (CEQA Guidelines § 15064.4(b)). Therefore, the evaluation of GHG impacts presented above evaluates whether the Proposed Project would make a considerable contribution to cumulative climate change effects.

3.9.4 MITIGATION MEASURES

None required.

3.10 HAZARDS AND HAZARDOUS MATERIALS

3.10.1 ENVIRONMENTAL CHECKLIST

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

3.10.2 SETTING

Regulatory Context

Definition of Hazardous Material

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the CCR as:

A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed” (CCR, Title 22, Section 66260.10).

U.S. Environmental Protection Agency

The USEPA administers numerous statutes pertaining to human health and the environment. The USEPA regulates toxic air contaminants through its implementation of the CAA. Although the CAA covers a range of air pollutants, Section 112(r) specifically covers “extremely hazardous materials” which include acutely toxic, extremely flammable, and highly explosive substances. Section 112(r) (referred to as the USEPA’s Risk Management Plan) requires facilities involved in the use or storage of extremely hazardous materials to implement a Risk Management Plan (RMP). A RMP requires a detailed analysis of potential accident factors present at a facility and requires the implementation of mitigation measures designed to reduce the identified accident potential.

The USEPA also regulates the land disposal of hazardous materials through the Resource Conservation and Recovery Act (RCRA). Under RCRA, the USEPA regulates the activities of waste generators, transporters, and handlers (any individual who treats, stores, and/or disposes of a designated hazardous waste). RCRA further requires the tracking of hazardous waste from its generation to its final disposal through a process often referred to as the “cradle-to-grave” regulation. The “cradle-to-grave” regulation requires detailed documentation and record keeping for hazardous materials generators, transporters, and/or handlers in order to ensure proper accountability for violations (USEPA, 2020).

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act provides a federal fund to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through various enforcement mechanisms, the USEPA obtains private party cleanup orders and recovers costs from financially viable individuals and companies once a response action has been completed. Uncontrolled or abandoned hazardous waste site identification, monitoring, and response activities in states are coordinated through the state environmental protection or waste management agencies.

Federal Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) regulates the preparation and enforcement of occupational health and safety regulations with the goal of providing employees a safe working environment. OSHA regulations apply to the work place and cover activities ranging from confined space entry to toxic chemical exposure. OSHA regulates workplace exposure to hazardous chemicals and activities through regulations governing work place procedures and equipment.

U.S. Department of Transportation

The U.S. Department of Transportation regulates the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act. This act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as RCRA, discussed previously.

Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the State Hazardous Waste Control Law. Both laws impose “cradle-to-grave” regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

California Occupational Safety and Health Administration

California Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing state workplace safety regulations. Cal/OSHA regulations concerning the use of hazardous materials in the workplace, as detailed in Title 8 of the CCR, include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

Cal/OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Safety Data Sheets be available to employees and that employee information and training programs be documented.

Regional Water Quality Control Board

The SWRCB and RWQCBs also regulate hazardous substances, materials and wastes through a variety of state statutes including, for example, the Porter Cologne Water Quality Control Act, Cal. Water Code § 13000 et seq., and the underground storage tank cleanup laws (Cal. Health and Safety Code §§ 25280-25299.8). RWQCBs regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Any person proposing to discharge waste within any region must file a report of waste discharge with the appropriate regional board. The Proposed Project is located within the jurisdiction of the CVRWQCB.

Certified Unified Program Agency

Hazardous waste management in the City of Vacaville is administered through the Department of Resource Management, Environmental Services Division, which is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas within Solano County (Solano County, 2020). The legislation that developed the CUPA was created by the State Legislature to minimize the number of inspections and different fees for businesses that use hazardous materials and dispose of hazardous wastes (Solano County, 2020).

California Accidental Release Prevention Program, Risk Management Plan

Solano County has implemented a California Accidental Release Prevention Program in compliance with the CCR Title 19, Division 2, Chapter 4.5 (California Accidental Release Prevention), and OSHA Process Safety Management standards (Section 5189 of Title 8 of CCR, or CFR, Title 29, Section 1910.119). This program requires any business that handles more than threshold quantities of a Regulated Substance to develop a RMP. The RMP is implemented by the business to prevent or mitigate releases of regulated substances that could have off-site consequences.

3.10.3 DISCUSSION OF IMPACTS

Question A

Would the project: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant with Mitigation. Construction of the Proposed Project would require site preparation activities, such as excavation and grading at the Project Site. During construction, oil, diesel fuel, gasoline, hydraulic fluid, and other liquid hazardous materials could be used. If spilled, these substances could pose a risk to the environment or human health. This is a potentially significant impact.

Mitigation Measure HYD-1 would require the City obtain coverage under the current NPDES Construction General Permit for construction activities and implement the listed BMPs during construction, which addresses potential leaks and spills from vehicles and construction equipment. Furthermore, **Mitigation Measure HAZ-1**, which address accidental spill prevention, would mitigate potential impacts from accidental release of hazardous materials during construction of the Proposed Project. With implementation of **Mitigation Measure HYD-1**, **Mitigation Measure HAZ-1**, and adherence to regulatory requirements, potential impacts associated with hazardous materials during construction activities would be less than significant.

The design and construction of the apartment buildings would comply with the City's Construction Standards (Chapter 14 of the Vacaville Municipal Code), which incorporates the CBC, as amended, and the 2016 California Fire Code, as amended. Other laws and regulations that govern the use and storage of hazardous materials include, but are not limited to, Chapter 6.95 of the California Health and Safety Code (inventory and emergency response), Title 8 of the Code of California Regulations (CCR) (workplace safety), and Titles 22 and 26 of the CCR (hazardous waste). Delivery of hazardous materials to the Project Site and along public roadways would be required to comply with CFR Title 49, as monitored and enforced by the California Highway Patrol and Caltrans. Storage of all flammable materials at construction sites would be subject to the regulations of Title 19 of the CCR and the Uniform Fire Code.

Once operational, the Proposed Project would utilize substances typical of residential settings. These include household cleaning products, household goods, and other materials needed for maintenance of the property including commercial grade cleaning products or chemicals required for landscaping and gardening purposes. All operation activities would be required to adhere to local standards set forth by the City, as well as state and federal health and safety requirements that are intended to minimize risk to the public from hazardous materials, such as Cal/OSHA requirements, the Hazardous Waste Control Act, the California Accidental Release Prevention Program, and the California Health and Safety Code. Compliance with these regulations in conjunction with the Mitigation Measures listed above, would reduce potential exposure of people or the environment to hazardous materials associated with the Proposed Project to a less-than-significant level.

Question B

Would the project: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant with Mitigation. As discussed above, construction and operation of the Proposed Project could potentially create a hazard to the public or the environment in the event of an accidental release of hazardous materials into the environment. This is a potentially significant impact. However, **Mitigation Measures HYD-1** and **HAZ-1** would mitigate potential impacts from accidental release of hazardous materials. Impacts would be less than significant after mitigation.

Question C

Would the project: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. No schools are located within one-quarter mile of the Project Site. No impact would occur.

Question D

Would the project: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. No, the Proposed Project would not be located on a site which is included on a list of hazardous materials sites. The Hazardous Waste and Substances Sites (Cortese) List is a planning tool used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. The Cortese list is prepared in accordance with California Government Code Section 65962.5. The List of Hazardous Waste and Substances sites from DTSC EnviroStor and the SWRCB GeoTracker databases were reviewed to locate "Cortese List" sites. These databases did not indicate any sites located on or in the vicinity of the Project Site. The Proposed Project is not located on a site included on a hazardous materials list and therefore, would not create a significant hazard to the public or the environment. No Impact would occur.

Question E

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

No Impact. The Project Site is not located within an airport land use compatibility zone (Solano County, 2010). No public airports are located within two miles of the Project Site. The nearest airport is the Nut Tree Airport located approximately 2.66 miles northeast of the Project Site. Neither temporary construction activities nor operations of the Proposed Project would affect the safe operations of any local airport. The Proposed Project would not result in a safety hazard or excessive noise for people residing or working in the vicinity of a private airstrip. No impact would occur.

Question F

Would the project: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. Construction of the Proposed Project would occur within the boundary of the Project Site and would not result in lane closures and thus would not affect emergency access or evacuation. As described in **Section 3.18.3**, operation of the Proposed Project would not result in inadequate emergency access. Therefore, the Proposed Project would not interfere with an adopted emergency response plan or emergency evacuation plan in place through the State, County, or City. Operation of the Proposed Project would not interfere with emergency response or evacuation routes in the project vicinity, as no road construction is proposed. No impact would occur.

Question G

Would the project: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No Impact. As explained in **Section 3.21**, the Proposed Project is located within a fire hazard severity zone (FHSZ) classification of "LRA Unzoned," which indicates that the Project Site is located in an urbanized area that is not susceptible to wildland fire. Furthermore, the Project Site does not involve unique slopes or other factors that would exacerbate wildfire risks. The Proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. No impact would occur.

Cumulative Impacts

Less than Significant with Mitigation. Hazard-related impacts are site specific (i.e., have the potential to affect only a limited area). Various existing and proposed development infrastructure, including residential, industrial, and public facilities in the vicinity of the Project Site would all involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operations; hazardous materials utilized during construction and operations of the Proposed Project would be limited to the existing Project Site.

Construction of the Proposed Project could potentially have adverse impacts associated with hazards and hazardous materials. **Mitigation Measure HAZ-1**, which address accidental spill prevention, would mitigate potential impacts from accidental release of hazardous materials to a less-than-significant level. Reduction of on-site hazardous related impacts, as discussed above, would ensure that construction activities would not result in impacts that would be cumulatively considerable.

Operation of the Proposed Project and cumulative projects could result in a cumulative impact if these projects were to result in potential exposure of hazardous materials to sensitive individuals or the general public-at-large, or if additional projects in the vicinity were to include the use or storage of hazardous materials. Because any hazardous materials use would be properly contained on-site, operation of the Proposed Project would not contribute to cumulatively considerable hazardous impacts.

3.10.4 MITIGATION MEASURES

HAZ-1 Accidental Spill Prevention and Response Plan

An accidental spill prevention and response plan shall be developed which will include a list of all hazardous materials used and/or stored on the Project Site during construction activities, appropriate information about initial spill response, containment, and cleanup strategies, and a list of appropriate City contact information. The spill prevention and response plan shall be included as a component of the SWPPP described in **Mitigation Measure HYD-1**. The plan shall require containment equipment and sufficient supplies to combat spills of oil or hazardous substances and shall be on site at all times during construction.

3.11 HYDROLOGY/WATER QUALITY

3.11.1 ENVIRONMENTAL CHECKLIST

<u>HYDROLOGY/WATER QUALITY</u>	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: <ul style="list-style-type: none"> i) result in a substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) 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; or iv) impede or redirect flood flows? 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.11.2 SETTING

Regulatory Context

Clean Water Act

The CWA (33 USC §§ 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The 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:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines. Under Section 303(d) of the CWA, the USEPA publishes a list every two years of impaired bodies of water for which water quality objectives are not attained. Total Maximum Daily Loads are established for contaminants of concern in order to ensure contamination levels decrease over time.
- Section 401 (Water Quality Certification) requires an applicant for any federal permit that proposes an activity, which may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Act.
- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB and is discussed in detail below.
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by USACE and the USEPA.

Federal Anti-Degradation Policy

The federal Anti-Degradation Policy is part of the CWA (Section 303(d)) and 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.

Safe Drinking Water Act

Under the Safe Drinking Water Act (SDWA) (Public Law 93-523), passed in 1974, USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA primary and secondary Maximum Contaminant Levels (MCL). MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting drinking water MCLs.

National Pollution Discharge Elimination System

Under Section 402(p) of the CWA, the USEPA established the NPDES to enforce discharge standards from a variety of sources. Both point source and non-point-source pollution is covered under the NPDES. Dischargers in both categories can apply for individual discharge permits, or apply for coverage under the General Permits that cover certain qualified dischargers. Point source discharges come from “any discernible, confined, and discrete conveyance,” including municipal and industrial wastewater, stormwater runoff, combined sewer overflows, sanitary sewer overflows, and municipal separated storm sewer systems. NPDES permits impose limits on the pollutants discharged based on minimum performance standards or the quality of the receiving water, whichever type is more stringent in a given situation.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) provides the basis for water quality regulation within California. 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. The RWQCB implements waste discharge requirements identified in the Report.

State Non-Degradation Policy

In 1968, as required under the federal Anti-Degradation Policy described previously, the SWRCB adopted a Non-Degradation Policy aimed at maintaining high quality for waters in California. The Non-degradation 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 provides as follows:

1. Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.
2. Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet WDRs that would ensure (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

City of Vacaville General Plan

The City’s General Plan identifies the Project Site as being within the UGB. The General Plan notes that, in 1995, the City entered into an agreement with the Solano Irrigation District (SID) to support development within the UGB and provide municipal services. This agreement has been amended in 2010 and 2018 and is effective until 2050 (City of Vacaville, 2018a). The General Plan supports water conservation measures, preservation of groundwater recharge areas such as floodplains, and preservation of surface and groundwater quality.

City of Vacaville Municipal Code

Chapter 14.27.030 of the City's Municipal Code identifies water conservation, landscaping, water recycling, and other water-related standards for new construction. Additionally, Chapter 14.26.030 of the City's Municipal Code identifies regulations and requirements to prevent, control, and reduce stormwater pollution for new development and redevelopment.

Regional Hydrology**Watershed**

The Project Site is partially within the Alamo Creek watershed and partially within the Upper Ulatis Creek watershed (USEPA, 2020). There are no surface waterbodies on the Project Site or immediate vicinity. Runoff from the Project Site is collected into the City's storm drain system, which flows untreated into creeks and streams.

Floodplain

FEMA oversees the delineation of flood zones and the provision of federal disaster assistance. FEMA manages the National Flood Insurance Program and publishes the Flood Insurance Rate Maps (FIRM), that show the expected frequency and severity of flooding by area, typically for the existing land use and type of drainage/flood control facilities present. The majority of the Project Site is located outside the 100-year floodplain, in an area of minimal flood hazard (Zone X). A small portion of the Project Site in the southeast corner is classified as Flood Zone X, and is located within the 500-year floodplain (annual flood risk of 0.2 percent) (See **Figure 3-5**) (FEMA, 2020).

Groundwater

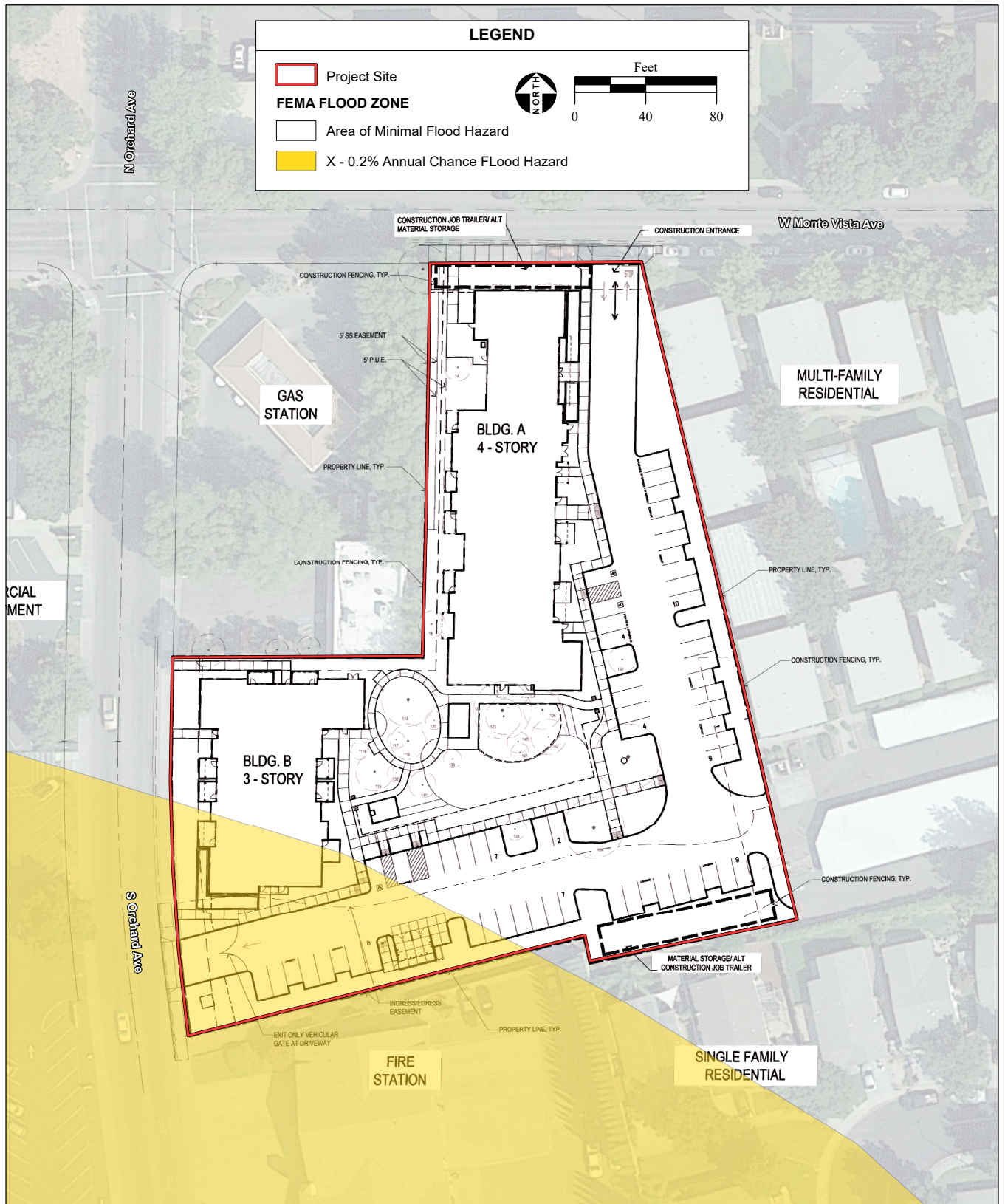
The City is located in the Sacramento Valley Basin within the Sacramento Valley – Solano sub-basin (CDWR, 2020). This sub-basin drains an area of 664 square miles. Quality of groundwater within this sub-basin is generally good.

3.11.3 DISCUSSION OF IMPACTS**Question A**

Would the project: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant with Mitigation. Construction of the Proposed Project could potentially violate water quality standards or waste discharge requirements, as construction equipment and materials have the potential to result in accidental discharge of pollutants into water resources. This would be a potentially significant impact. Potential pollutants include particulate matter, sediment, oils and greases, concrete, and adhesives. **Mitigation Measure HYD-1** includes acquisition of an NPDES Construction General Permit for construction activities and implementation of BMPs during construction to prevent impacts to water quality.

Operation of the Proposed Project could potentially introduce contaminants into water resources from stormwater runoff, as parking lots often contain contaminants such as vehicle oil and gasoline. However, the Proposed Project has been designed to reduce potential runoff. A Stormwater Control Plan has been



SOURCE: FEMA NFHL/FIRM effective 05/04/2009; LPAS Architecture, 8/10/2020;
Vivid/Maxar aerial photograph, 8/1/2018 Caltrans, 2020; AES, 10/26/2020

City of Vacaville Oak Grove Apartments Initial Study / 220537 ■

Figure 3-5
FEMA Flood Zones

developed for the Proposed Project and is included as Sheet C-6.1 and C-6.2 of **Appendix A**. As shown on the Stormwater Control Plan, stormwater retention basins and permeable pavers would be installed throughout the Project Site and would provide preliminary filtration of contaminated stormwater runoff before stormwater reaches the water table. With implementation of **Mitigation Measure HYD-1** and the Project design elements within the Stormwater Control Plan, impacts related to water quality standards would be less than significant.

Question B

Would the project: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant. No, the Proposed Project would not substantially decrease groundwater supplies or interfere with recharge. The northern parcel of the Project Site is currently paved and developed and the Project Site is within an area of dense urban development. The 2.11-acre Proposed Project would generate an insignificant increase in impervious surfaces in the region. Furthermore, the Stormwater Control Plan prepared for the Proposed Project includes stormwater retention basins and permeable pavers which would allow the recharge of groundwater supplies. Therefore, interference with groundwater recharge would be less than significant.

As described in **Section 3.20**, the City's water supply is sourced from a mix of groundwater and surface water. According to the City's 2018 Water Master Plan, groundwater sourced from local City wells is expected to have 100 percent reliability through the year 2040. The Proposed Project and its residents would not result in a significant consumption of water supplies and sufficient water supplies exist to serve the Proposed Project (see discussion under **Section 3.20.3**). The Project Site is located within the City's defined UGB and is expected to experience growth, as stated in the City's General Plan. Therefore, the Project Site is accounted for in City water planning projections and is not expected to substantially decrease groundwater supplies or use an excessive amount of groundwater over current projections in the City's Water System Master Plan. Due to the minimal amount of introduced impervious surfaces and the projected availability of groundwater supplies, impacts related to groundwater supply and recharge would be less than significant (City of Vacaville, 2018a).

Question C

Would the project: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in a substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; iii) 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; or iv) impede or redirect flood flows?

Less than Significant with Mitigation. No surface water resources occur on the Project Site. However, the southern parcel is largely undeveloped and would be subject to new impervious surfaces. Grading, cut and fill activities, impervious surfaces, and earth-moving activities associated with construction of the Proposed Project have the potential to result in erosion, siltation, temporary changes to drainage patterns, and contamination of stormwater. This would be a potentially significant impact. Implementation

of **Mitigation Measure HYD-1** consists of obtaining coverage under the current NPDES Construction General Permit for construction activities. This would include implementation of BMPs during construction to reduce the potential for impacts associated with erosion and exceeding water quality thresholds. Implementation of BMPs such as fiber rolls, hay bales, and silt fencing, would reduce the potential for sediment and stormwater runoff containing pollutants from entering receiving waters. The Construction General Permit also includes post-construction performance standards to protect the physical and biological integrity of aquatic ecosystems. Additionally, a Stormwater Control Plan has been prepared for the Proposed Project and includes stormwater retention basins, permeable pavers, and connections to the City's storm drain system, which would filter potentially polluted runoff and control stormwater so as to not result in flooding on or off site (see Sheet C-6.1 and C-6.2 of **Appendix A**). With implementation of **Mitigation Measure HYD-1**, the Proposed Project would comply with the California General NPDES Permit for construction activities. Impacts related to alterations in drainage patterns and impervious surfaces would be less than significant with mitigation.

Question D

Would the project: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less than Significant. No, the Proposed Project would not risk release of pollutants due to Project inundation. As described above and shown on **Figure 3-5**, the majority of the Project Site is located outside the 100-year floodplain. However, a small portion of the southern parcel (southeast corner) is within the 500-year floodplain (FEMA, 2020). This area is partially developed with a roadway that accesses the neighboring apartment complex. A small portion of Proposed Building B and a portion of the proposed parking lot would be located within a 500-year floodplain. However, the Proposed Project would not require significant grading and would not generate a significant risk of flooding on or off site. Proposed grading would not significantly re-direct the flow of stormwater runoff. Runoff would be collected by the City's stormwater drainage system, which collects and drains the larger urbanized area of the City. Discharges of urban runoff in the City of Vacaville are regulated under the NPDES Phase II General Permit (Water Quality Order No. 2003-0005-DWQ). The Project Site is within an area identified in the City's General Plan for development and would not generate unplanned impervious surfaces at a level that would overwhelm the City's stormwater infrastructure. The Project Site is relatively flat and is not within a tsunami zone (DOC, 2009). As discussed in **Section 3.8**, the Project Site is not within an area with a high risk of earthquakes and does not contain soils that would increase the risk of seiche. Impacts would be less than significant.

Question E

Would the project: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant. No, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. The City of Vacaville does not have a Water Quality Control Plan. The SID, which provides the City water for areas within the UGB, does not have a Water Quality Control Plan. There are no other Water Quality Control Plans that cover the Project Site.

Vacaville Groundwater Sustainability Agency (GSA) is in the process of preparing a draft Groundwater Sustainability Plan (GSP) that would cover the Project Site, however a draft has not yet been released (Vacaville GSA, 2020). Vacaville GSA has partnered with other GSAs within the Solano Sub-Basin to create a single GSP, including Solano Irrigation District GSA, County of Sacramento GSA, Solano Subbasin GSA, and Northern Delta GSA.

The City has a Groundwater Management Plan (2011) (GMP), included as Appendix F of the City's Urban Water Management Plan (City of Vacaville, 2011). The GMP aims to maintain a high quality, reliable, and sustainable water supply for the citizens of Vacaville through managing groundwater conjunctively with its surface water resources. The City of Vacaville 2018 Water System Master Plan notes that the City has sufficient water supply to meet existing and projected water demand through year 2040. The Project Site is located within the City's defined UGB and is expected to experience growth, as stated in the City's General Plan. Therefore, the Project Site is accounted for in City water planning projections and would not conflict with the GMP. Impacts would be less than significant.

Cumulative Impacts

Less than Significant with Mitigation. The Proposed Project and potential cumulative projects in the vicinity of the Project Site would be required to comply with the NPDES Construction General Permit, which is intended to reduce the potential for cumulative impacts to water quality during construction (refer to **Mitigation Measure HYD-1**). Therefore, impacts on cumulative construction-related water quality effects would be less than significant after compliance with the NPDES Construction General Permit.

Additionally, the Proposed Project would result in minimal new hardscape that would not be cumulatively considerable. A Stormwater Control Plan has been prepared for the Proposed Project and includes stormwater retention basins, permeable pavers, and connections to the City's storm drain system, which would direct and filter stormwater runoff. Because the Proposed Project would not increase flood risks, would not deplete a groundwater basin, and would not place people or structures within an area prone to tsunami or seiche, the Proposed Project would not contribute to these cumulatively considered impacts.

The Proposed Project is within a growth area identified in the City's General Plan and included in the City's consideration of future growth impacts to water resources. Cumulative development projects and the Proposed Project would be subject to local, State, and federal regulations designed to minimize cumulative impacts to hydrology and water resources. Mitigation measures for the Proposed Project in combination with compliance with City, State, and federal regulations, are expected to reduce cumulatively considerable impacts to a less-than-significant level.

3.11.4 MITIGATION MEASURES

HYD-1 Stormwater Pollution Prevention Plan

The Project Applicant shall obtain coverage under the NPDES Construction General Permit prior to initiation of construction activities. The SWRCB requires that construction sites have adequate control measures to reduce the discharge of sediment and other pollutants to streams to ensure compliance with Section 303 of the CWA. To comply with the NPDES permit, a Notice of Intent shall be filed with the SWRCB.

A SWPPP shall be approved prior to construction. The SWPPP shall include a detailed, site-specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills) including a description of the type and location of erosion and sediment control BMPs to be implemented at the Project Site; and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the Project Site. A copy of the SWPPP shall be kept on the Project Site. Water quality BMPs identified in the SWPPP may include, but are not limited to, the following:

- Areas where ground disturbance occurs shall be identified in advance of construction and limited to approved areas.
- Vehicular construction traffic shall be confined to the designated access routes and staging areas.
- Equipment maintenance and cleaning shall be confined to staging areas. No vehicle maintenance shall occur on-site during construction.
- Supervisory construction personnel shall be informed of environmental concerns, permit conditions, and final project specifications. Said personnel shall be responsible for instructing on-site work to meet the requirements of the SWPPP including making sure work is conducted outside of protected trees' drip lines to the extent possible.
- Disturbed areas shall be restored to pre-construction contours to the extent possible.
- Hay/straw bales and silt fences shall be used to control erosion during stormwater runoff events.
- The highest quality soil shall be salvaged, stored, and used for native re-vegetation/seeding.
- Drainage gaps shall be implemented in topsoil and spoil piles to accommodate/reduce surface water runoff.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be maintained until disturbed areas have been re-vegetated. Erosion control structures shall be in place and operational at the end of each day if work activities occur during the rainy season.
- Fiber rolls shall be placed along the perimeter of disturbed areas to ensure sediment and other potential contaminants of concern are not transported off-site or to open trenches. Locations of fiber rolls will be field adjusted as needed and according to the advice of the certified SWPPP inspector.
- Vehicles and equipment stored in the construction staging area shall be inspected regularly for signs of leakage. Leak-prone equipment will be staged over an impervious surface or other suitable means will be provided to ensure containment of any leaks. Vehicle/equipment wash waters or solvents will not be discharged to surface waters or drainage areas.
- During the rainy season (dates to be specified in the SWPPP), soil stockpiles and material stockpiles will be covered and protected from the wind and precipitation. Plastic sheeting will be used to cover the stockpiles and straw wattles will be placed at the base for perimeter control.

- Contractors shall immediately control the source of any leak and immediately contain any spill utilizing appropriate spill containment and countermeasures. Leaks and spills shall be reported to the designated representative of the lead contractor and shall be evaluated to determine if the spill or leak meets mandatory SWPPP reporting requirements. Contaminated media shall be collected and disposed of at an off-site facility approved to accept such media.

3.12 LAND USE/PLANNING

3.12.1 ENVIRONMENTAL CHECKLIST

<u>LAND USE/PLANNING</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.12.2 SETTING

Regulatory Context

City of Vacaville General Plan

Applicable City General Plan goals, policies, and objectives include:

Land Use Element

Goal LU-12 Provide high-quality housing in a range of residential densities and types.

Policy LU-P12.1 Encourage development that broadens the choice and type, size, and affordability of housing in Vacaville.

Policy LU-P3.6 Require that new development or new Specific Plan areas be located immediately adjacent to existing development or infrastructure.

Vacaville Municipal Code

Applicable City Land Use and Development Code include:

Chapter 14.09.088 Neighborhood Commercial District: allows for the uses which generally provide goods and services in small retail centers intended to accommodate a neighborhood area.

Chapter 14.09.106 Residential Overlay District: provides for the development of attached medium density and attached high density residential uses in the General Commercial, Neighborhood Commercial, Office Commercial, and Business Park districts, in structures physically separate from the commercial or business park uses or combined within the same structure.

Chapter 10.09.082 Residential High Density District: provides for higher density multi-family housing including townhouses, condominiums, and apartments. The allowed density ranges from 20.1 to 24.0 units per gross developable acre, with a minimum project area of five acres.

Environmental Setting

Project Site Land Uses

The 2.11-acre Project Site consists of two parcels. The northern parcel (APN 126-150-050) is currently occupied by the Glenbrook Hills Swim Club and the southern parcel (APN 126-160-150) is undeveloped land containing trees (**Figure 2-3**). The Project Site is located within City limits and zoned CN (City of Vacaville, 2020). The Proposed Project involves a General Plan zoning map amendment, to include a RO district over the current CN district. The Proposed Project would be subject to compliance with standards for the RH zoning district.

Surrounding Land Uses

Surround land uses are comprised of commercial and residential uses. Lands to the north and east of the Project Site are zoned Residential High Density (RH). Lands directly south of the Project Site are zoned Residential Low Medium (RLM-4.5). Lands on the west side of South Orchard Avenue, west of the Project Site are zoned Neighborhood Commercial Mixed Use). A parcel (APN 126-150-040) located on the corner of South Orchard Avenue and West Monte Vista Avenue, which shares parcel boundaries with the Project Site, is zoned CN (City of Vacaville, 2020). The City of Vacaville Fire Station 71 is located directly south of the Project Site.

3.12.3 DISCUSSION OF IMPACTS

Question A

Would the project: Physically divide an established community?

No Impact. Projects that have the potential to physically divide an established community typically include new freeways and highways, major arterials streets, and railroad lines. The Proposed Project would not physically divide an established community. No impact would occur.

Question B

Would the project: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant. As described above, the Project Site is currently zoned CN. The City Zoning Code permits the establishment of Residential Overlay districts within underlying CN districts by means of a zoning map amendment. Under the Proposed Project, the zoning for the Project Site would apply a RO district over the CN district. The project would be subject to compliance with standards for RH zoning district. The RO district, which, in conjunction with the requested affordable housing Density Bonus, would allow the higher residential density associated with the 67-unit affordable housing complex. The proposed zoning amendment and Density Bonus are components of the Proposed Project.

Therefore, with the zoning map amendment and approval of the Density Bonus, the Proposed Project would not conflict with any land use plan, policy, or regulation.

The Proposed Project is consistent with applicable policies in the City's General Plan; specifically, Policy LU-P12.1 listed above, to encourage development that broadens the choice and type, size, and affordability of housing in Vacaville. The Proposed Project would be consistent with all applicable land use plans, policies, and regulations, as discussed in each individual environmental impact area analyzed within this IS. Therefore, implementation of the Proposed Project would not conflict with any plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Impacts would be less than significant.

Cumulative Impacts

Less than Significant. Potential cumulative projects in the vicinity of the Project Site, including population growth resulting from build-out of the City's and County's General Plans, would be developed in accordance with local and regional planning documents. As described above, the Proposed Project would comply with all zoning requirements and would reflect current land uses in the vicinity of the Project Site. Thus, cumulative impacts associated with land use compatibility are expected to be less than significant. Additionally, as discussed above, the Proposed Project is consistent with the General Plan land use designations, goals, and policies, and thus would not contribute to the potential for adverse cumulative land use effects.

3.12.4 MITIGATION MEASURES

None required.

3.13 MINERAL RESOURCES

3.13.1 ENVIRONMENTAL CHECKLIST

<u>Mineral Resources</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less- Than- Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.13.2 SETTING

Regulatory Setting

Pursuant to the mandate of the Surface Mining and Reclamation Act of 1975 (SMARA), the State Mining and Geology Board designates mineral deposits that have regional, multi-community, or statewide economic significance. SMARA allows the State Mining and Geology Board (SMGB) to designate and classify lands containing mineral deposits of regional or statewide significance. Classification of minerals is completed by the State Geologist in accordance with the SMGB's priority list, into four Mineral Resource Zones (MRZ). Lands classified as MRZ-1 are areas where geologic information indicates no significant mineral deposits are present; MRZ-2 indicates areas that contain identified mineral resources; MRZ-3 indicates areas of undetermined mineral resources significance; MRZ-4 indicates areas of unknown mineral resource potential (DOC, 2019).

Environmental Setting

As described in the County's General Plan, Solano County is rich in a number of nonfuel mineral resources. Mineral resources mined or produced within Solano County include mercury, sand and gravel, clay, stone products, calcium, and sulfur. Figure RS-4 of the County General Plan (Chapter 4; Page RS-33) shows the locations of MRZs in Solano County. MRZ-3 zones, areas of undetermined mineral resources, are located to the northeast of Vallejo, to the south and southeast of Green Valley, in areas south and east of Travis Air Force Base, and in pockets located within both Vacaville and Fairfield. One MRZ-2 zone, areas that contain identified mineral resources, is mapped between Vallejo and Benicia to the east. The Project Site is not located in an MRZ zone.

3.13.3 DISCUSSION OF IMPACTS

Question A

Would the project: Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

No impact. According to the USGS Mineral Resources Data System, there are no known mineral resources located on the Project Site (USGS, 2020). Therefore, the Proposed Project would not result in the loss of availability of any mineral resources that could be of value to the region. No impacts would occur to mineral resources.

Question B

Would the project: Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No impact. There are no locally important mineral resource recovery sites in the area (USGS, 2020). No impacts would occur to mineral resources.

3.13.4 MITIGATION MEASURES

None required.

3.14 NOISE

3.14.1 ENVIRONMENTAL CHECKLIST

<u>NOISE</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less- Than- Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.14.2 SETTING

Background Information on Noise

Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second or Hertz.

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20

micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn} , and shows very good correlation with community response to noise.

The day/night average level (also referred to as L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-dB weighing applied to noise occurring during nighttime (10:00 P.M. to 7:00 A.M.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 3-10 lists several examples of the noise levels associated with common situations.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

TABLE 3-10. TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 meters (1,000 ft.)	--100--	
Gas Lawn Mower at 1 meter (3 ft.)	--90--	
Diesel Truck at 15 meters (50 ft.), at 80 km/hour (50 mph)	--80--	Food Blender at 1 meter (3 ft.) Garbage Disposal at 1 meter (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 meters (10 ft.)
Commercial Area Heavy Traffic at 90 meters (300 ft.)	--60--	Normal Speech at 1 meter (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing
Source: Caltrans, 2013.		

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (e.g., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

Existing Noise and Vibration Environments

Existing Sensitive Receptors

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Near the Project Site, sensitive land uses include existing multi-family residences immediately east of the Project Site, and existing single-family residences immediately south of the Project Site. The existing multi-family residences are located approximately 50 feet from the nearest proposed building. Other sensitive uses in the vicinity of the Project Site include single-family residences located approximately 100 feet north of the Project Site, the Trinity Baptist Church located approximately 300 feet east of the Project Site, and a nursing home located approximately 300 feet south of the Project Site.

Regulatory Setting

City of Vacaville General Plan

The following policies of the City General Plan Noise Element are applicable to the Proposed Project.

- | | |
|-----------------|---|
| Policy NOI-P1.2 | Require that noise created by new transportation and non-transportation noise sources be mitigated, to the extent that is technically and economically feasible, to comply with the noise level standards of Table NOI-3. [Included below as Table 3-11] |
| 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: <ul style="list-style-type: none">o Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.o Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.o Utilize “quiet” air compressors and other stationary noise sources where technology exists.o Limit hours of operation of outdoor noise sources through conditions of approval. |

TABLE 3-11. LAND USE COMPATIBILITY STANDARDS FOR COMMUNITY NOISE ENVIRONMENTS

Type of Proposed Project	Community Noise Exposure in Decibels (CNEL) Day/Night Average Noise Level in Decibels (Ldn)					
	55	60	65	70	75	80
Residential Low Density Single-Family, Duplex, Mobile Homes						
Residential – Multi-Family						
Transient Lodging – Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing, Utilities, Agriculture						
<div> <div></div> <p>NORMALLY ACCEPTABLE Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.</p> </div> <div> <div></div> <p>NORMALLY UNACCEPTABLE New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.</p> </div> <div> <div></div> <p>CONDITIONALLY ACCEPTABLE New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.</p> </div> <div> <div></div> <p>CLEARLY UNACCEPTABLE New construction or development clearly should not be undertaken.</p> </div>						
Source: State of California, 2003						

City of Vacaville Municipal Code

The City of Vacaville Municipal Code provides noise level limits for non-transportation (stationary) and mobile noise sources. Municipal code sections applicable to the Proposed Project are provided below:

14.09.127.090 Hours of Construction.

A. 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 grading or construction activities shall be allowed on Sundays or holidays except as provided herein:

1. Interior work which would not create noise or disturbance noticeable to a reasonable person of normal sensitivity in the surrounding neighborhood shall not be subject to these restrictions.

14.09.127.100 Hours of Operation.

A. Hours of operation may be regulated, as determined by the decision-maker, through the conditions of the project approval, in order to mitigate impacts on surrounding uses and ensure compliance with the provisions of this Title.

14.09.127.120 Noise.

These standards have been established to implement the Noise Element of the General Plan. They are applicable to the land use determinations approved through the General Plan amendment and the zone change process. They also apply to any project approvals granted in accordance with the Zoning Ordinance and the Subdivisions Ordinance. The standards identify the maximum noise levels to which sensitive land uses may be exposed and the maximum noise standards related to non-transportation sources. A sensitive land use is a use which is sensitive to noise impacts and for which this section establishes maximum noise exposure standards.

C. Project Approval and Operational Standards. These standards apply to all land uses subject to approval through the Zoning Ordinance and the Subdivisions Ordinance, and are applicable to both transportation and non-transportation noise sources. Compliance with these standards shall be required in conjunction with all land development and subdivision approvals.

4. Non-Transportation Sources. Non-transportation noise sources include noise from activities or uses such as industrial operations, outdoor recreation facilities, loading docks, and construction equipment. Two standards apply to non-transportation noise sources: the hourly Leq, dBA, which is an hourly average sound level, and the maximum level, dBA. **Table 3-12** shows the maximum hourly average and the peak daytime and nighttime noise standards for non-transportation sources when located near sensitive land uses. All uses shall comply with these standards.

TABLE 3-12. MAXIMUM NOISE EXPOSURE AND GENERATION LEVELS FOR NON-TRANSPORTATION SOURCES

Land Use Category	Noise Level Descriptor	Exterior Noise Levels		Interior Noise Levels	
		Daytime (7am to 10pm)	Nighttime (10pm to 7am)	Daytime (7am to 10pm)	Nighttime (10pm to 7am)
Residential	Hourly L_{eq} , dBA	50	45	45	35
Maximum Level, dBA	70	65	-	-	-
Transient Lodging	Hourly L_{eq} , dBA	-	-	45	35
Hospital, Nursing Homes	Hourly L_{eq} , dBA	50	45	45	35
Other	Hourly L_{eq} , dBA	-	-	-	-
	Maximum Level, dBA	-	-	-	-
Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises					

3.14.3 DISCUSSION OF IMPACTS

Question A

Would the project result in: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Less than Significant with Mitigation. During the construction of the Proposed Project, noise from construction activities would temporarily add to the noise environment in the vicinity of the Project Site. As shown in **Table 3-13**, activities involved in construction would generate maximum noise levels ranging from 76 to 85 dB at a distance of 50 feet.

TABLE 3-13. CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Pneumatic Tools	85

Source: Federal Highway Administration, 2006

Construction of the Proposed Project is anticipated to begin in October 2022 and be completed by December 2023. Equipment associated with construction activities generally includes dozers,

tractors/loaders/backhoes, cranes, forklifts, welders, pavers and paver equipment, rollers, and air compressors. Construction activities would also be temporary in nature and are anticipated to occur during normal daytime working hours.

The existing sensitive receptors located within approximately 50 feet of construction activity could experience maximum instantaneous noise levels of up to 85 dBA L_{max} . Average noise levels would be expected to be 5-10 dBA less than maximum noise levels, or 75-80 dBA Leq. These levels are greater than the City's 50 dBA exterior noise standards for non-transportation noise sources during daytime hours (7 A.M. to 10 P.M.). Therefore, this is a potentially significant impact.

Mitigation Measure N-1, provided below, would require that construction activities associated with the Proposed Project comply with the noise control measures established by the City's General Plan Policy NOI-P4.2. Implementation of **Mitigation Measure N-1** would reduce construction noise levels associated with the Proposed Project to the maximum extent feasible. Additionally, the City regulates construction noise by restricting the allowable hours of construction for construction sites within 500 feet of existing residences. Section 14.09.127.090 of the City's Municipal Code prohibits construction between dusk (one-half hour after sunset) and 7:00 a.m. Monday through Saturday, as well as on Sundays or holidays, where residences are within 500 feet. Accordingly, no construction activities associated with the Proposed Project would occur outside of daytime hours, minimizing the potential for noise-related sleep disruption. Given the temporary nature of construction activities, restrictions on construction times required by the City's Municipal Code, and noise minimization measures required by **Mitigation Measure N-1**, impacts relating to construction noise levels associated with the Proposed Project would be considered less than significant with mitigation.

Operation

Less than Significant. Operational noise from the Proposed Project would primarily consist of increased vehicle traffic to and from the Project Site. Additional noises associated with operation of the Proposed Project would include sounds of people speaking, and using outdoor amenities. Such noises would not result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project Site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Furthermore, the exposure of sensitive receptors to excessive noise levels from traffic noise sources associated with buildout of the City's General Plan was determined to be a less-than-significant impact in the City's General Plan and ECAS EIR. Additionally, as described in **Section 3.18**, operation of the Proposed Project is expected to have significantly lower vehicle trip generation compared to buildout of the Project Site under existing zoning, as analyzed in the City's General Plan and ECAS EIR. Therefore, impacts relating to noise levels due to operation of the Proposed Project would be considered less than significant.

Question B

Would the project result in: Generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant. No, the Proposed Project would not generate excessive groundborne vibration or noise. The primary vibration-generating activities associated with the Proposed Project would occur

during construction when activities such as grading, drilling, and compacting occur. For structural damage, Caltrans uses a vibration limit of 0.5 inches/second, peak particle velocity (in/sec, PPV), for buildings structurally sound and designed to modern engineering standards; 0.2 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern; and a conservative limit of 0.08 in/sec PPV for historic buildings or buildings that are documented to be structurally weakened. All surrounding structures are assumed to be structurally sound, but damage would be a concern, therefore the 0.2 in/sec PPV will be used as a threshold of significance for structural damage. The threshold of 0.2 in/sec PPV is also used by Caltrans as the threshold for human annoyance caused by vibration. Therefore, activities creating vibrations exceeding 0.2 in/sec PPV would impact sensitive receptors in nearby residences (Caltrans, 2013). **Table 3-14** shows the typical vibration levels produced by construction equipment.

TABLE 3-14. VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)
Large Bulldozer	0.089	0.031
Loaded Trucks	0.076	0.027
Small Bulldozer	0.003	0.001
Auger/drill Rigs	0.089	0.031
Jackhammer	0.035	0.012
Vibratory Hammer	0.070	0.025
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074
Source: Caltrans, 2013		

The **Table 3-14** data indicate that construction vibration levels anticipated for the Proposed Project are less than the 0.2 inches per second threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located further than 26 feet from typical construction activities. At distances greater than 26 feet construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours. This is a less-than-significant impact and no mitigation is required.

Question C

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The Project Site is not located near an existing airport or private airstrip and is not within an area covered by an existing airport land use plan. The nearest airport to the Project Site is the Nut Tree Airport located approximately 2.66 miles northeast of the Project Site. Therefore, the Proposed Project would not expose people residing in the Proposed Project to excessive noise levels and no impact would occur.

Cumulative Impacts

Less than Significant. As stated above, operation of the Proposed Project would not increase existing ambient noise levels above the applicable thresholds at sensitive receptors. Additionally, the exposure of sensitive receptors to excessive noise levels from traffic noise sources associated with buildout of the City's General Plan was determined to be a less-than-significant impact in the City's General Plan and ECAS EIR. Therefore, the Proposed Project would not result in cumulatively considerable impacts. This impact is considered less than significant.

3.14.4 MITIGATION MEASURES

N-1 Noise Reduction

- 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.

3.15 POPULATION AND HOUSING

3.15.1 ENVIRONMENTAL CHECKLIST

<u>POPULATION AND HOUSING</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less- Than- Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.15.2 SETTING

Regulatory Setting

City of Vacaville General Plan

The Land Use Element of the City's General Plan provides detailed information related to the City's housing needs and standards. The Land Use Element contains goals and policies that are relevant to population and housing. Applicable goals and policies include:

Policy LU-P1.3	Preserve the predominant single-family residential character of Vacaville while providing other housing opportunities.
Policy LU-P2.3	Encourage housing, shopping, and employment opportunities on both sides of Interstate 80 to minimize the need for excessive travel across Interstate 80.
Policy LU-P3.6	Require that new development or new Specific Plan areas be located immediately adjacent to existing development or infrastructure.
Goal LU-12	Provide high-quality housing in a range of residential densities and types.
Policy LU-P12.1	Encourage development that broadens the choice of type, size, and affordability of housing in Vacaville.

Regional Housing Needs Allocation

Cities and counties are required by California law to account for regional housing needs in the housing elements of their general plans. The purpose of the Regional Housing Needs Allocation (RHNA) is to allocate and preemptively plan for housing for all income ranges for an eight-year period. The California Department of Housing determines the total housing necessary for the San Francisco Bay Area (Bay Area) region and the ABAG distributes this need to local governments through the Final Regional Housing Need Plan, which outlines the RHNA.

The Housing Element of the City of Vacaville General Plan (adopted in 2015) addresses the fair share allocation of regional housing for the City, as projected by ABAG and presented in the RHNA. According to the General Plan, for the 2015-2023 period, there is a remaining need for 938 new housing units (City of Vacaville, 2015).

Environmental Setting

Population

As of July 1, 2019, the population for Solano County is estimated at 447,643 people, and the population for the City is 100,670 (U.S. Census, 2019). The Housing Element of the City General Plan projected the City's population will increase by approximately 23.3 percent between 2010 and 2040 for a total population of 114,000 in 2040 (City of Vacaville, 2015).

Housing

The Proposed Project would be an infill project that creates additional affordable housing opportunities in the City. According to the City's General Plan Housing Element, low vacancy rates, the number of households on waiting lists for subsidized housing, and presence of homeless are indicators of immediate need for housing in the community. Overpayment of rent is also an indicator of immediate need, in particular for low- and very-low income households (City of Vacaville, 2015). The City of Vacaville has the ability to meet its housing needs through new construction on appropriately designated land identified by the City of Vacaville General Plan, substantial rehabilitation of existing market-rate housing units to be re-designated as affordable units, and construction of secondary living units on existing single-family home sites (City of Vacaville, 2015).

3.15.3 DISCUSSION OF IMPACTS

Question A

Would the project: Induce substantial unplanned 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)?

Less than Significant. No, the Proposed Project would not induce significant unplanned population growth in the area. The Project Site is located within the City's defined UGB and is expected to experience growth, as stated in the City's General Plan. Although the Proposed Project's Zoning Map Amendment to include a RO district (see **Section 2.3.3**) is not reflected in the City's General Plan, the relatively small scale of apartment units (67) associated with the Proposed Project would represent a negligible increase compared to current growth projections in the City General Plan, based on current

zoning. Therefore, the potential increase in population growth due to the proposed Zoning Map Amendment would have less than significant impacts on population growth in the area as a whole.

The Proposed Project, which includes construction of affordable residential units, would assist the City in meeting its low income/affordable housing goals. The Proposed Project would comply with the goals, policies, and programs of the City of Vacaville General Plan Housing Element, which includes the City's commitment to provide affordable housing (City of Vacaville, 2015). The Proposed Project would construct 67 affordable housing units, with 27 one-bedroom, 22 two-bedroom, and 18 three-bedroom floor plans. Based on the average household size in the City of 2.74 persons (City of Vacaville, 2013), the population of the Proposed Project would be approximately 184. As of July 1, 2019, the population for the City was 100,670 (U.S. Census, 2019). Assuming the Proposed Project would add 184 new residents to the City's population, this would represent a negligible 0.18 percent increase in population. The Proposed Project would not induce substantial unplanned population growth in an area, either directly or indirectly. Impacts would be less than significant.

Question B

Would the Project: Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Proposed Project would not displace existing housing or people that would necessitate the construction of replacement housing. On the contrary, the Proposed Project would create 67 new residential apartment units for affordable and supportive rental housing. No impact would occur.

Cumulative Impacts

No Impact. The Proposed Project is not expected to significantly increase unplanned growth, and therefore would not contribute to cumulative impacts associated with growth. No impact would occur.

3.15.4 MITIGATION MEASURES

None required.

3.16 PUBLIC SERVICES

3.16.1 ENVIRONMENTAL CHECKLIST

<u>PUBLIC SERVICES</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
Would the project:				
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
a) Fire Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Police Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.16.2 SETTING

Fire Protection/Emergency Medical Service

Fire Protection and emergency medical services within the City of Vacaville are provided by the Vacaville Fire Department. The fire department has five stations, the closest being Station 71, located directly south of the Project Site. The nearest hospital to the Project Site is NorthBay VacaValley Hospital, which is located approximately 3.2 miles east of the Project Site, and provides a comprehensive range of inpatient and outpatient medical services (NorthBay, 2020).

Law Enforcement

Law enforcement services within the City of Vacaville are provided by the Vacaville Police Department. The police department has one station, located approximately one mile southeast of the Project Site.

Schools

The Vacaville Unified School District services the City and includes nine elementary schools, one independent learning school, three middle schools, four high schools, and one adult school (Vacaville Union School District, 2020). The Project Site is within the enrollment boundaries for Hemlock Elementary School, Alamo Elementary School, Willis Jepson Middle School, and Vacaville High School (School Works, 2020).

Parks

As described in **Section 3.17.2**, the City of Vacaville Parks and Recreation Department is responsible for management of parks and recreational facilities in the City, which include parks and fields, bike paths, and community centers (City of Vacaville, 2020e). The overall standard of providing 4.5 acres of developed parkland per thousand people reflects a minimum goal to maintain this important quality of life component as the City's population increases through the years (City of Vacaville, 2015b).

3.16.3 DISCUSSION OF IMPACTS

Question A – Fire Protection

Would the project: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection?

Less than Significant. The Project Site is located in the Vacaville Fire Department service area; Vacaville Fire Station 71 is located directly south of the Project Site. The northern parcel of the Project Site, as well as the surrounding area is currently developed and the risk of fire is anticipated to remain similar to existing conditions. Residential growth on the Project Site and vicinity, and the associated increase in demand for fire services, is currently accounted for in the City's General Plan. It should be noted that the Proposed Project's Zoning Map Amendment to include a RO district (see **Section 2.3.3**) is not reflected in the City's General Plan. However, due to the relatively small scale of apartment units (67) associated with the Proposed Project, the potential demand for fire services would be negligible in regard to current City General Plan projections. Furthermore, payment of the public facilities impact fee (when the new residences are developed) and property taxes would ensure that fire protection services could be provided to the Proposed Project without diminishing service to others within the Vacaville Fire Department's service area. All building design and construction would be required to comply with the California Fire Code, which includes construction techniques that minimize fire risk. The Vacaville Fire Department would conduct a plan check prior to approval of the building permit, which would ensure that appropriate steps are taken to minimize the risk of fire, by requiring that recommendations of the Vacaville Fire Department are implemented, reducing the potential for a fire on the Project Site. Fire protection services would not need to be extended to serve the Proposed Project; impacts would be less than significant.

Question B – Police Protection

Would the project: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: police protection?

Less Than Significant. Law enforcement services within the City of Vacaville are provided by the Vacaville Police Department. The Project Site is within the Vacaville Police Department's service area. While the Proposed Project would be expected to marginally increase demand for police protection services compared to existing conditions, the Proposed Project would not create the need for new or expanded police protection facilities because residential growth on the Project Site and vicinity is anticipated in the City's General Plan. It should be noted that the Proposed Project's Zoning Map Amendment to include a RO district (see **Section 2.3.3**) is not reflected in the City's General Plan. However, due to the relatively small scale of apartment units (67) associated with the Proposed Project, the potential demand for police services would be negligible in regard to current City General Plan projections. Impacts would be less than significant.

Question C – Schools

Would the project: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: schools?

Less Than Significant. The Project Site is served by the Vacaville Unified School District. The Proposed Project would involve 67 new residential units. The Vacaville Unified School District estimates the student population rate of 0.434 students per dwelling unit (Public Economics, 2018). Therefore, the Proposed Project is expected to generate approximately 29 students. This incremental increase in the number of students would not result in the need for new or physically altered school facilities. In addition, pursuant to Senate Bill 50 (Section 65995(h)), payment of mandatory fees to the affected school district would reduce school faculty impact fees to a less than significant level under CEQA. Impacts would be less than significant.

Questions D – Parks

Would the project: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: parks?

Less Than Significant. As described in **Section 3.17.3**, impacts to existing neighborhood and regional parks would be less than significant. The Proposed Project involves the construction of 67 new apartment units, which would not generate enough increased demand to result in the need for park facilities beyond those currently planned for. Payment of the public facilities impact fees (when the new

residences are developed) and property taxes would mitigate any impacts to parks. For these reasons, impacts to parks would be less than significant.

Question E – Public Facilities

Would the project: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: other public facilities?

Less Than Significant. As described in **Section 3.17.3**, impacts to existing recreations facilities would be less than significant. The Proposed Project involves the construction of 67 new apartment units, which would not generate enough increased demand to result in the need for facilities beyond those currently planned for. Payment of the public facilities impact fees (when the new residences are developed) and property taxes would mitigate any impacts to public facilities. For these reasons, impacts to public facilities would be less than significant.

Cumulative Impacts

Less than Significant. As described above, the Proposed Project could potentially increase the demand for fire, police, schools, parks, or other public facilities. However, growth within the UGB area is expected and planned for in the City General Plan and payment of the public facilities impact fees (when the new residences are developed) and property taxes would alleviate the demands to public services. Cumulative impacts would be less than significant.

3.16.4 MITIGATION MEASURES

None Required.

3.17 RECREATION

3.17.1 ENVIRONMENTAL CHECKLIST

<u>RECREATION</u>	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.17.2 SETTING

The City of Vacaville Parks and Recreation Department is responsible for management of parks and recreational facilities in the City, which include parks and fields, bike paths, and community centers (City of Vacaville, 2020e). The closest community park to the Project Site is Andrews Park, located approximately 1 mile east of the Project Site. The next closest parks are neighborhood parks, including City Hall Park located approximately 1 mile southeast of the Project Site and Three Oaks Park located approximately 1.6 miles south of the Project Site.

3.17.3 DISCUSSION OF IMPACTS

Question 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?

Less than Significant. No, the Proposed Project would not substantially deteriorate parks or recreational facilities due to increased use. The Proposed Project involves the construction of 67 new residential apartment units for affordable and supportive rental housing. Future residents of the Proposed Project are expected to use existing neighborhood and regional parks; however, the increase in population would not result in a significant increase of park use. The Proposed Project would be subject to the Parks and Recreation Facilities Impact Fee pursuant to Chapter 11.01.020 of the City's municipal code. The City would determine the park development impact fee at the time of development and payment of the fees is required prior to issuance of building permits. Park development impact fees are used by the City to finance construction of new neighborhood and community parks and address the impacts on existing parks caused by development in the City. Additionally, the Proposed Project incorporates recreational amenities for tenants, including a Community Room, playground, and shared landscaped open space.

See Sheet A08 of **Appendix A** for a shared amenities site plan. These features would provide onsite recreational opportunities to the residents of the property. As a result, the Proposed Project would likely reduce trips to existing nearby recreational facilities. Based on the minimal increased demand and the payment of park development impact fees, the Proposed Project would not adversely affect the capacity or physical conditions of local parks and recreation facilities. Impacts to existing neighborhood and regional parks and other recreations facilities would be less than significant.

Question 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?

No Impact. The Proposed Project does not involve or require the construction or expansion of recreational facilities. No impact would occur.

Cumulative Impacts

Less than Significant. The Proposed Project would have a less-than-significant impact on existing recreational facilities. As described above, the Proposed Project and other planned development in the area would be subject to the Parks and Recreation Facilities Impact Fee pursuant to Chapter 11.01.020 of the City's municipal code. Based on the payment of park development impact fees there is no evidence that this Proposed Project would result in cumulative impacts toward recreational facilities, and this is a less-than-significant impact.

3.17.4 MITIGATION MEASURES

None required.

3.18 TRANSPORTATION

3.18.1 ENVIRONMENTAL CHECKLIST

<u>TRANSPORTATION</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.18.2 SETTING

Transportation Network

The Project Site can be accessed via the following regional and City roadways:

- **South Orchard Drive** is a two lane north/south oriented roadway in the vicinity of the Project Site. South Orchard Drive is classified as a Collector by the City General Plan.
- **West Monte Vista Avenue** is a two lane east/west oriented roadway in the vicinity of the Project Site. West Monet Vista Avenue is classified as a Collector by the City General Plan.
- **Interstate 80 (I-80)** is an interstate highway serving as the primary regional connector. I-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.

Bikeways, Pedestrian Facilities, Public Transportation System

There are no bicycle pathways/routes in the immediate vicinity of the Project Site. Sidewalks with a raised curb and gutter are provided along South Orchard Drive and West Monte Vista Avenue in the vicinity of

the Project Site. Bus service in Vacaville is provided by Vacaville City Coach, Fairfield and Suisun Transit, and YOLOBUS, as described further below. The nearest Vacaville City Coach bus stop, North Orchard Avenue at FoodFair, is located immediately adjacent to the Project Site on South Orchard Avenue.

3.18.3 DISCUSSION OF IMPACTS

Question A

Would the project: Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less than Significant. No, the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system. The ITE Trip Generation Handbook is generally used to estimate weekday AM, PM, and daily trip generation forecasts. However, as described in the 2018 Caltrans Technical Report on *Affordable Housing Trip Generation Strategies and Rates*, ITE trip generation rates often significantly over-estimate the number of vehicle trips for affordable housing projects where residents are likely to have lower than average rates of car ownership and use (Caltrans, 2018a). The 2018 Caltrans Technical Report finds that lower income households generate 47 percent less vehicle miles traveled than their wealthier counterparts, and affordable housing sites generate 35 percent fewer motorized vehicle trips in the PM peak hour, on average, than would be predicted using standard ITE data (Caltrans, 2018a). Based on these findings, a 30 percent trip reduction was applied to ITE trip generation rates for the Proposed Project. As shown in **Table 3-15** below, implementation of the Proposed Project would be expected to result in a total of 255 daily vehicle trips, with 17 trips occurring during the AM peak hour and 21 trips occurring during the PM peak hour.

TABLE 3-15. WEEKDAY PROJECT TRIP GENERATION RATES AND ESTIMATES

Land Use Category (ITE Code)	Units	Rate	Daily Trips	AM Peak Hour		PM Peak Hour	
				Rate	Total	Rate	Total
Apartments Mid-rise	67	5.44	364	0.36	24	0.44	29
<i>Affordable Housing Reduction</i>			-109	-0.11	-7	-0.13	-9
Net Project Trips			255	0.25	17	0.31	21
Source: Caltrans, 2018a; Institute of Transportation Engineers, 2017							

The intersections within close proximity to the Project Site all currently operate at an acceptable level of service (LOS) during AM and PM peak hours and are expected to maintain an acceptable LOS with buildout of the General Plan (City of Vacaville, 2013). Due to the low number of project-generated trips, the Proposed Project would not adversely impact levels of service at nearby signalized intersections or roadways.

As shown above, the Proposed Project is expected to have significantly lower trip generation than a traditional apartment development. Although the Proposed Project includes implementation of a zoning amendment which would increase the allowable density on the Project Site, the Proposed Project would continue to have lower trip generation than a traditional apartment development, as analyzed in the City's General Plan and ECAS EIR. Accordingly, the Proposed Project would be consistent with traffic impacts analyzed in the City's General Plan and ECAS EIR.

The Proposed Project would not affect access to bicycle or pedestrian facilities in the vicinity of the Project Site. Additionally, the Proposed Project would increase access to local Vacaville coach bus stops in the vicinity of the Project Site. Based on the above, the Proposed Project would not conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, and a less-than-significant impact would occur.

Question B

Would the project: Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Less than Significant. No, the Proposed Project would not be inconsistent with CEQA guidelines Section 15064.3 (b). Section 15064.3 was recently added to the State CEQA Guidelines and describes specific considerations for evaluating a project's transportation impacts. Section 15064.3(b) establishes vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts, shifting away from the use of LOS analysis that evaluates a project's impacts on traffic conditions at nearby roadways and intersections. The Proposed Project is infill development that would provide residential housing within an existing urban area. Infill development generally reduces VMT compared to greenfield development (new development on lands not previously planned for development) and the Proposed Project would provide residential housing in an area serviced by existing public transit, potentially reducing the distance local residents would need to travel.

In addition, according to the Governor's Office of Planning and Research's (OPR) Technical Advisory on Evaluating Transportation Impacts In CEQA, adding affordable housing to infill locations generally improves jobs-housing match, in turn shortening commutes and reducing VMT (OPR, 2020). Further, "... low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available. In areas where existing jobs housing match is closer to optimal, low income housing nevertheless generates less VMT than market- rate housing. Therefore, a project consisting of a high percentage of affordable housing may be a basis for the lead agency to find a less-than-significant impact on VMT." Therefore, because the Proposed Project consists of the establishment of affordable housing on an infill in proximity to transit, it would not create a substantial increase in VMT, or conflict or be inconsistent with CEQA Guidelines section 15064.3(b). Impacts associated with VMT would be less than significant.

Question C

Would the project: Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. Primary access to the Proposed Project would be provided by an entrance and exit driveway on West Monte Vista Avenue. An exit-only driveway will also be provided on South Orchard Avenue, similar to current conditions. The Proposed Project would not include any modifications to the existing circulation system in the vicinity of the Project Site that would result in a traffic safety hazard. Therefore, the Proposed Project would not substantially increase hazards due to a geometric design feature or incompatible uses. No impact would occur.

Question D

Would the project: Result in inadequate emergency access?

No Impact. As described above, access to the Proposed Project would be provided by an entrance and exit driveway on West Monte Vista Avenue, and an exit-only driveway on South Orchard Avenue. The only gate would be a two-door vehicular gate with vehicle detection located at the exit to South Orchard Avenue. This gate would swing inward in order to facilitate emergency access. Access to the adjacent Orchards Apartments would be maintained throughout construction. Therefore, the Proposed Project would not result in inadequate emergency access. No impact would occur.

Cumulative Impacts

No Impact. As described above, the intersections in the vicinity of the Project Site are forecasted to continue to operate acceptably under buildout of the City's General Plan. Additionally, traffic volumes from operation of the Proposed Project would be less than those evaluated under buildout of the City's General Plan after implementation of the required zoning amendment described in **Section 2.3.3**. Therefore, no cumulative impacts would occur.

3.18.4 MITIGATION MEASURES

None required.

3.19 Tribal Cultural Resources

3.19.1 ENVIRONMENTAL CHECKLIST

<u>TRIBAL CULTURAL RESOURCES</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than- Significant Impact	No Impact
Would the project:				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.19.2 SETTING

California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities. Because CEQA calls for a sufficient degree of analysis, tribal knowledge about the land and tribal cultural resources at issue are included in environmental assessments for projects that may have a significant impact on such tribal cultural resources (TCR). TCRs can only be identified by members of the Native American community, thus requiring consultation under CEQA.

Regulatory Context

AB 52, signed into law in 2014, established a new category of resources in CEQA called “tribal cultural resources” that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation. Pursuant to PRC, Division 13, Section 21074, TCRs can be either:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either:
 - a. Included or determined to be eligible for inclusion in the CRHR; or
 - b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the eligibility criteria for the CRHR (PRC § 5024.1(c)). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American Tribe.

Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources. In light of this, AB 52 requires that, within 14 days of a decision to undertake a project or determination that a project application is complete, a lead agency shall provide written notification to California Native American tribes that have previously requested placement on the agency’s notice list. Notice to tribes shall include a brief project description, location, lead agency contact information, and the statement that the tribe has 30 days to request consultation. The lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a tribe.

Consultation

On October 5, the City, as lead agency, sent a project notification letter to the Yocha Dehe Wintun Nation, the only Native American tribe which has requested placement on the City’s AB 52 notice list. The City received a written response from Yocha Dehe dated October 9, 2020. In that response, Yocha Dehe stated that the Tribe was unaware of any cultural resources on the Project Site and that a monitor was not needed, but asked to be notified if anything is found. Yocha Dehe also recommended that the Tribe be contacted to schedule and complete cultural sensitivity training for project personnel.

3.19.3 DISCUSSION OF IMPACTS

Question A

Would the project: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Less than Significant with Mitigation. As discussed above in **Section 3.6**, no TCRs were identified during cultural resources investigations or consultation with Native American tribes. However, there is the possibility that unanticipated discoveries of subsurface archaeological deposits or human remains may occur. This is a potentially significant impact. **Mitigation Measures CR-1, CR-2, and CR-3**, which provide for the protection of unanticipated finds made during ground disturbing activities, would reduce impacts to TCRs to a less-than-significant level.

Question B

Would the project: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than Significant with Mitigation. As discussed above in **Section 3.6**, no TCRs were identified during cultural resources investigations or consultation with Native American tribes. Furthermore, no resources have been determined by the lead agency to be considered significant to a California Native American tribe. However, there is the possibility that unanticipated discoveries of subsurface archaeological deposits or human remains may occur. This is a potentially significant impact. **Mitigation Measures CR-1, CR-2, and CR-3**, which provide for the protection of unanticipated finds made during ground disturbing activities, would reduce impacts to TCRs to a less-than-significant level.

Cumulative Impacts

Less than Significant with Mitigation. Development of the Proposed Project may impact TCRs, adding to cumulative impacts from other projects in the region. TCRs that could be affected by the Proposed Project as well as others in the region are subject to protections under PRC Sections 5024.1, 21083.2 and 21084.1, and CEQA Guidelines Section 15064.5. In addition, projects with federal involvement would be subject to Section 106 of the NHPA. Given the non-renewable nature of TCRs, any impact to TCRs is potentially cumulatively considerable. However, as discussed above, no TCRs were identified during cultural resources investigations or consultation with Native American tribes. If resources are uncovered during construction, application of the consultation process under **Mitigation Measures CR-1 through CR-3** would reduce impacts to TCRs to a less than significant level, Application of similar measures to TCRs located within the region would similarly reduce the Proposed Project's incremental contribution to cumulative impacts to TCRs to a less than significant level.

3.19.4 MITIGATION MEASURES

Implement **Mitigation Measures CR-1, CR-2, and CR-3**.

3.20 UTILITIES/SERVICE SYSTEMS

3.20.1 ENVIRONMENTAL CHECKLIST

<u>UTILITIES/SERVICE SYSTEMS</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.20.2 SETTING

Electric Power, Natural Gas, and Telecommunications Facilities

PG&E provides electric power and natural gas to the City of Vacaville. PG&E has over 42,000 miles of natural gas distribution pipelines. PG&E delivers 2.6 billion cubic feet of gas per day to its customers (PGE, 2020). AT&T provides telecommunications services to the City of Vacaville. Overhead and underground electrical distribution lines exist in the vicinity of the Project Site. Furthermore, a PG&E

easement is located along the eastern border of the Project Site, as seen on Sheet C-5.1 and C-5.2 of **Appendix A**.

Water Supply

Water would be supplied to the Project Site from the City. The existing City water system is comprised of two surface water treatment plants, thirteen groundwater wells, nine storage tanks, six booster pump stations, and over 292 miles of distribution and transmission pipelines. The water distribution system consists of one main pressure zone plus several higher elevation pressure zones in various areas of the City (City of Vacaville, 2018). The City receives water from several sources, including Solano Project surface water from Lake Berryessa, State Water Project surface water and Settlement Water from the North Bay Aqueduct, and groundwater from local City wells. The percentage of water used from each source varies depending on the availability and quality of the water. According to the City's 2018 Water Master Plan, water sourced from the Solano Project is expected to have a 99 percent reliability through 2040. State Water Project water is expected to have a percent reliability between 83 and 20 percent depending on the source, and groundwater is expected to have 100 percent reliability through 2040 (City of Vacaville, 2018, BOR, 2016). A formal agreement was made with the Solano Irrigation District (SID) to provide water to supply the buildout of the UGB through the year 2050 (City of Vacaville, 2018a). The SID includes development of the UGB in its determination of water availability.

An existing eight-inch water supply line is located under West Monte Vista Avenue, and existing eight-inch and 12-inch water lines are located under South Orchard Avenue. Because the Project Site is located in a fully developed area and water utilities exist on and in the vicinity of the Project Site, the Proposed Project would tie into existing lines. **Appendix A** contains more detailed information on the location of existing and proposed utilities.

Wastewater Collection and Treatment

Wastewater collection and treatment for most developed areas within the City limits is provided by the City of Vacaville. The City operates the Easterly Wastewater Treatment Plant (Easterly WWTP), which treats an average of 7.5 million gallons of wastewater per day and has an average dry weather capacity of 15 million gallons per day (GPD). The plant operates under an NPDES permit regulated by the CVRWQCB to provide Title 11 tertiary level treatment (City of Vacaville, 2020d).

Existing eight-inch sewer lines are located under West Monte Vista Avenue north of the Project Site and on the northeast corner of the parcel south of the Project Site, that is occupied by the City of Vacaville Fire Station 71, as described in **Appendix B**.

Solid Waste Collection and Disposal

City of Vacaville Solid Waste Collection and Disposal

Solid waste collection in the City is provided by Recology Vacaville Solano, Inc. and disposed at the Recology Hay Road Landfill (City of Vacaville, 2012). The Recology Hay Road Landfill has a design capacity of 37 million cubic yards and is expected to reach its permitted capacity in 2077 (CalRecycle, 2020). The California Department of Resources Recycling and Recovery has allocated the City of Vacaville with a disposal rate target of 6.5 pounds of waste per person per day (City of Vacaville, 2015b).

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 (City of Vacaville, 2015b).

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. 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. Further, the City of Vacaville's General Plan Public Facilities and Services Element includes a goal to reduce the volume of solid waste generated in Vacaville through recycling and resource conservation (City of Vacaville, 2015b).

California Integrated Waste Management Act

AB 939, the California Integrated Waste Management Act, mandates management of non-hazardous solid waste throughout California. The purpose of AB 939 is to reduce, recycle, and reuse solid waste generated in the State to the maximum extent feasible; improve regulation of existing solid waste landfills; ensure that new solid waste landfills are environmentally sound; streamline permitting procedures for solid waste management facilities; and specify the responsibilities of local governments to develop and implement integrated waste management programs.

California Green Building Standards Code

CALGreen requires that at least 50 percent of the weight of non-hazardous job site debris generated by new construction be recycled, reused, or otherwise diverted from landfill disposal. CALGreen requires submission of plans and verifiable post-project documentation to demonstrate compliance.

3.20.3 DISCUSSION OF IMPACTS

Question A

Would the project: Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less than Significant. Utilities including water, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunication facilities currently exist in the vicinity of the Project Site and the Proposed Project would tie into these utilities. The relocation or construction of new facilities for these utilities would not be necessary. Because the Proposed Project would take place on an infill site that has been previously served by existing utilities, only minor improvements would be necessary within or immediately adjacent to the Project Site in order to tie into existing utility systems. Therefore, impacts associated with the construction or relocation of utilities would be less than significant.

Question B

Would the project: Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less than Significant. Yes, the Proposed Project would have water supplies available to serve the Project in the future. Construction of the Proposed Project would require the use of water supplies for

activities such as washing aggregates, dust suppression, and washing surfaces. However, water would be limited during the construction phase and quantities are not anticipated to be significant.

Once operational, the residential uses on the Project Site would result in an increased demand for water supply. The City of Vacaville 2018 Water System Master Plan provides recommended water demand factors based on building type. The recommended water demand factors include growth factors to account for anticipated development within the City's UGB, including a 40 percent increase in residential dwelling units. Chapter 5 of the 2018 Water System Master Plan estimates that a new Residential High-Density Land Use will use approximately 230 gpd of potable water per dwelling unit (Table 5-7 of City of Vacaville, 2018). Therefore, the Proposed Project's water demand is estimated at approximately 15,410 gpd. It should be noted that the estimated 15,410 gpd does not include water use due to landscape irrigation or recreational facilities on site. However, water use for irrigation and recreational uses would likely be less than water usage at the former swim club within the site.

As described in Chapter 6.1.2 of the City of Vacaville 2018 Water System Master Plan, the City has sufficient water supply to meet the annual water demand projected at buildout of the Master Plan, which accounts for an anticipated 40 percent increase in residential units in the City, and additional water supply sources would not be required (City of Vacaville, 2018). It should be noted that Proposed Project's Zoning Map Amendment to include a RO district (see **Section 2.3.3**) is not reflected in the 2018 Water System Master Plan. However, due to the relatively small scale of water use associated with the Proposed Project, the potential increase in water use from the proposed zoning amendment would be negligible in regard to the City Water System Master Plan projections. Therefore, the Proposed Project and its residents would not result in a significant consumption of water supplies and sufficient water supplies exist to serve the Proposed Project. Impacts to water supplies would be less than significant.

Question C

Would the project: Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less than Significant. As described above, Project Site would be served by the Easterly WWTP, which treats an average of 7.5 million gallons of wastewater per day and has an average dry weather capacity of 15 million GPD. As described in **Appendix B**, the Proposed Project would introduce an additional 30,880 gpd of sewer flows to the Easterly WWTP, which is 0.2 percent of the Easterly WWTP's total capacity. Therefore, the Easterly WWTP has adequate capacity to convey and treat the additional flows generated by the Proposed Project. The amount of wastewater generated by the Proposed Project during construction and operation is not expected to exceed the Easterly WWTP's capacity. Impacts would be less than significant.

Question D

Would the project: Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less than Significant. The Proposed Project would increase the demand for solid waste disposal. However, considering the Recology Hay Road Landfill's design capacity of 37 million cubic yards and

expected closure year of 2077, it is not anticipated that this increase in solid waste production would exhaust the remaining landfill capacity. Therefore, the Proposed Project would result in a less-than-significant impact related to generation of operational solid waste.

Question E

Would the project: Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. Yes, the Proposed Project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. The Proposed Project would include recycling facilities and would comply with local solid waste ordinances as well as State standards for reducing solid waste. Because State and local laws and regulations are more stringent than federal standards, State and local laws are the primary driver for the reduction in solid waste. Specifically, the Proposed Project would be required to comply with the laws and regulations that aim to divert waste from landfills, including, but not limited to, AB 939, CALGreen, and the policies set forth in the City of Vacaville General Plan Public Facilities and Services Element, which require reductions in waste. Therefore, the Proposed Project would comply with solid waste laws and regulations; no impact would occur.

Cumulative Impacts

Less than Significant. Utilities would not need to be expanded or relocated, as the Proposed Project would tie into existing infrastructure, which has capacity to serve the Proposed Project. Due to the relatively small size of the Proposed Project, which includes construction of 67 residential apartment units, the City would not experience a significant change in demand for services from existing conditions. Therefore, the Proposed Project would not contribute to cumulative impacts of utility and service systems.

3.20.4 MITIGATION MEASURES

None required.

3.21 Wildfire

3.21.1 ENVIRONMENTAL CHECKLIST

<u>WILDFIRE</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.21.2 SETTING

Regulatory Context

State Responsibility Areas

State Responsibility Areas (SRA) are lands in California where the California Department of Forestry and Fire Protection (CalFire) has legal and financial responsibility for wildfire protection and where CalFire administers fire hazard classifications and building standard regulations. Local Responsibility Areas (LRA) include land in cities, cultivated agricultural lands, unincorporated non-flammable areas, and lands that do not meet the criteria for SRA of Federal Responsible Areas (City of Vacaville, 2020c). California PRC§§ 4201 through 4204 and California Government Code 51175-89 direct CalFire to map fire hazard zones within state SRAs and LRAs, respectively, based on relevant factors such as fuels, terrain, and weather.

These zones, referred to as FHSZs, are based on the physical conditions that give a likelihood that an area will burn over a 30 to 50-year period without considering modifications such as fuel reduction efforts. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the wildland-urban interface zones.

City of Vacaville General Plan

Applicable City General Plan goals, policies, and objectives include:

Safety Element

Policy SAF-P5.1 Reduce the risk from wildfires by restricting development in High and Very High Hazard areas.

Disaster and Emergency Preparedness

According to the City's General Plan, the City has adopted the ABAG's regional hazard mitigation plan as the City's local hazard mitigation plan. This document includes actions and strategies for avoidance, preparation, and mitigation of potential disasters, to include wildfire. Furthermore, the Solano County Office of Emergency Services has prepared a Multiple Hazard Mitigation Plan that assesses hazards, assigns responsibilities, and prescribes evacuation routes for all of Solano County, including Vacaville.

Environmental Setting

The combination of highly flammable vegetation and warm, dry summers create the potential for wildland fires in Vacaville. Wildfire risk in Vacaville is mainly associated with wind, temperature, humidity, and fuel moisture content, with wind being the most crucial. High hazard areas within the city include outlying residential parcels and open lands adjacent to residential uses. The Project Site is located within a flat and currently developed area within City limits. The Project Site is immediately surrounded by urban development and no open space or wildland, and is not located in a FHSZ, as shown on Figure SAF-9 of the City's General Plan. Given the Project Site location, the threat of wildfire is diminished.

The Proposed Project is not located in a SRA, but is rather located in an Incorporated LRA (CalFire, 2007). The Project Site is located within a FHSZ classification of "LRA Unzoned," which indicates that the Project Site is located in an urbanized area that is not susceptible to wildland fire (CalFire, 2007a). The closest land designated as a moderate/high FHSZ, is the rural and mountainous area approximately one mile west and southwest of the Project Site.

3.21.3 DISCUSSION OF IMPACTS

Question A

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The Proposed Project is not located in a SRA or a very high FHSZ. Construction of the Proposed Project would occur within the Project Site boundaries and would not result in lane closures and thus would not affect emergency access or evacuation. Therefore, the Proposed Project would not

interfere with an adopted emergency response plan or emergency evacuation plan in place through the State, County, or City. No impact would occur.

Question B

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less than Significant. As mentioned above, the Proposed Project is not located in a SRA or a very high FHSZ. However, lands approximately one mile west and southwest of the Project Site, are classified as moderate/high FHSZ. The Proposed Project would be located on a relatively flat area, surrounded by developed land. The Proposed Project does not involve unique slopes or other factors that would exacerbate wildfire risks. Therefore, wildfire risk would not be exacerbated and the potential to expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire is less than significant.

Question C

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less than Significant. As mentioned above, the Proposed Project is not located in a SRA or a very high FHSZ. The Proposed Project would be constructed and located within the Project Site boundary, in which the northern parcel is already developed. Overhead and underground utility lines exist in the vicinity of the Project Site. It is not anticipated that new electrical distribution lines, whether overhead or underground, would be necessary to serve the Proposed Project. Impacts would be less than significant.

Question D

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. As mentioned above, the Proposed Project is not located in a SRA or a very high FHSZ. As described in **Section 3.8**, Geology and Soils, the Proposed Project is not located on an unstable geologic unit or soil and does not have a high risk of landslides or liquefaction. The Project Site is relatively flat and grading associated with the Proposed Project would not alter drainage patterns. Therefore, the Proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. No impact would occur.

Cumulative Impacts

Less than Significant. Operation of the Proposed Project and cumulative projects could result in a cumulative impact if these projects exacerbated wildfire risk. The City's General Plan has adopted standards for new construction adjacent to open space lands where wildfire is a threat. The Project Site and surrounding area is within City limits and not within a FHSZ. Furthermore, this Project Site area is largely developed, urban in nature, and not adjacent to wildland or open space lands, which reduces the potential for uncontrolled wildfire. Therefore, the Proposed Project would not contribute to cumulative impacts related to wildfire.

3.21.4 MITIGATION MEASURES

None required.

3.22 MANDATORY FINDING OF SIGNIFICANCE

<u>MANDATORY FINDINGS OF SIGNIFICANCE</u>	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question A

Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant with Mitigation. As discussed in the previous sections, the Proposed Project could potentially have significant environmental effects with respect to Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, and Tribal Cultural Resources. However, the impacts of the Proposed Project would be reduced to a less-than-significant level with the implementation of the mitigation measures identified in the sections.

Question B

Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less than Significant with Mitigation. Cumulative impacts for each resource area have been considered within the analysis of each resource area. When appropriate, mitigation measures have been provided to reduce all potential impacts to a less-than-significant level.

Question C

Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant with Mitigation. The potential direct environmental effects of the Proposed Project have been considered within the discussion of each environmental resource area in the previous sections. When appropriate, mitigation measures have been provided to reduce all potential impacts to a less-than-significant level.

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APPENDICES

APPENDIX A

PROJECT PLANS - LPAS



ENTITLEMENT SET

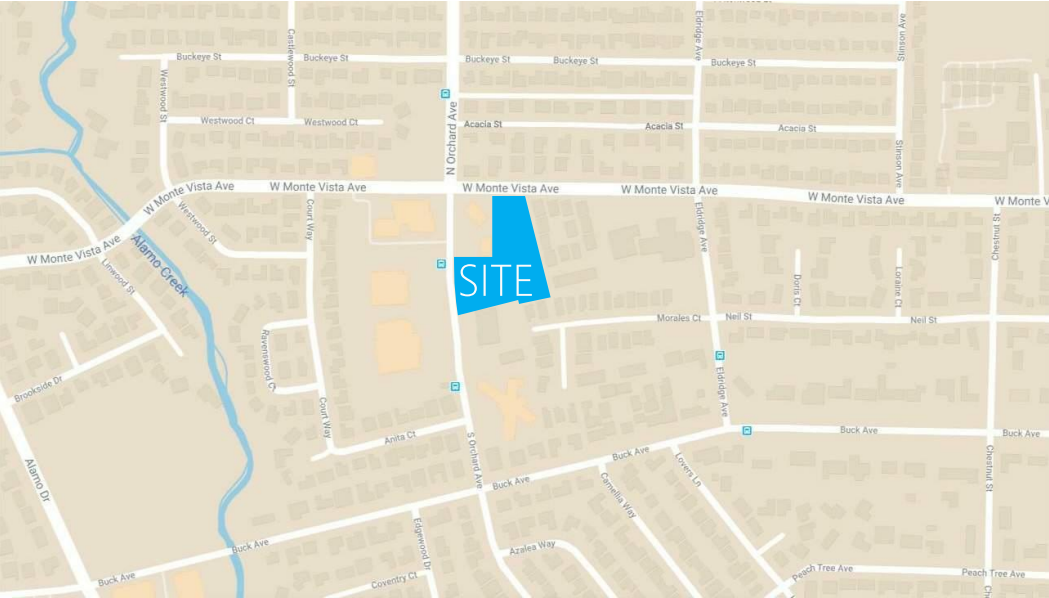
OAK GROVE APARTMENTS

| Vacaville, CA

PROJECT NO. 1216-0007

08/11/20

VICINITY PLAN



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SHEET INDEX

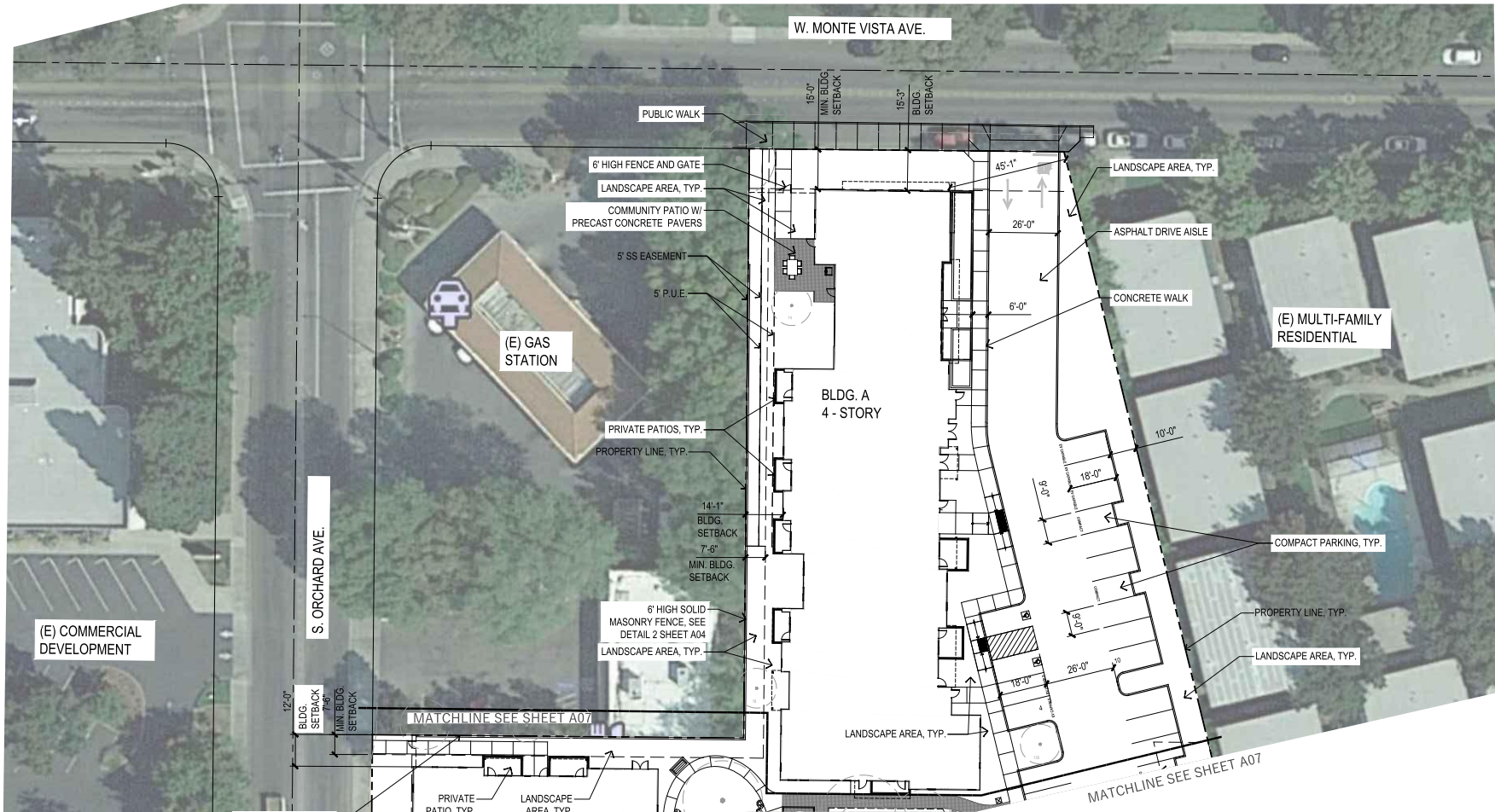
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 - C-5.2 PRELIMINARY UTILITY PLAN
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 - L02 ENLARGED LANDSCAPE PLAN
 - L03 ENLARGED LANDSCAPE PLAN
 - L04 TREE PRESERVATION AND REMOVAL PLAN



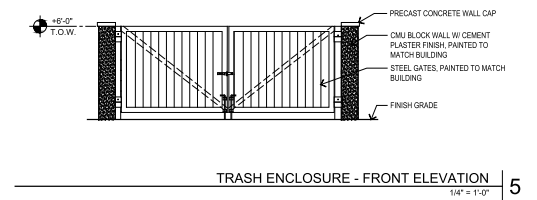
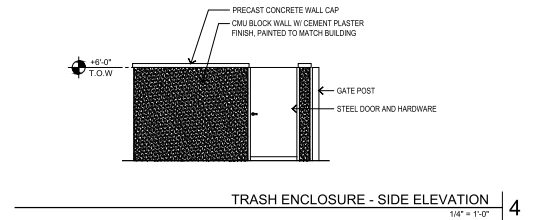
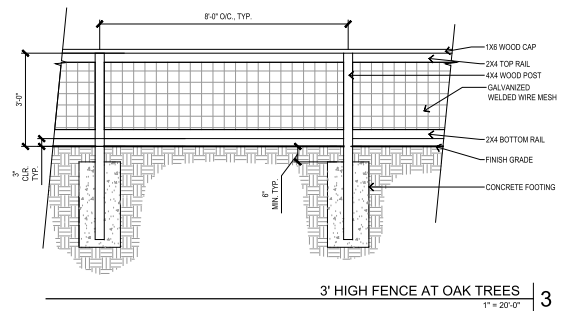
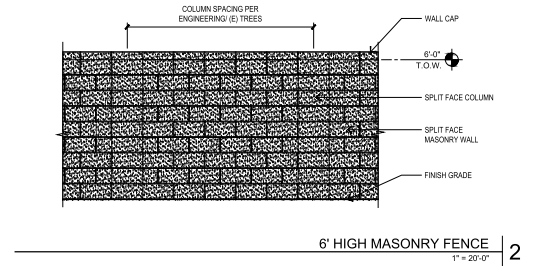
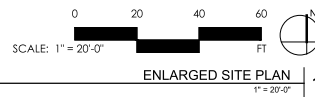
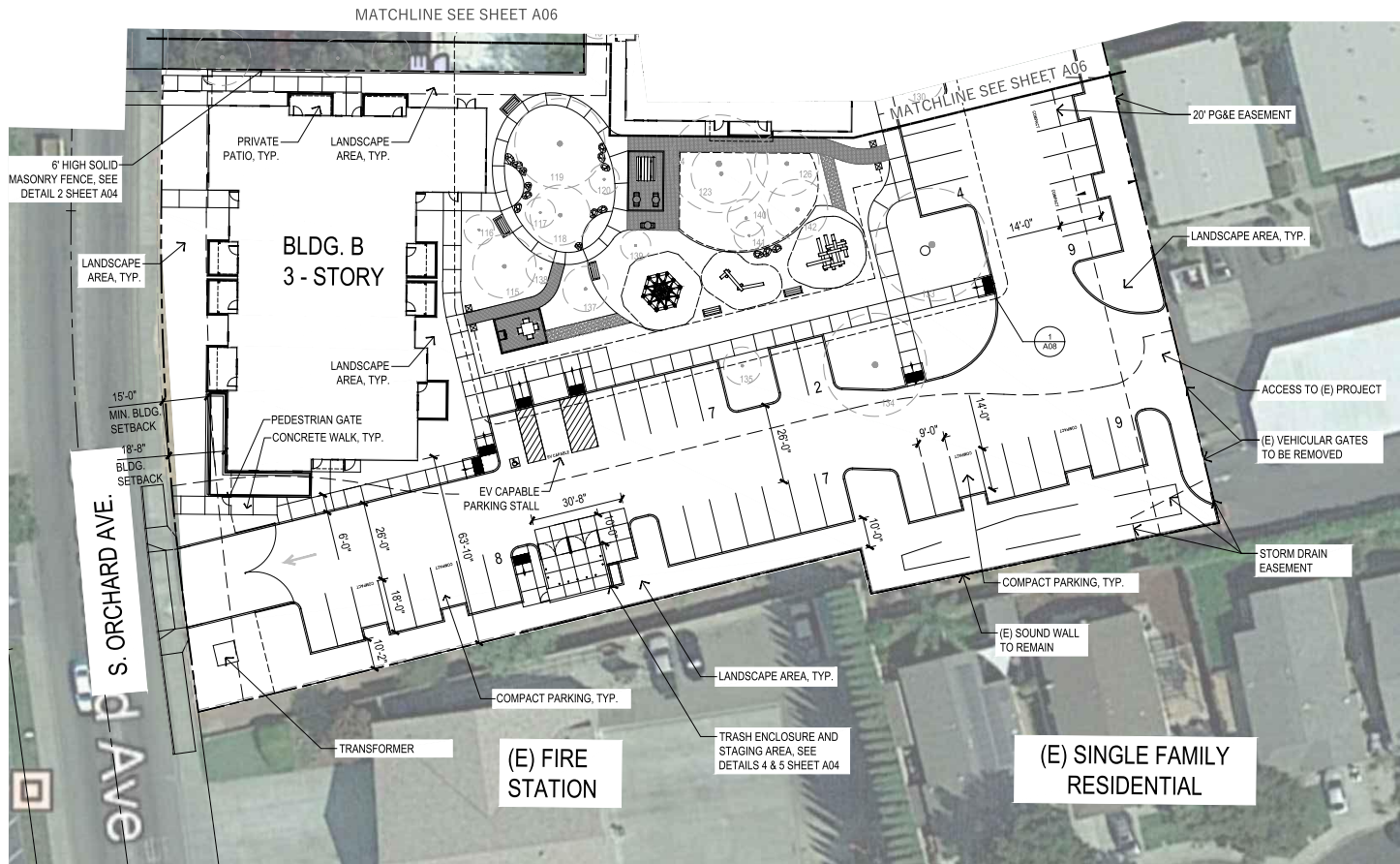


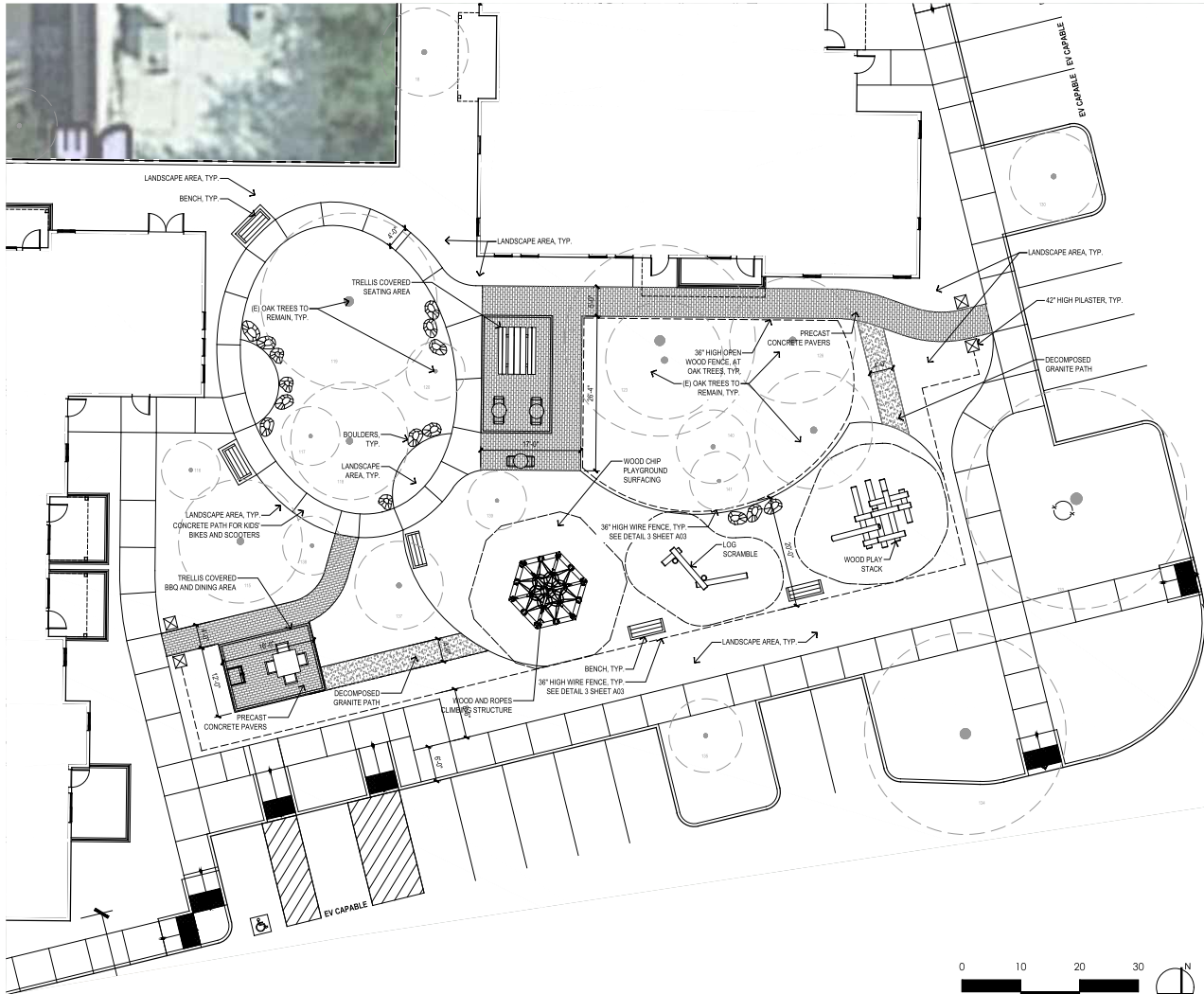






ENLARGED SITE PLAN
1" = 20'-0"



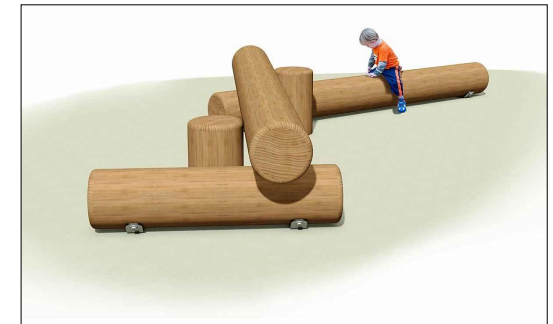


SCALE: 1" = 10'-0"

SHARED AMENITIES PARTIAL SITE PLAN
1"



WOOD AND ROPES CLIMBING STRUCTURE

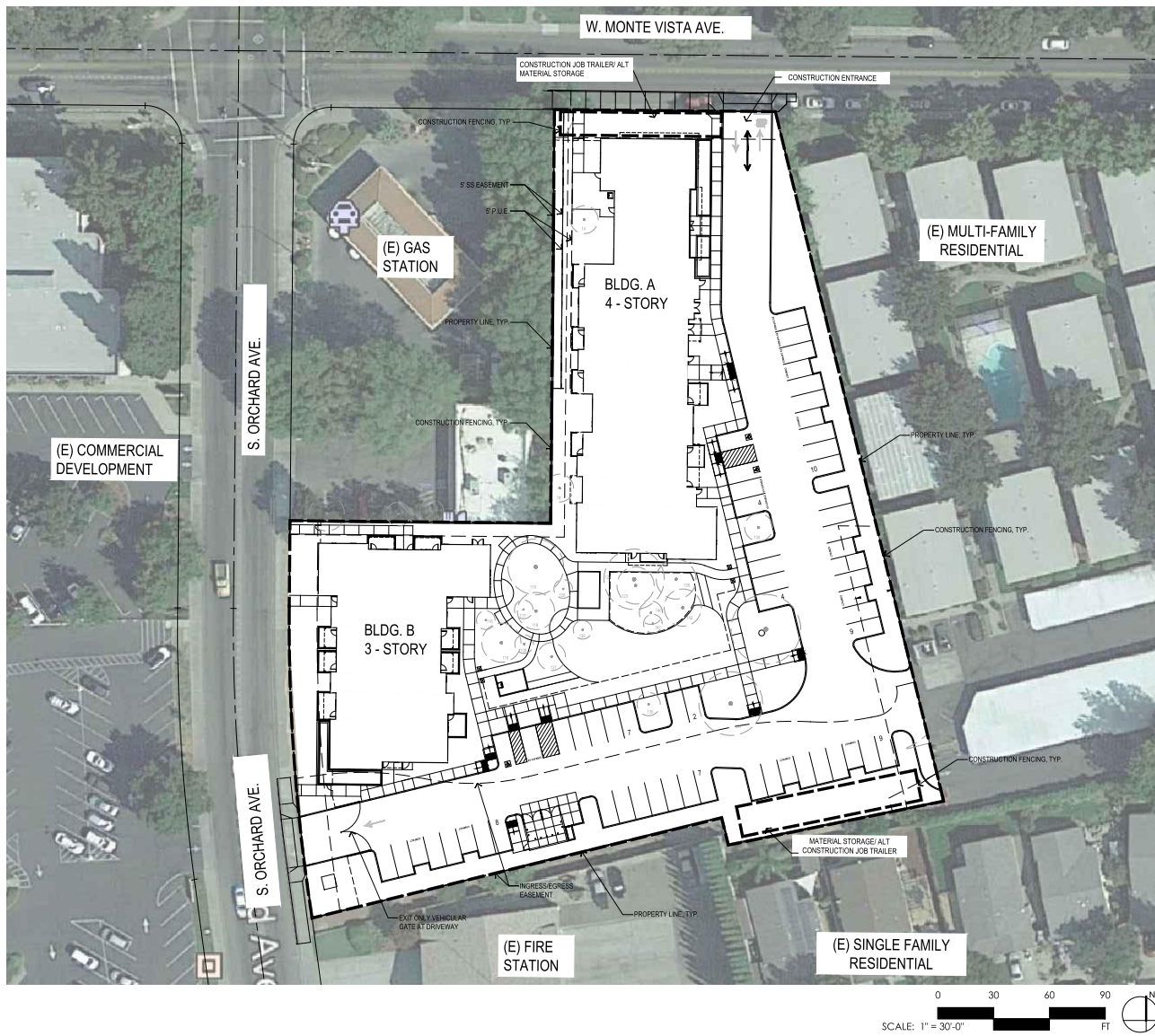


LOG SCRAMBLE



WOOD PLAY STACK

PLAY STRUCTURES | 2



CONSTRUCTION STAGING PLAN
1" = 30'-0"

1

OPEN SPACE TOTALS			
COMMON OPEN SPACE			
REQUIRED:	6,700 SQ FT	100 SF/UNIT	
PROVIDED:	9,709 SQ FT		
PRIVATE PATIO AVE OPEN SPACE			
REQUIRED:	100 SQ FT/UNIT		
PROVIDED:	92.5 SQ FT/UNIT		
PRIVATE DECK AVE OPEN SPACE			
REQUIRED:	50 SQ FT/UNIT		
PROVIDED:	75 SQ FT/UNIT		

PROJECT TOTALS			PROJECT TOTAL	
NUMBER OF UNITS:			Units	SF
1 BEDROOM:	1A	34%	23	14,030
1 BEDROOM:	1B	1%	1	621
1 BEDROOM:	1C	3%	2	1,262
1 BEDROOM:	1D	1%	1	682
2 BEDROOM:	2A	12%	8	6,440
2 BEDROOM:	2B	18%	12	9,588
2 BEDROOM:	2C	3%	2	1,692
3 BEDROOM:	3A	16%	11	12,166
3 BEDROOM:	3B	10%	7	7,735
RESIDENTIAL AREA:			67	54,216
AMENITIES:				4,212
CIRC. & SUPPORT:				15,357
TOTAL RESIDENTIAL BUILDING AREA (NOT INCLUDING DECKS):				73,785
EFFICIENCY:				73.5%

PARKING				
PARKING REQUIRED				
	Units			
AFFORDABLE UNITS	49	49 SPACES	1 SPACE/UNIT	
SUPPORTIVE HOUSING UNITS	18	6 SPACES	.3 SPACES/UNIT	
		55 SPACES		
PARKING PROVIDED				
TOTAL SPACES	60 SPACES	.9 SPACES/UNIT		

OAK GROVE APARTMENTS PROJECT DATA				8/10/2020
SITE DATA				
Site Area:	2.11 Acres			
	91,912 SF			
Baseline Density:	24 DU/ACRE	50 Units		
Density Bonus:	35%	32.2 DU/ACRE	68 Units	

BUILDING A				FLOOR 1		FLOOR 2		FLOOR 3		FLOOR 4		BUILDING TOTAL		
NUMBER OF UNITS:				24	Units	SF	Units	SF	Units	SF	Units	SF	Units	SF
1 BEDROOM:	1A	610	SF	2	1,220	3	1,830	3	1,830	3	1,830	11	6,710	
1 BEDROOM:	1B	621	SF	-	-	-	-	-	-	-	-	-	-	
1 BEDROOM:	1C	631	SF	2	1,262	-	-	-	-	-	-	2	1,262	
1 BEDROOM:	1D	682	SF	-	-	-	-	-	-	-	-	-	-	
2 BEDROOM:	2A	805	SF	2	1,610	2	1,610	2	1,610	2	1,610	8	6,440	
2 BEDROOM:	2B	799	SF	-	-	4	3,196	4	3,196	4	3,196	12	9,588	
2 BEDROOM:	2C	846	SF	-	-	-	-	-	-	-	-	-	-	
3 BEDROOM:	3A	1,106	SF	-	-	1	1,106	1	1,106	1	1,106	3	3,318	
3 BEDROOM:	3B	1,105	SF	1	1,105	2	2,210	2	2,210	2	2,210	7	7,735	
Average unit Size:				815	SF									
RESIDENTIAL AREA:				7	5,197	12	9,952	12	9,952	12	9,952	43	35,053	
AMENITIES:					3,788								3,788	
CIRC. & SUPPORT:					3,565		2,531		2,531		2,531		11,158	
TOTAL RESIDENTIAL BUILDING AREA (W/O DECKS):					12,550		12,483		12,483		12,483		49,999	

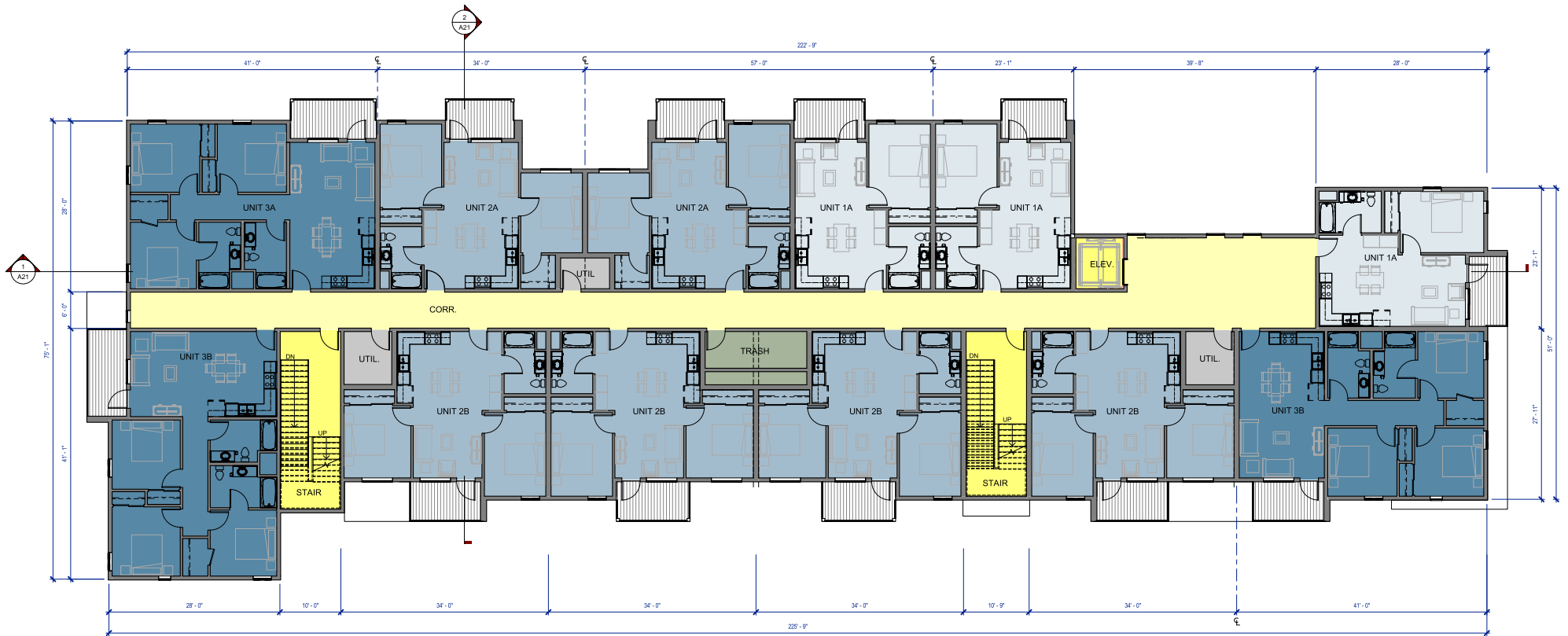
BUILDING B				FLOOR 1		FLOOR 2		FLOOR 3				BUILDING TOTAL		
NUMBER OF UNITS:				24		Units	SF	Units	SF	Units	SF	Units	SF	
1 BEDROOM:	1A	610	SF	4	2,440	4	2,440	4	2,440	-	-	12	7,320	
1 BEDROOM:	1B	621	SF	1	621	-	-	-	-	-	-	1	621	
1 BEDROOM:	1C	631	SF	-	-	-	-	-	-	-	-	-	-	
1 BEDROOM:	1D	682	SF	1	682	-	-	-	-	-	-	1	682	
2 BEDROOM:	2A	805	SF	-	-	-	-	-	-	-	-	-	-	
2 BEDROOM:	2B	799	SF	-	-	-	-	-	-	-	-	-	-	
2 BEDROOM:	2C	846	SF	-	-	1	846	1	846	-	-	2	1,692	
3 BEDROOM:	3A	1,106	SF	2	2,212	3	3,318	3	3,318	-	-	8	8,848	
3 BEDROOM:	3B	1,105	SF	-	-	-	-	-	-	-	-	-	-	
Average unit Size:				798	SF									
RESIDENTIAL AREA:				8	5,955	8	6,604	8	6,604	-	-	24	19,163	
AMENITIES:					424									424
CIRC. & SUPPORT:					1,595		1,302		1,302					4,199
TOTAL RESIDENTIAL BUILDING AREA (W/O DECKS):					7,974		7,906		7,906					23,786



BUILDING A - FIRST FLOOR PLAN | 1
1/8" = 1'-0"

COLOR FILL LEGEND

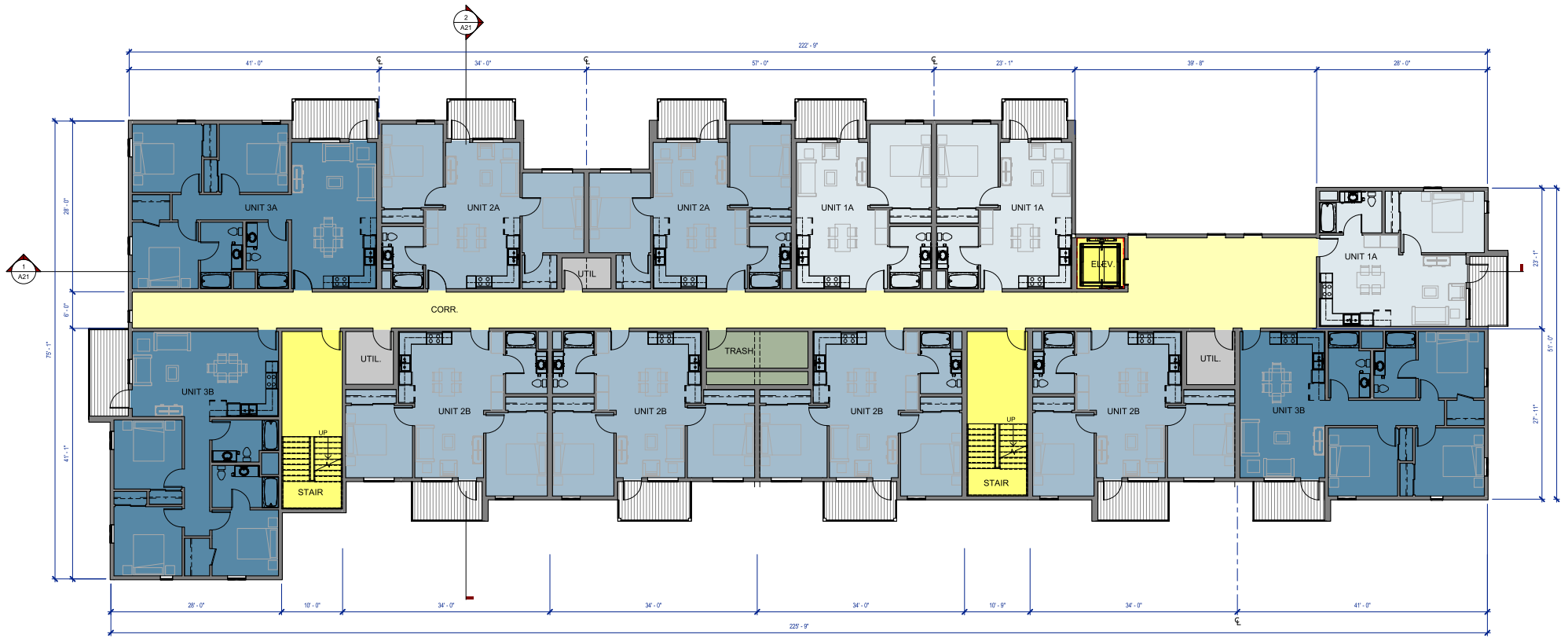
- 1 BEDROOM UNIT
- 2 BEDROOM UNIT
- 3 BEDROOM UNIT
- BIKES
- COMMUNITY/SERVICES
- LAUNDRY
- UTILITY
- TRASH
- CIRCULATION
- VERTICAL CIRCULATION



BUILDING A - SECOND FLOOR 1
1/8" = 1'-0"

COLOR FILL LEGEND

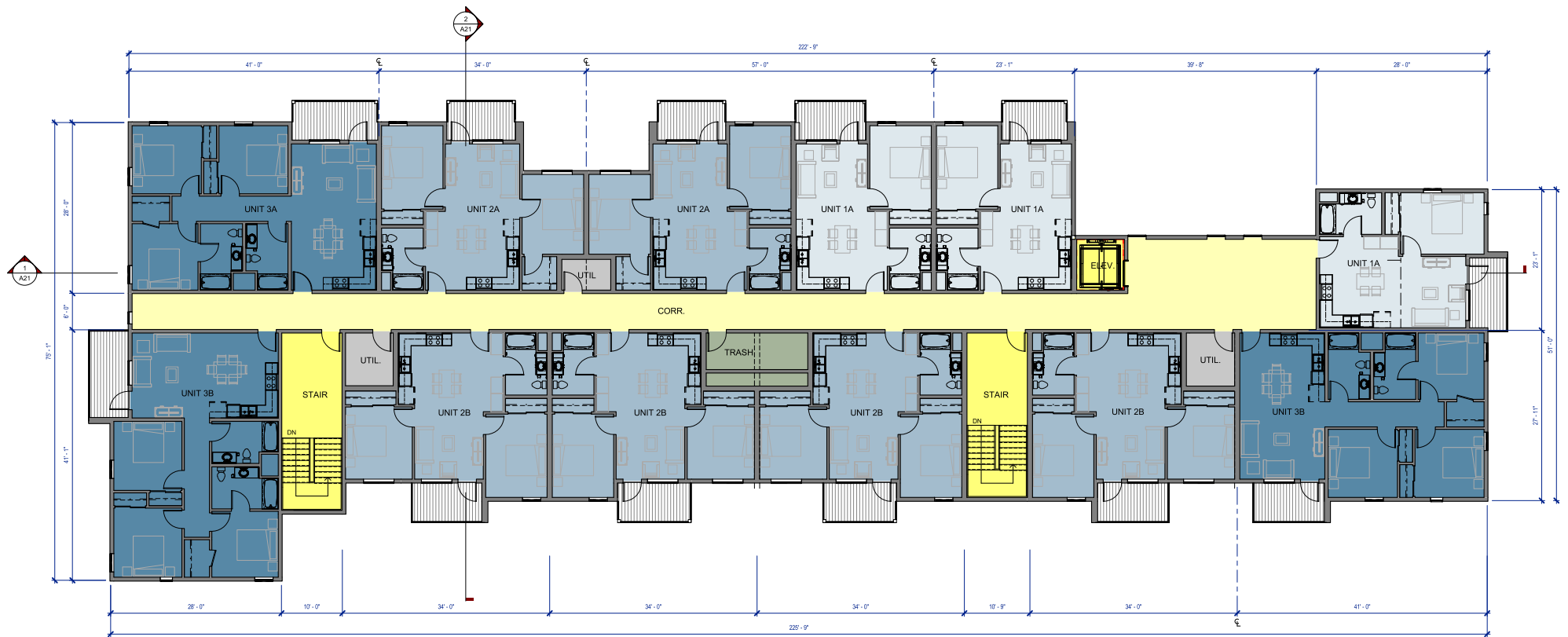
- | | |
|---|---|
| 1 BEDROOM UNIT | TRASH |
| 2 BEDROOM UNIT | CIRCULATION |
| 3 BEDROOM UNIT | VERTICAL CIRCULATION |
| UTILITY | |



BUILDING A - THIRD FLOOR PLAN 1
1/8" = 1'-0"

COLOR FILL LEGEND

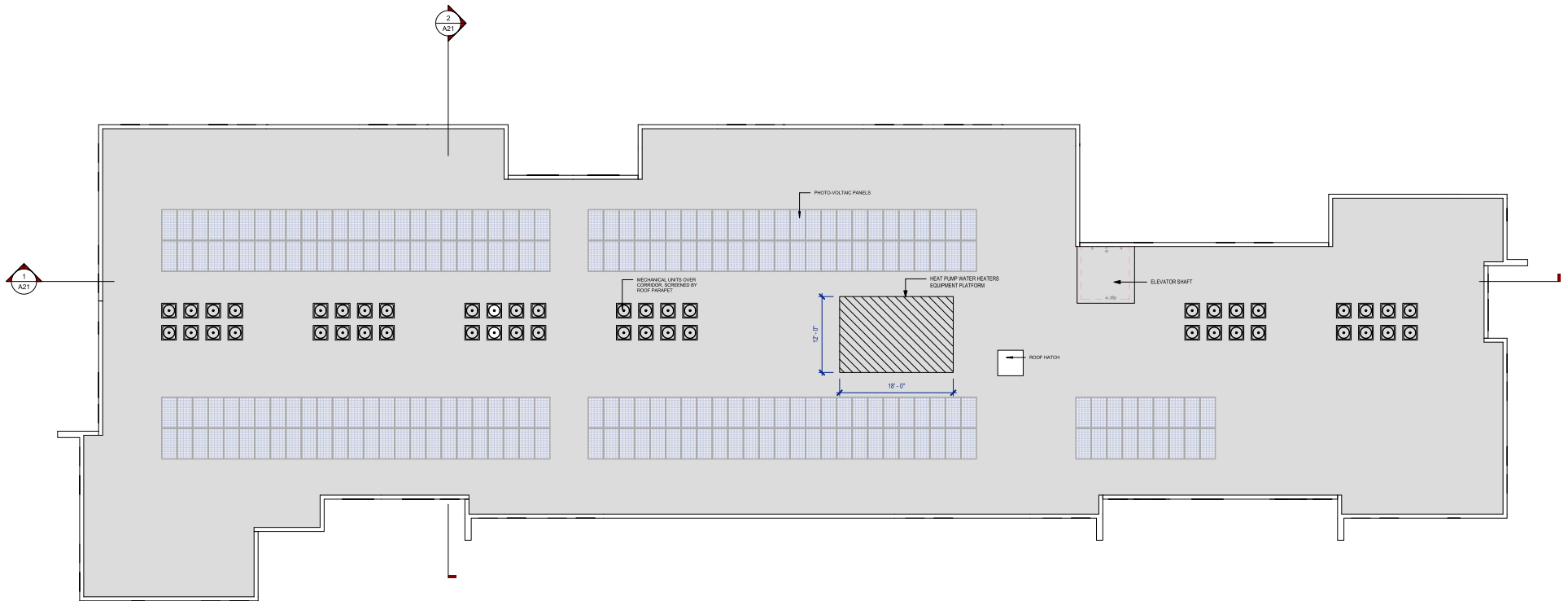
- | | |
|---|---|
| 1 BEDROOM UNIT | TRASH |
| 2 BEDROOM UNIT | CIRCULATION |
| 3 BEDROOM UNIT | VERTICAL CIRCULATION |
| UTILITY | |



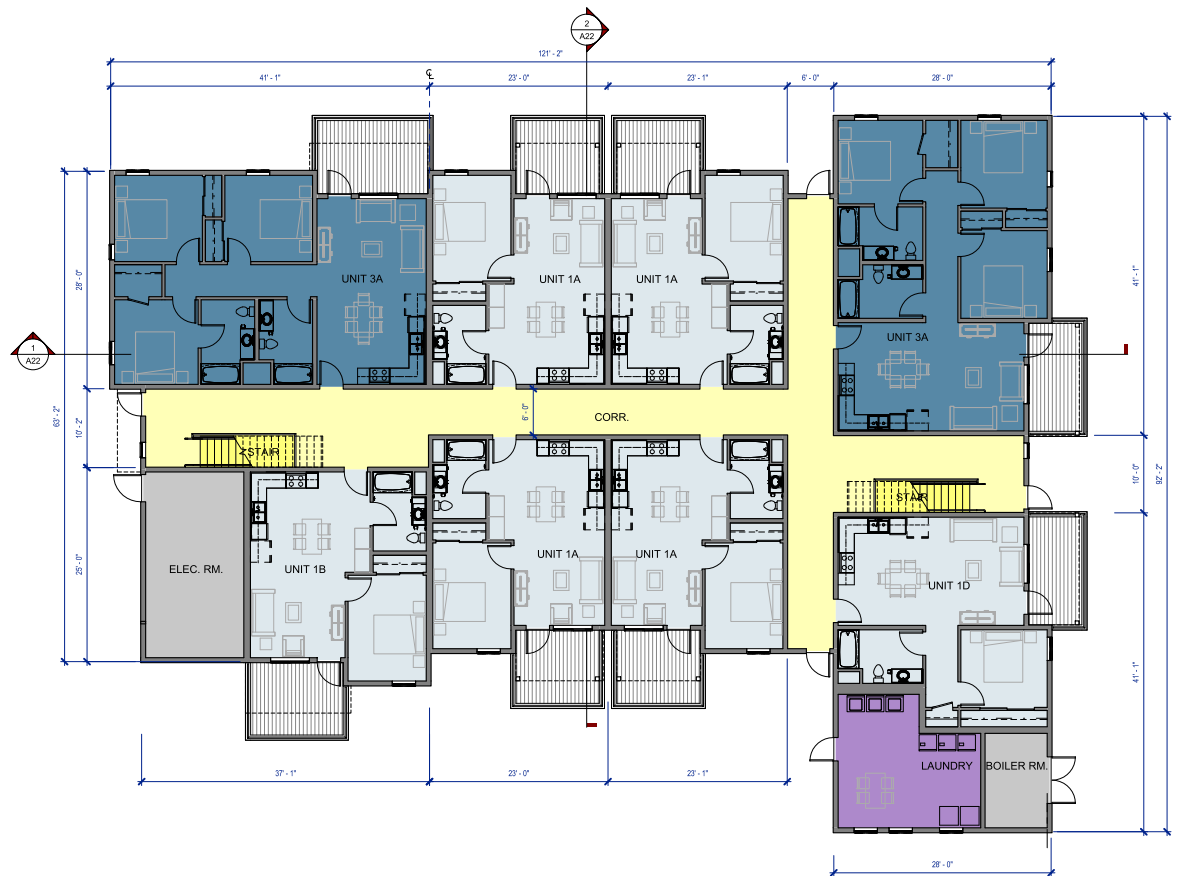
BUILDING A - FOURTH FLOOR PLAN 1
1/8" = 1'-0"

COLOR FILL LEGEND

- | | |
|---|---|
| 1 BEDROOM UNIT | TRASH |
| 2 BEDROOM UNIT | CIRCULATION |
| 3 BEDROOM UNIT | VERTICAL CIRCULATION |
| UTILITY | |

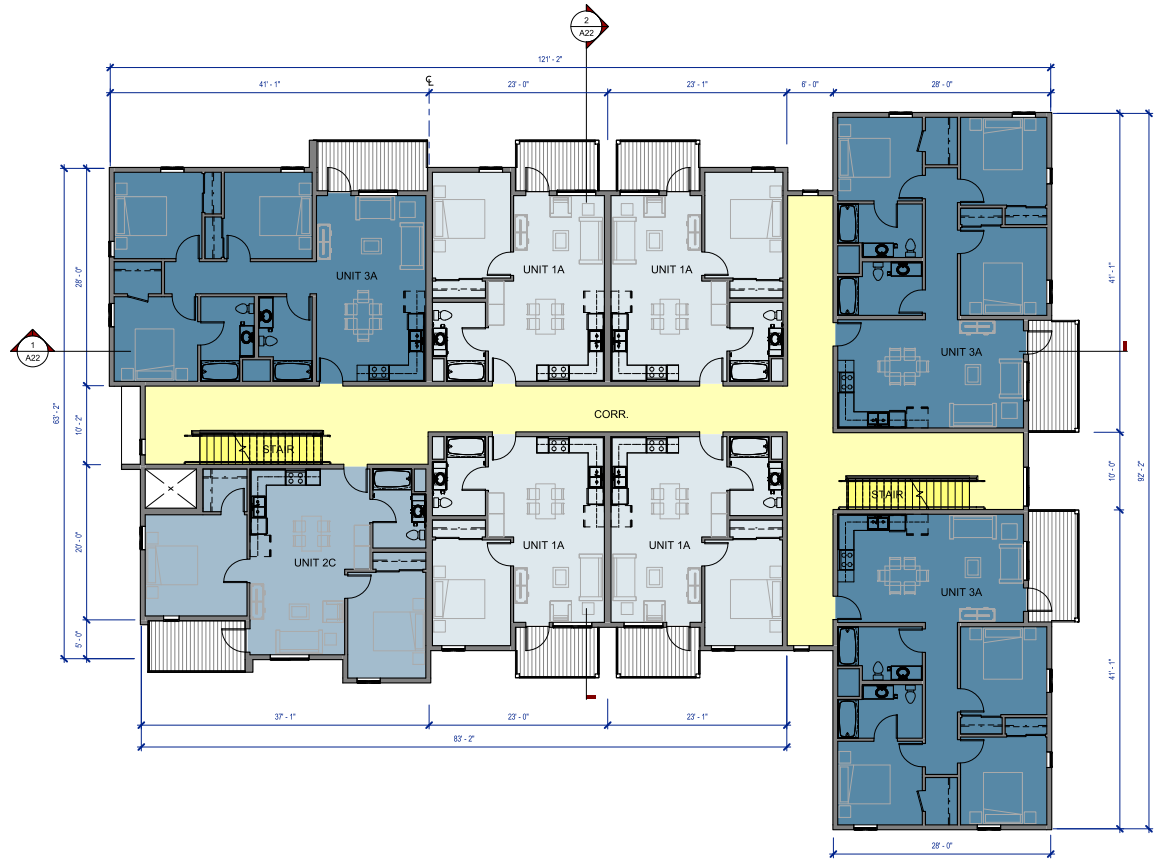


BUILDING A - ROOF PLAN | 1
1/8" = 1'-0"



BUILDING B - FIRST FLOOR

08/11/20

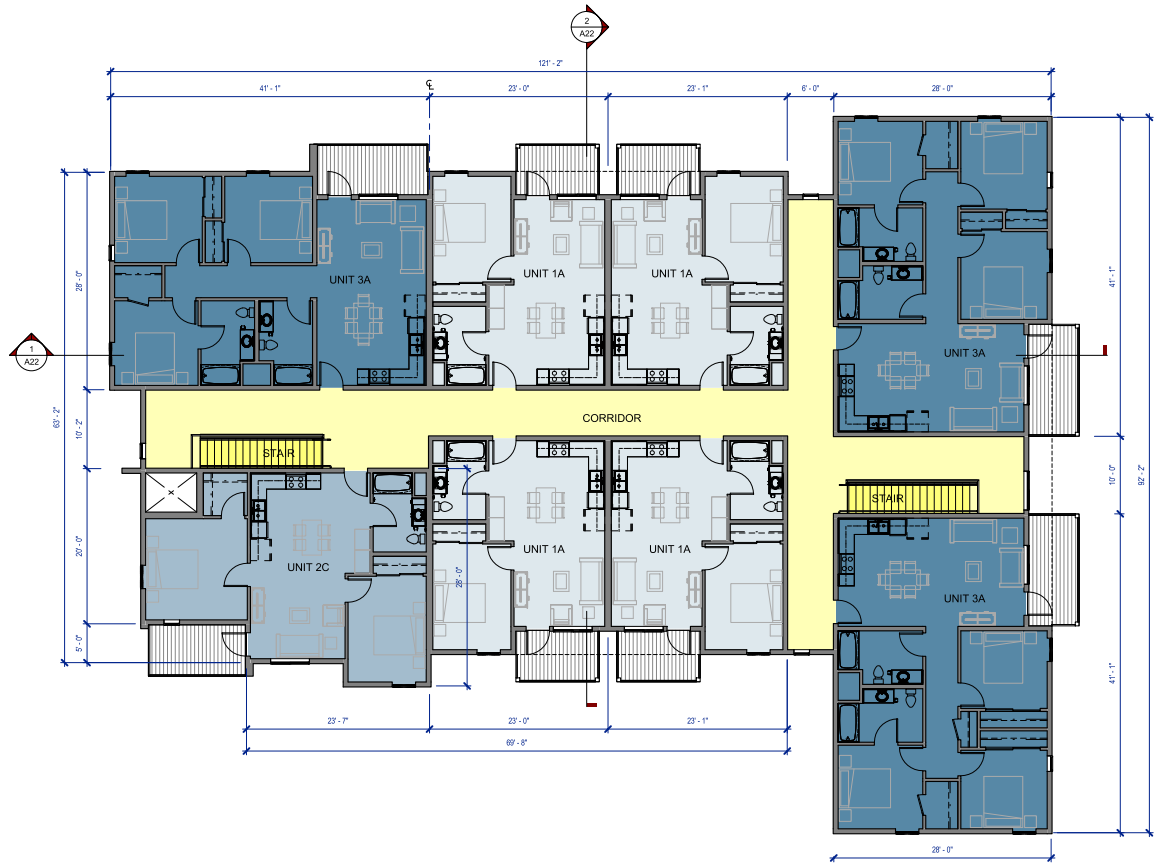


COLOR FILL LEGEND

- 1 BEDROOM UNIT
- 2 BEDROOM UNIT
- 3 BEDROOM UNIT
- CIRCULATION

BUILDING B - SECOND FLOOR | 1
1/8" = 1'-0"

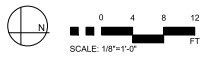


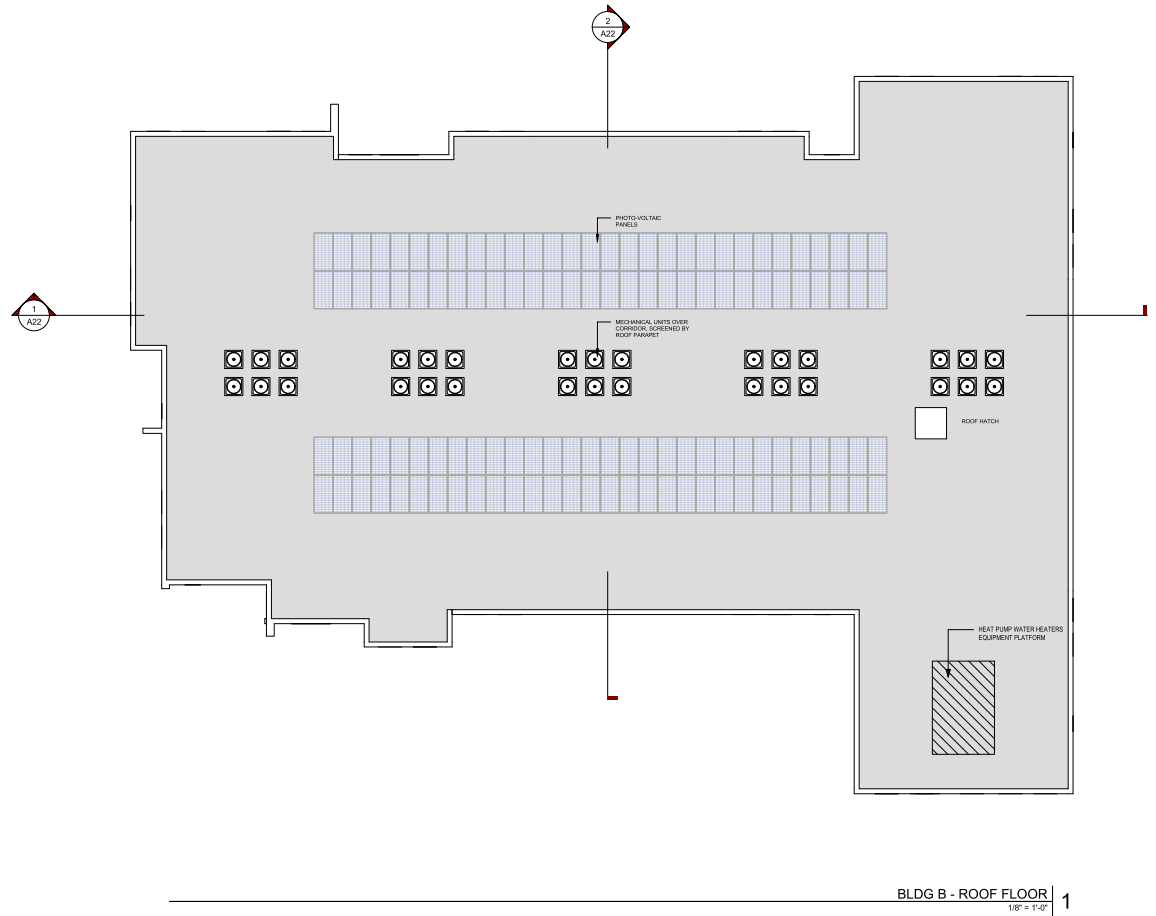


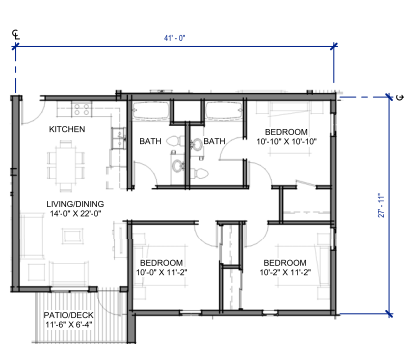
COLOR FILL LEGEND

- 1 BEDROOM UNIT
- 2 BEDROOM UNIT
- 3 BEDROOM UNIT
- CIRCULATION

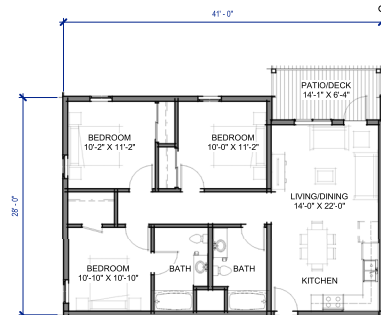
BUILDING B - THIRD FLOOR
1/8" = 1'-0"



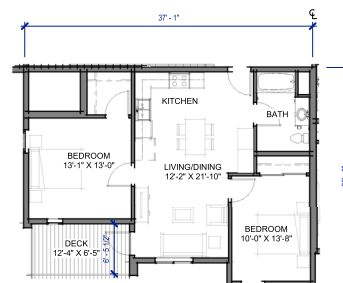




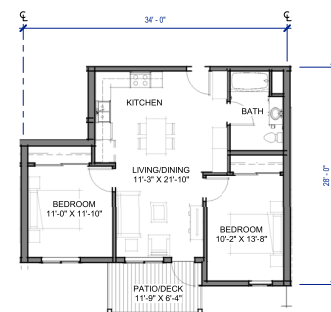
1,105 S.F. UNIT 3B | 9
7 UNITS 1/8" = 1'-0"



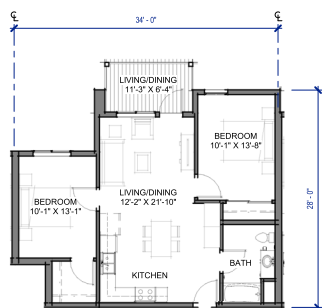
1,106 S.F. UNIT 3A | 8
11 UNITS 1/8" = 1'-0"



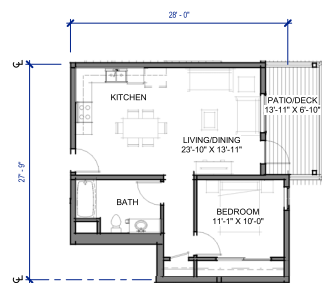
846 S.F. UNIT 2C | 7
2 UNITS 1/8" = 1'-0"



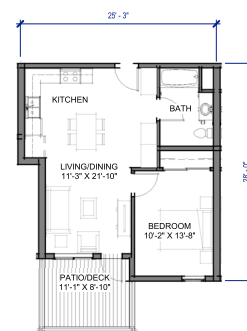
799 S.F. UNIT 2B | 6
12 UNITS 1/8" = 1'-0"



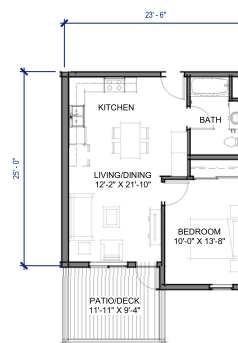
805 S.F. UNIT 2A | 5
8 UNITS 1/8" = 1'-0"



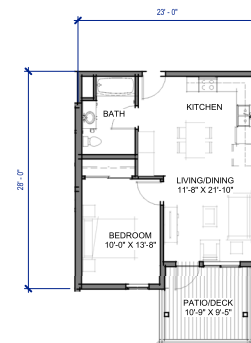
682 S.F. UNIT 1D | 4
1 UNITS 1/8" = 1'-0"



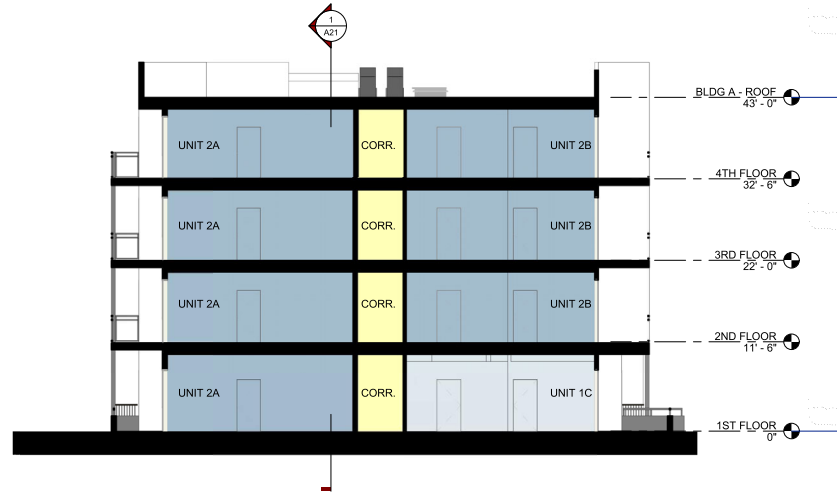
631 S.F. UNIT 1C | 3
2 UNITS 1/8" = 1'-0"



621 S.F. UNIT 1B | 2
1 UNIT 1/8" = 1'-0"



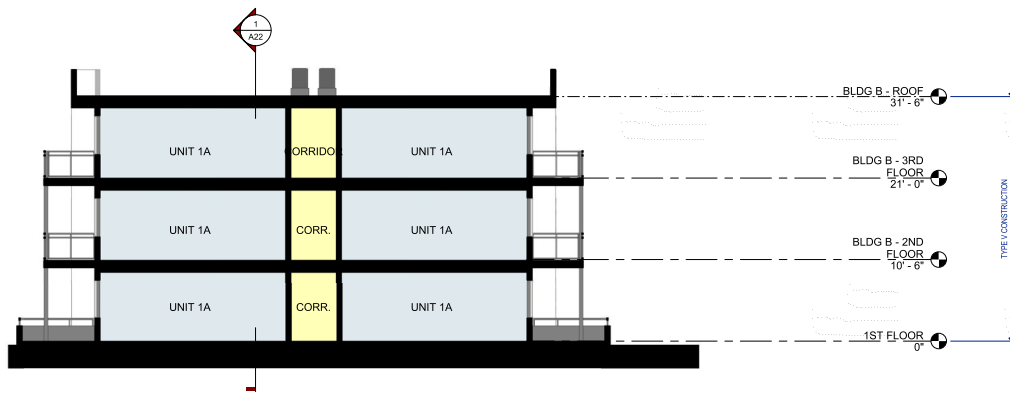
610 S.F. UNIT 1A | 1
23 UNITS 1/8" = 1'-0"



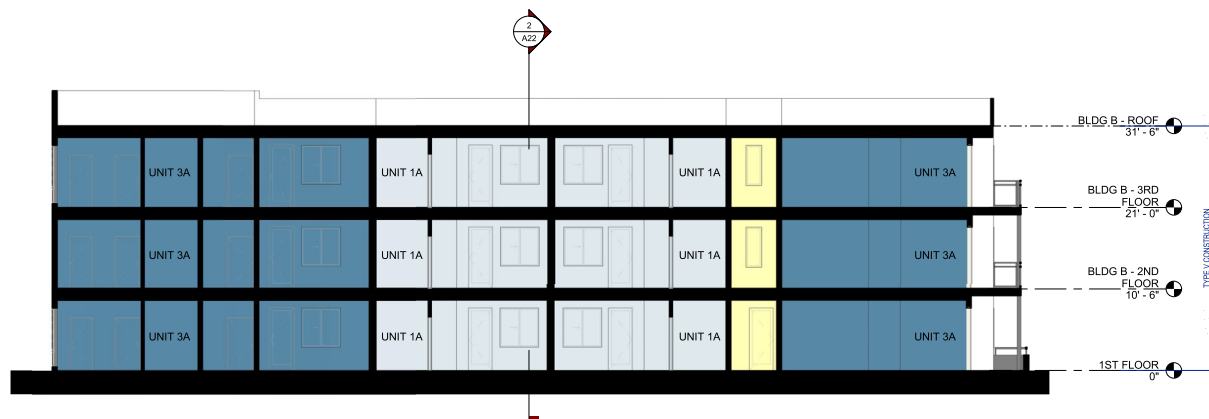
BUILDING A - EAST/WEST SECTION | 2
1/8" = 1'-0"



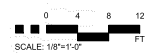
BUILDING A - NORTH/SOUTH SECTION | 1
1/8" = 1'-0"



BUILDING B - EAST/WEST SECTION | 2
1/8" = 1'-0"

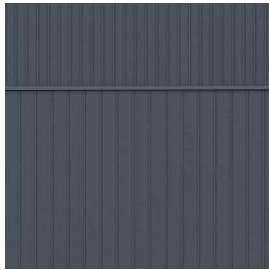


BUILDING B - NORTH/SOUTH SECTION | 1
1/8" = 1'-0"

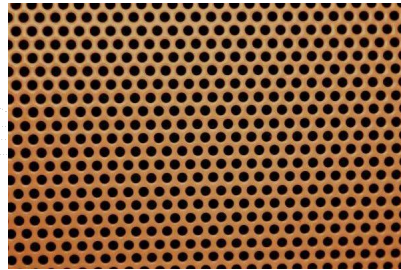




1. ALPOLIC C12 COPPER METAL



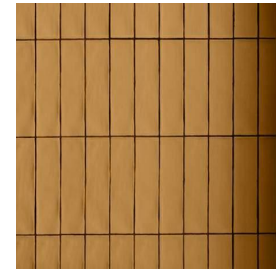
2. HARDIE VERTICAL PANEL-CHARCOAL BLUE SW 2739



3. POWDER COATED PERFORATED METAL RAILING

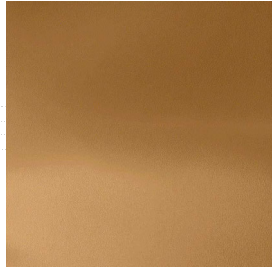


4. PLASTER - SHERWIN WILLIAMS AGREEABLE GRAY

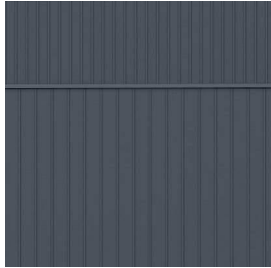


5. TILE ACCENT

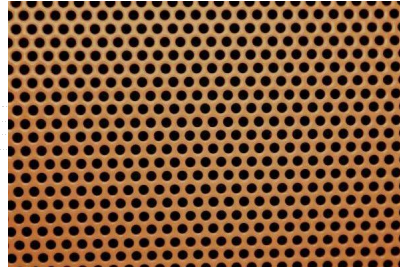




1. ALPOLIC C12 COPPER METAL



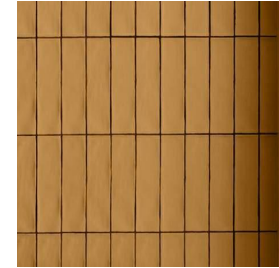
2. HARDIE VERTICAL PANEL-CHARCOAL BLUE SW 2739



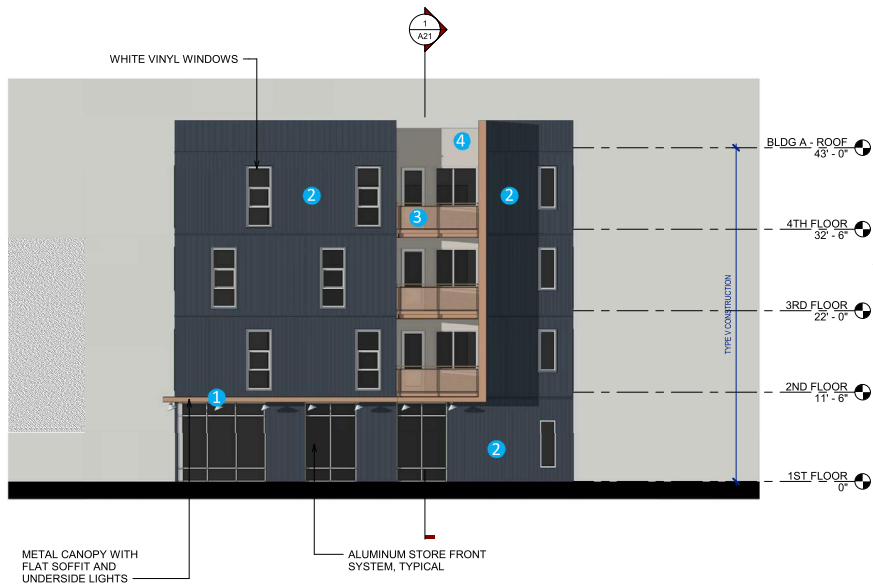
3. POWDER COATED PERFORATED METAL RAILING



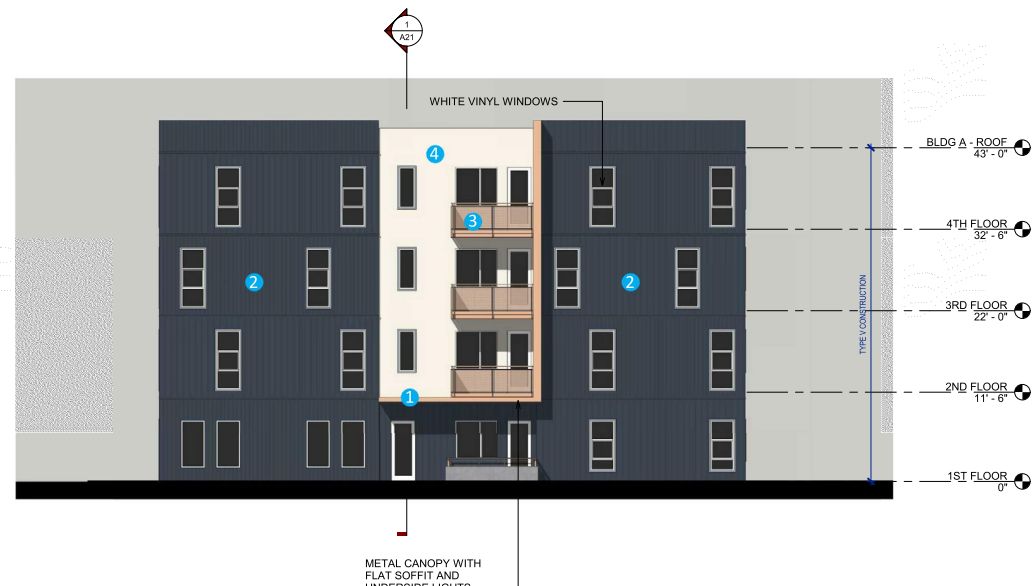
4. PLASTER - SHERWIN WILLIAMS AGREEABLE GRAY



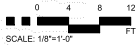
5. TILE ACCENT

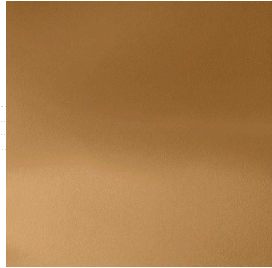


BUILDING A - NORTH ELEVATION
1/8" = 1'-0" 2

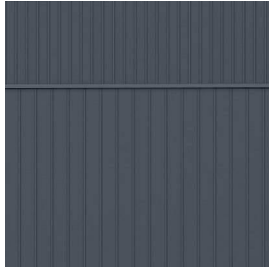


BUILDING A - EAST ELEVATION
1/8" = 1'-0" 1

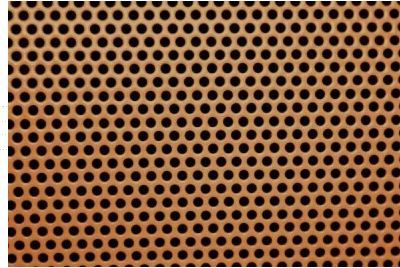




1. ALPOLIC C12 COPPER METAL



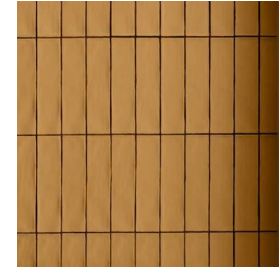
2. HARDIE VERTICAL PANEL-
CHARCOAL BLUE SW 2739



3. POWDER COATED PERFORATED METAL RAILING



4. PLASTER - SHERWIN WILLIAMS
AGREEABLE GRAY



5. TILE ACCENT

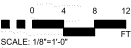


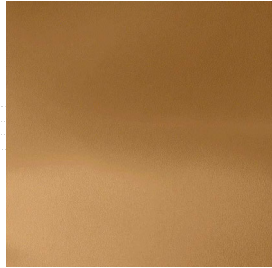
ALUMINUM STORE FRONT
SYSTEM, TYPICAL

WHITE VINYL WINDOWS

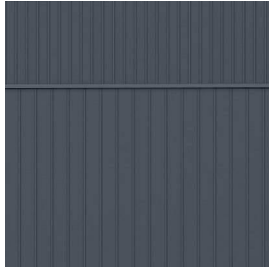


BUILDING A - WEST ELEVATION | 1
1/8" = 1'-0"

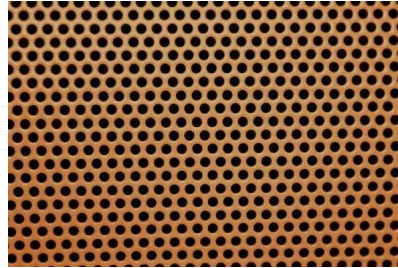




1. ALPOLIC C12 COPPER METAL



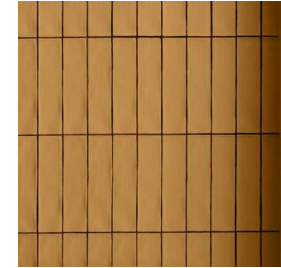
2. HARDIE VERTICAL PANEL-CHARCOAL BLUE SW 2739



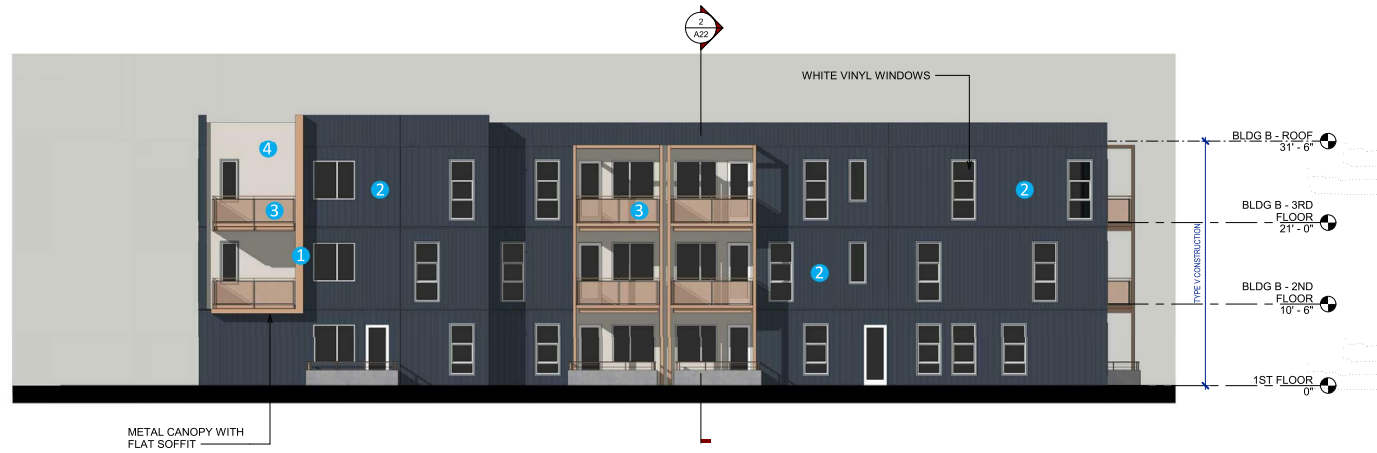
3. POWDER COATED PERFORATED METAL RAILING



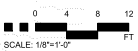
4. PLASTER - SHERWIN WILLIAMS AGREEABLE GRAY



5. TILE ACCENT

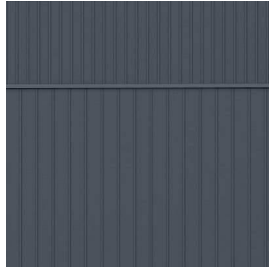


BUILDING B - EAST ELEVATION 1
1/8" = 1'-0"

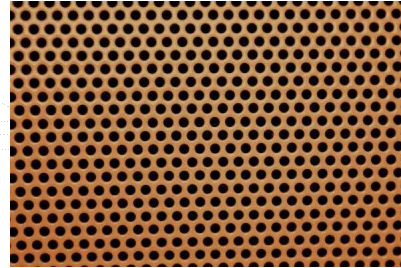




1. ALPOLIC C12 COPPER METAL



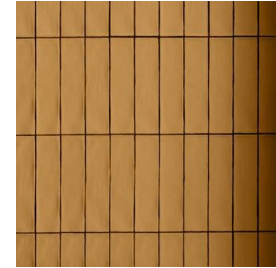
2. HARDIE VERTICAL PANEL-CHARCOAL BLUE SW 2739



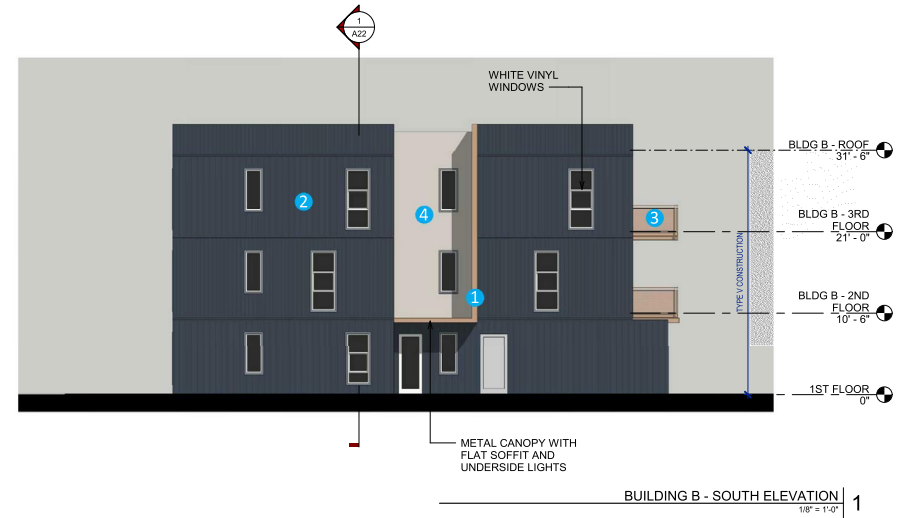
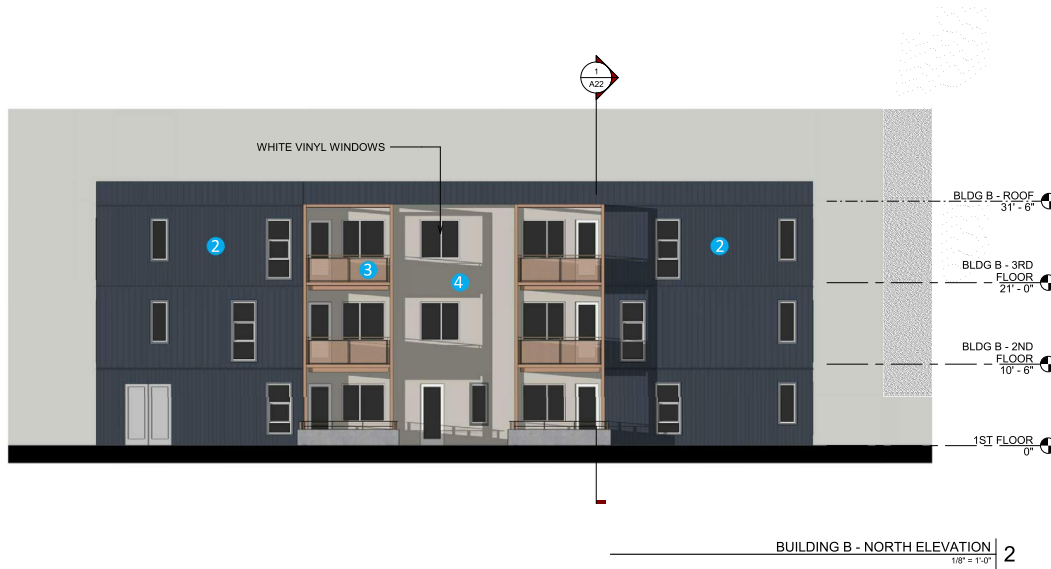
3. POWDER COATED PERFORATED METAL RAILING



4. PLASTER - SHERWIN WILLIAMS AGREEABLE GRAY

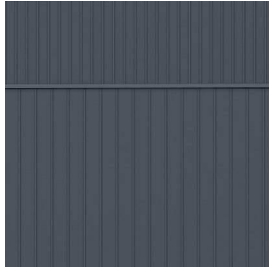


5. TILE ACCENT

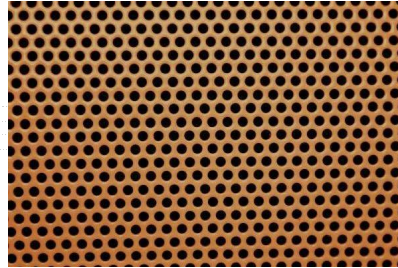




1. ALPOLIC C12 COPPER METAL



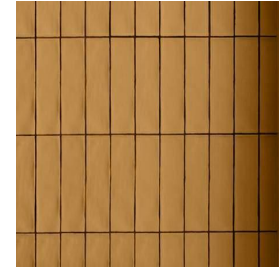
2. HARDIE VERTICAL PANEL-CHARCOAL BLUE SW 2739



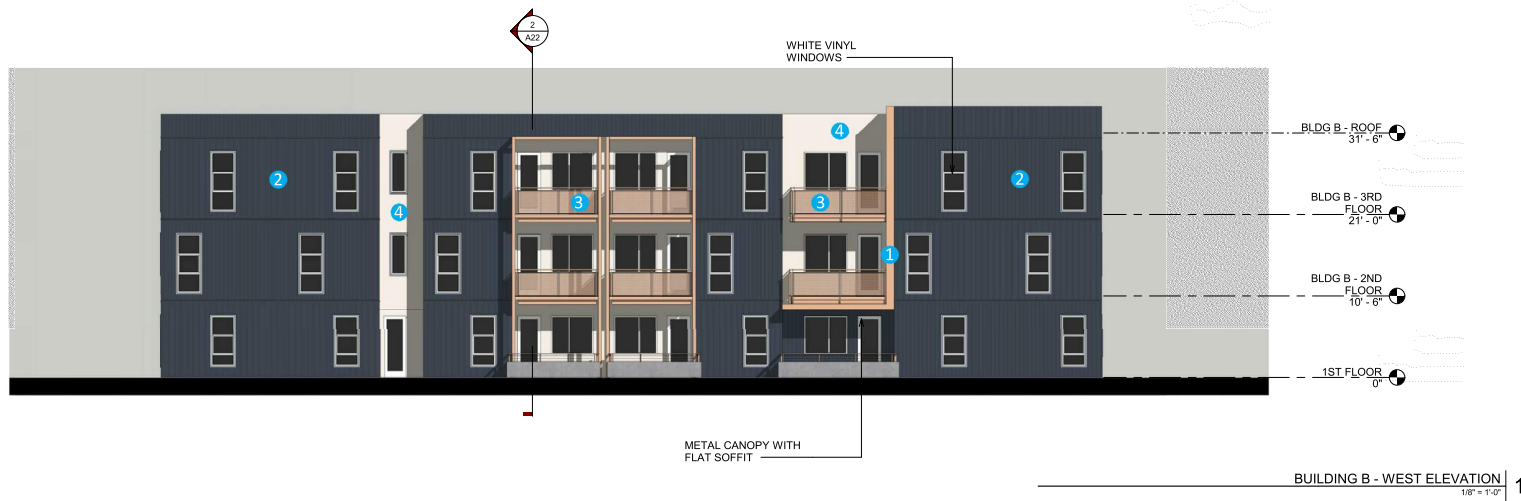
3. POWDER COATED PERFORATED METAL RAILING

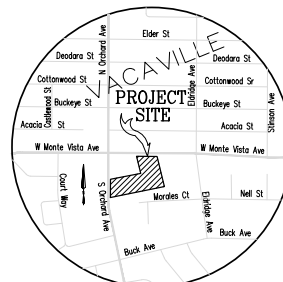
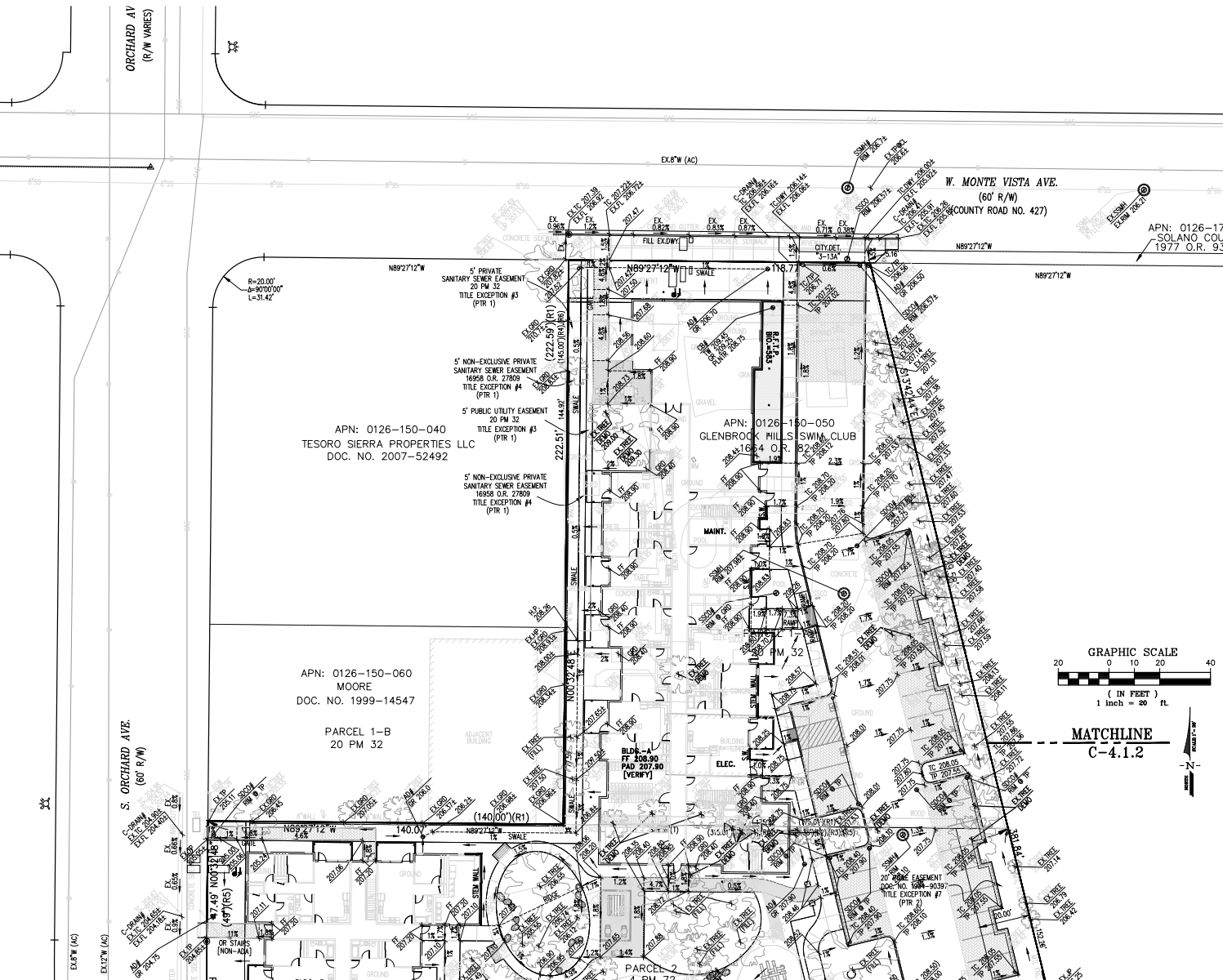


4. PLASTER - SHERWIN WILLIAMS AGREEABLE GRAY



5. TILE ACCENT





VICINITY MAP
NOT TO SCALE

BASIS OF BEARINGS

FOUND STANDARD CITY MONUMENTS ALONG WEST MONTE VISTA AVENUE AS SHOWN ON THAT CERTAIN MAP ENTITLED "RECORD OF SURVEY, RICO PROPERTY," FILED JUNE 20, 1984, IN BOOK 17 OF PARCEL MAPS, AT PAGE 11, IN THE OFFICE OF THE COUNTY RECORDER OF SOLANO COUNTY, TAKEN AS NORTH 89°27'12" WEST.

BENCHMARK

STATION C111L, IN BOOK 27 PM, PAGE 68, BEING EXISTING SECONDARY CONTROL MONUMENT FOUND AT INTERSECTION OF DOBBINS STREET AND CERNON STREET 2-1/2" BRASS DISK UNSTAMPED IN MONUMENT WELL. ELEVATION = 185.231 FEET, CITY OF VACAVILLE DATUM.

Luk and Associates
Civil Engineering
Land Planning
Land Surveying
738 Alfred Nobel Drive
Hercules, CA 94547
Phone (510) 724-3388
Fax (510) 724-3383

Seal:



OAK GROVE APARTMENTS

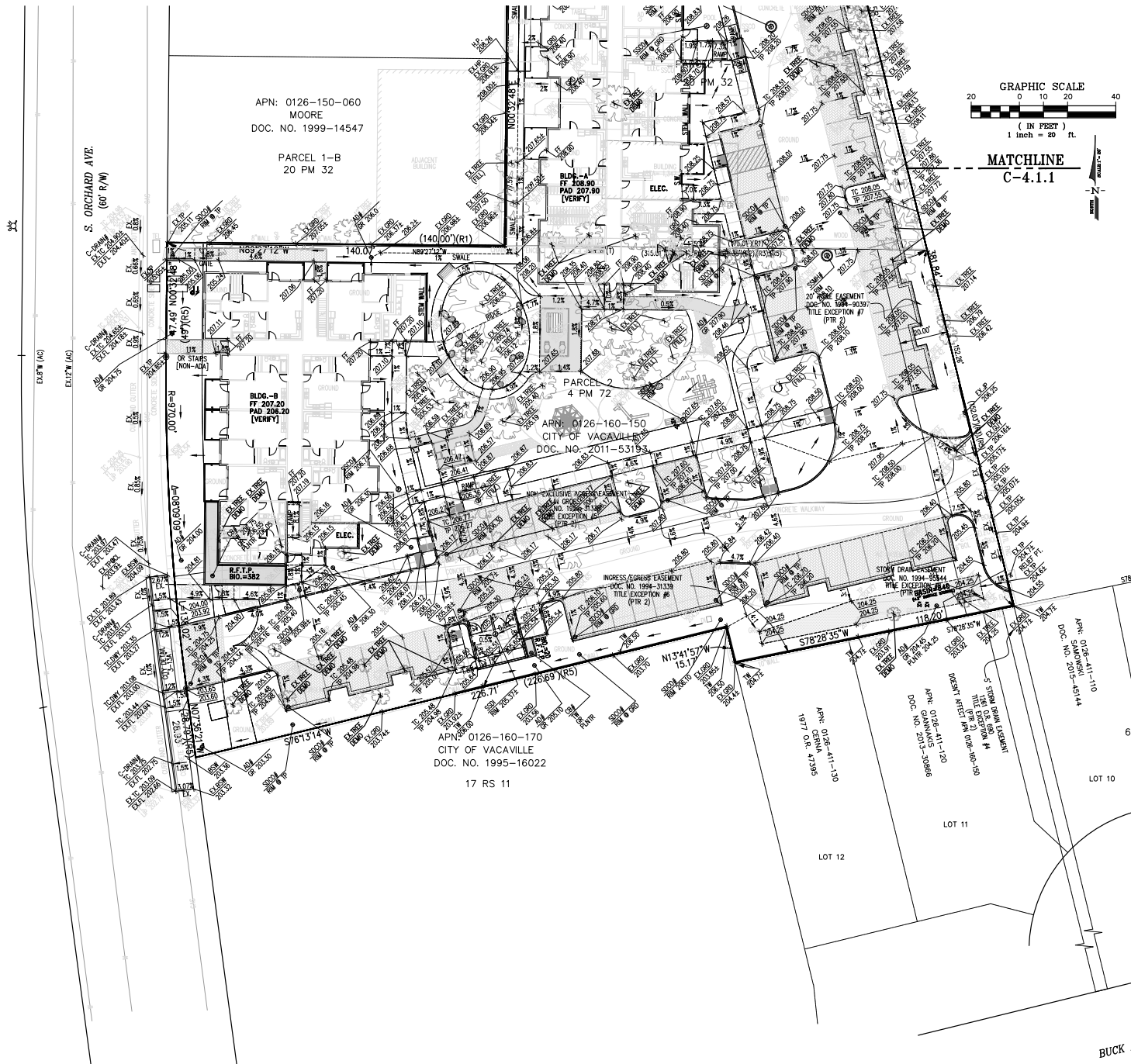
475 W. MONTE VISTA AVENUE
VACAVILLE, CA 95688

NO.	DATE	DESCRIPTION
△		
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Title:
PRELIMINARY
GRADING PLAN:
ELEVATIONS

Date:	JULY 2020
Scale:	1" = 20'
Drawn By:	D.A.D.
Checked By:	C.W.
Job No.:	17131A25
Drawing No.:	MASTER.DWG
Plot Date:	2020-08-06
Sheet No.:	

C-4.1.1



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Seal:



OAK GROVE APARTMENTS

475 W. MONTE VISTA AVENUE
VACAVILLE, CA 95688

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		

Title:

PRELIMINARY
GRADING PLAN:
ELEVATIONS

Date:

JULY 2020

Scale:

1" = 20'

Drawn By:

D.A.D.

Checked By:

C.W.

Job No.:

17131A25

Drawing No.:

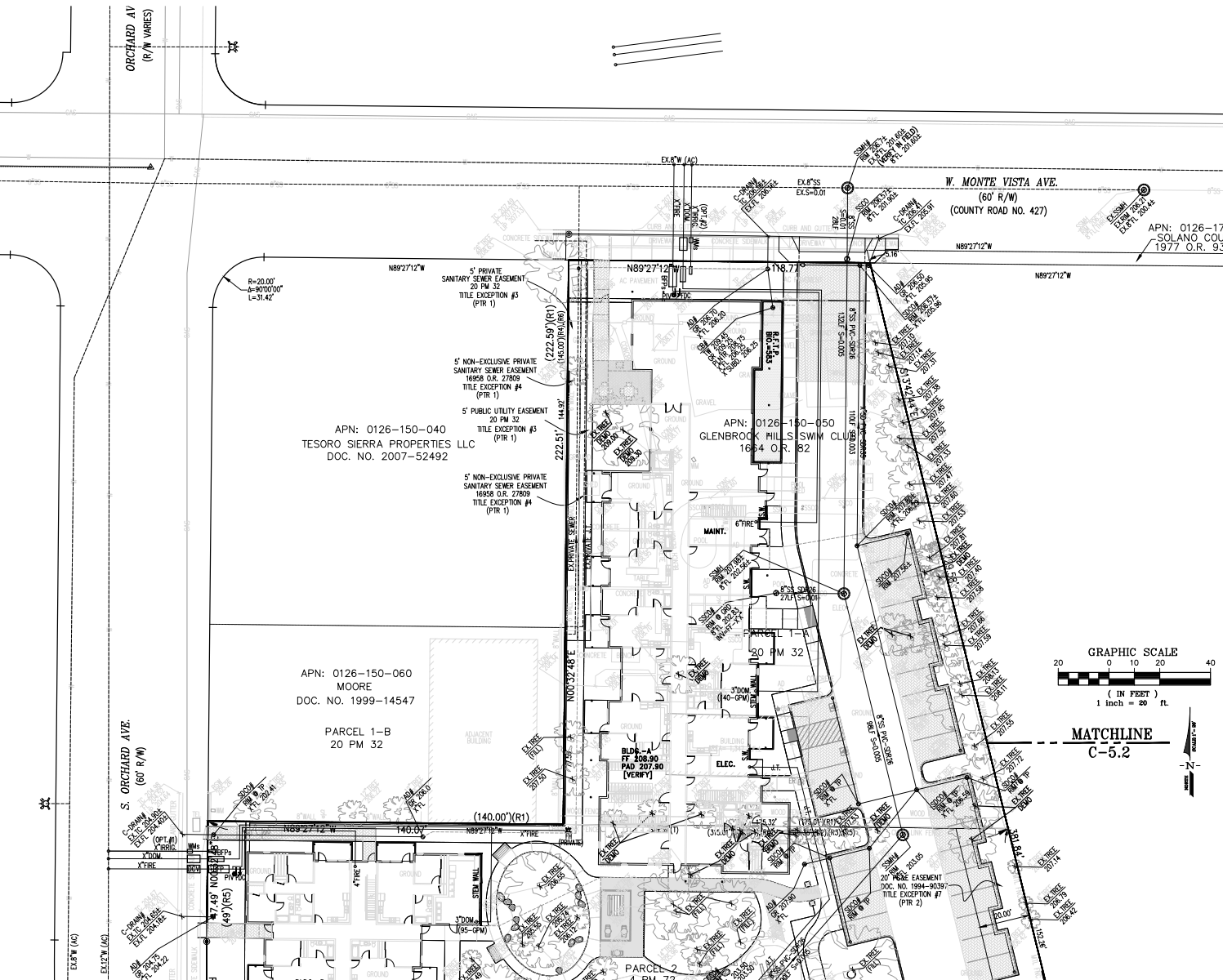
MASTER.DWG

Plot Date:

2020-08-06

Sheet No.:

C-4.1.2



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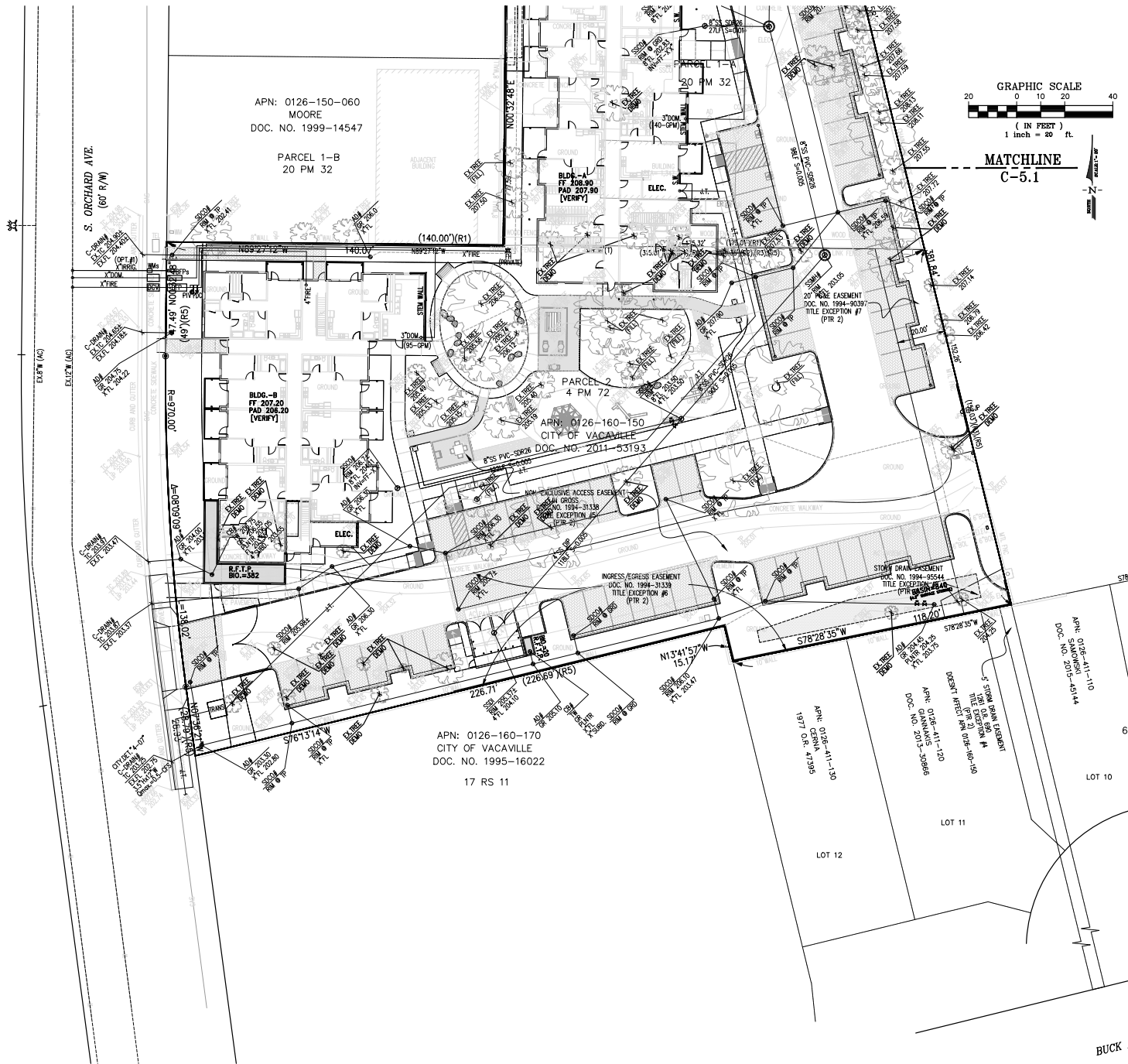
OAK GROVE APARTMENTS

475 W. MONTE VISTA AVENUE
VACAVILLE, CA 95688

REVISIONS	NO.	DATE	DESCRIPTION
△	1		
△	2		
△	3		

Title:
PRELIMINARY
UTILITY PLAN:

Date:	JULY 2020
Scale:	1" = 20'
Drawn By:	D.A.D.
Checked By:	C.W.
Job No.:	17131A25
Drawing No.:	MASTER.DWG
Plot Date:	2020-08-06
Sheet No.:	C-5.1



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Seal:



OAK GROVE APARTMENTS

475 W. MONTE VISTA AVENUE
VACAVILLE, CA 95688

NO.	DATE	DESCRIPTION
1		
2		
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4		

Title:
**PRELIMINARY
UTILITY PLAN:**

Date: JULY 2020

Scale: 1" = 20'

Drawn By: D.A.D.

Checked By: C.W.

Job No.: 17131A25

Drawing No.: MASTER.DWG

Plot Date: 2020-08-06

Sheet No.: C-5.2

Seal:



475 W. MONTE VISTA AVENUE
VACAVILLE, CA 95688

REVISIONS		
NO.	DATE	DESCRIPTION
△		
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△		
Title: PRELIMINARY STORMWATER CONTROL PLAN:		
Date:	JULY 2020	
Scale:	1" = 20'	
Drawn By:	D.A.D.	
Checked By:	C.W.	
Job No.:	17131A25	
Drawing No.:	MASTER.DWG	
Plot Date:	2020-08-06	
Sheet No.:		

C-6.1





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 Fax (510) 724-3383

Seal:



OAK GROVE APARTMENTS

475 W. MONTE VISTA AVENUE
 VACAVILLE, CA 95688

REVISIONS		
NO.	DATE	DESCRIPTION
1		
2		
3		
4		

Title:
 PRELIMINARY
 STORMWATER
 CONTROL PLAN:

Date: JULY 2020

Scale: 1" = 20'

Drawn By: D.A.D.

Checked By: C.W.

Job No.: 17131A25

Drawing No.: MASTER.DWG



























Plot Date: 2020-08-06

Sheet No.: C-6.2



OVERALL LANDSCAPE PLAN
1" = 30'-0"

PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	WATER USE	SHRUBS	BOTANICAL / COMMON NAME	CONT	WATER USE
	<i>Acer rubrum</i> 'Bowhall' Bowhall Red Maple	15 gal	Med		<i>Laurus nobilis</i> Compact Compact Sweet Bay	5 gal	Low
	<i>Cercis canadensis</i> Eastern Redbud	15 gal	Med		<i>Lomandra longifolia</i> 'Platinum Beauty' Variegated Dwarf Mat Grass	5 gal	Low
	<i>Lagerstroemia indica</i> x <i>fauvrii</i> 'Natchez' Natchez Crape Myrtle	24"box	Med		<i>Muhlenbergia rigens</i> Deer Grass	5 gal	Low
	<i>Pistacia chinensis</i> 'Keith Davey' Keith Davey Chinese Pistache	24"box	Low		<i>Nandina domestica</i> 'Gulf Stream' TM Gulf Stream Heavenly Bamboo	5 gal	Low
	<i>Quercus lobata</i> Valley Oak	24"box	Low		<i>Pittosporum tobira</i> 'Wheeler's Dwarf' Wheeler's Dwarf Mock Orange	5 gal	Med
	<i>Zelkova serrata</i> 'Green Vase' Sawleaf Zelkova	24"box	Low		<i>Rhaphiolepis indica</i> 'Ballerina' Ballerina Indian Hawthorn	5 gal	Low
SHRUBS	BOTANICAL / COMMON NAME	CONT	WATER USE		BOTANICAL / COMMON NAME	CONT	WATER USE
	<i>Abelia</i> x 'Rose Creek' Rose Creek Abelia	1 gal	Med		<i>Rosa</i> x 'Noaschnee' TM Flower Carpet White Groundcover Rose	5 gal	Med
	<i>Acacia cognata</i> 'ACCOG01' Cousin It Little River Wattle	1 gal	Low		<i>Westringia fruticosa</i> 'Smokey' Smokey Westringia	5 gal	Low
	<i>Carex divisa</i> Berkeley Sedge	1 gal	Low		<i>Zauschneria californica</i> 'Calistoga' Calistoga California Fuchsia	5 gal	Low
	<i>Cistus</i> x <i>purpureus</i> Orchid Rockrose	5 gal	Low		<i>Myoporum parvifolium</i> Trailing Myoporum	1 gal	Low
	<i>Dianella tasmanica</i> Flax Lily	5 gal	Low		Native Preservation Native Sod	sod	Low
	<i>Dietes bicolor</i> Fortnight Lily	5 gal	Low		<i>Rosmarinus officinalis</i> 'Prostratus' Dwarf Rosemary	1 gal	Low
	<i>Hemerocallis hybrids</i> Daylily	5 gal	Low				

PRELIMINARY PLANTING SCHEDULE

California Water Efficient Landscape Worksheet									
Reference Evapotranspiration (ET _a)	8.88	Project Type	Residential	ET _a Factor	0.55				
Hydrozone # / Planting Description	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	ET _a Factor (PF/IE)	Landscape Area (Sq. Ft.)	ET _a Factor (PF/IE)	Area	Estimated Total Water Use (ETWU)	ETWU
Regular Landscape Areas									
Hydrozone 1: Trees - Existing - Low	0.5/Drip		0.81	0.62	170	105		665	
Hydrozone 2: Trees - Low	0.5/Drip		0.81	0.62	500	556		2860	
Hydrozone 3: Trees - Medium	0.2/Drip		0.81	0.25	820	204		1096	
Hydrozone 4: Shrubs - Low	0.8/Drip		0.55	1.45	14675	21345		114873	
Hydrozone 5: Shrubs - Medium	0.2/Drip		0.55	0.36	1125	409		2202	
	0.1		0.75	0.13				0	
Totals					17695	22819		121725	
Special Landscape Areas									
	1				0			0	
Totals					0			0	
ETWU Total								121725	
Maximum Allowed Water Allowance (MAWA)								52375	

PRELIMINARY WATER USE CALCULATIONS

Tree Species	Tree Size	Symbol	Coverage	Qty	Area	Shade Total
<i>Pistacia chinensis</i> 'Keith Davey'	35'	F	Full	4	962 SF	3,848 SF
<i>Zelkova serrata</i> 'Green Vase'		T	Three-Qtrs	7	722 SF	5,054 SF
Existing Tree		H	Half	11	481 SF	5,291 SF
		Q	Quarter	0	0 SF	0 SF
					241 SF	14,193 SF
<i>Acer rubrum</i> 'Bowhall'	15'	F	Full	0	177 SF	0 SF
<i>Cercis canadensis</i>		T	Three-Qtrs	0	133 SF	0 SF
		H	Half	5	89 SF	445 SF
		Q	Quarter	0	44 SF	0 SF
						445 SF
Total Tree Shaded Area Provided (SF)						14,638 SF
Percent of Parking Shaded						52.7%
Total Parking Area (SF)						27,794 SF

TREE SHADE CALCULATIONS

LANDSCAPE AREA CALCULATION

PROPERTY SIZE NET AREA: 91,756 SF (2.11 ACRES)
PROVIDED LANDSCAPE AREA: 29,714 SF (3.1% OF NET AREA)

WATER EFFICIENT LANDSCAPE ORDINANCE:

"I have complied with the criteria of City of Vacaville Water Efficient Landscape Ordinance and applied them for the efficient use of water in the landscape and irrigation design plan."

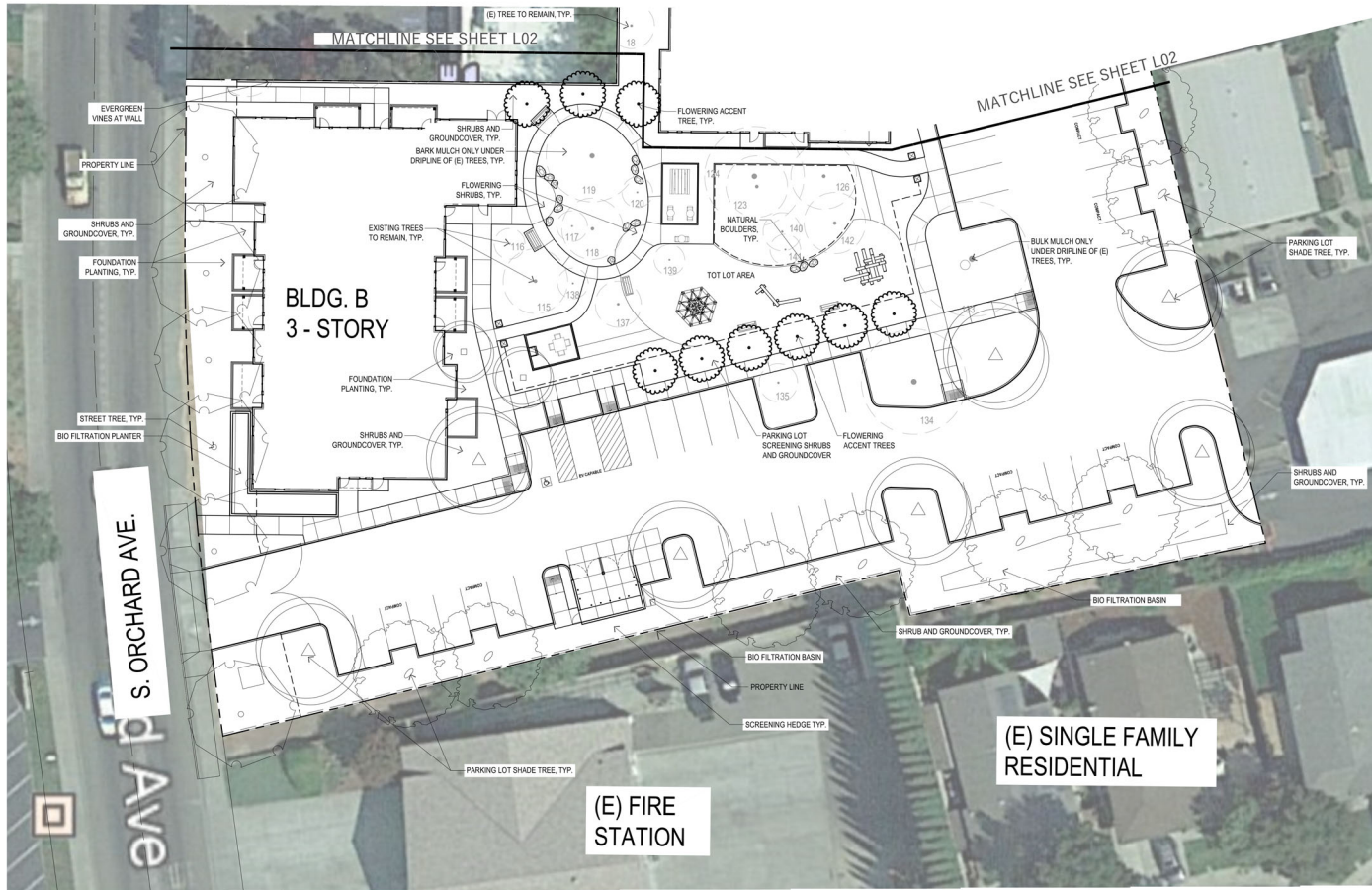
Applicant Signature: *John B. Gault* License Number: 4836 Date: 08.03.2020

LANDSCAPE AREA AND COMPLIANCE






1

PRELIMINARY PLANTING SCHEDULE



PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	WATER USE	
	Acer rubrum 'Bowhall' Bowhall Red Maple	15 gal	Med	
	Cercis canadensis Eastern Redbud	15 gal	Med	
	Lagerstroemia indica x fauriei 'Natchez' Natchez Crape Myrtle	24"box	Med	
	Pistacia chinensis 'Keith Davey' Keith Davey Chinese Pistache	24"box	Low	
	Quercus lobata Valley Oak	24"box	Low	
	Zelkova serrata 'Green Vase' Sawleaf Zelkova	24"box	Low	
SHRUBS	BOTANICAL / COMMON NAME	CONT	WATER USE	
	Abelia x 'Rose Creek' Rose Creek Abelia	1 gal	Med	
	Acacia cognata 'ACCOG01' Cousin It Little River Wattle	1 gal	Low	
	Carex divisa Berkeley Sedge	1 gal	Low	
	Cistus x purpureus Orchid Rockrose	5 gal	Low	
	Dianella tasmanica Flax Lily	5 gal	Low	
	Diets bicolor Fortnight Lily	5 gal	Low	
	Hemerocallis hybrids Daylily	5 gal	Low	
	Laurus nobilis Compact Compact Sweet Bay	5 gal	Low	
	Lomandra longifolia 'Platinum Beauty' Variegated Dwarf Mat Grass	5 gal	Low	
	Muhlenbergia rigens Deer Grass	5 gal	Low	
	Nandina domestica 'Gulf Stream' TM Gulf Stream Heavenly Bamboo	5 gal	Low	
	Pittosporum tobira 'Wheeler's Dwarf' Wheeler's Dwarf Mock Orange	5 gal	Med	
	Rhaphiolepis indica 'Ballerina' Ballerina Indian Hawthorn	5 gal	Low	
	Rosa x 'Noaschnee' TM Flower Carpet White Groundcover Rose	5 gal	Med	
	Westringia fruticosa 'Smokey' Smokey Westringia	5 gal	Low	
	Zauschneria californica 'Calistoga' Calistoga California Fuchsia	5 gal	Low	
GROUND COVERS	BOTANICAL / COMMON NAME	CONT	WATER USE	SPACING
	Myoporum parvifolium Trailing Myoporum	1 gal	Low	60" o.c.
	Native Preservation Native Sod	sod	Low	
	Rosmarinus officinalis 'Prostratus' Dwarf Rosemary	1 gal	Low	48" o.c.



ENLARGED LANDSCAPE PLAN
1" = 20'-0"

1

PRELIMINARY PLANTING SCHEDULE

2

APPENDIX B

ANALYSIS OF SEWER SYSTEM IMPACTS TECHNICAL MEMORANDUM

TECHNICAL MEMORANDUM

DATE: November 23, 2020

Project No.: 273-60-20-06

SENT VIA: EMAIL

TO: Kelly Boyle, Analytical Environmental Services

CC: Justen Cole, City of Vacaville
Christina Castro, City of Vacaville

FROM: Chris Malone, PE, RCE #51009

REVIEWED BY: Jeff Pelz, PE, RCE #46088

SUBJECT: Analysis of Sewer System Impacts, Oak Grove Apartments



The purpose of this technical memorandum (TM) is to evaluate the sewer system impacts of the proposed Oak Grove Apartment complex (Project) that would be constructed at the southeast corner of the intersection of West Monte Vista Avenue and Orchard Avenue in the City of Vacaville (City). The major elements of this TM include:

- Description of Proposed Development
- Project Flow Generation
- Existing Sewer Facilities and Flow Impacts
- Conclusions

DESCRIPTION OF PROPOSED DEVELOPMENT

The Project site is located on two adjacent parcels, APN 126-160-150 and APN 126-150-050, which total 2.12 acres. The site, which is depicted on Figure 1, wraps around two currently developed parcels at the intersection of West Monte Vista Avenue and Orchard Avenue, and would have frontage on both streets. The Project would consist of 67 units of one, two, and three-bedroom apartments as follows:

- 1-bedroom (570 square-foot): 27 units
- 2-bedroom (910 square-foot): 22 units
- 3-bedroom (1,040 square-foot): 18 units

APN 126-160-150 is 1.37 acres, is currently undeveloped, and has frontage on Orchard Avenue. Per the City's land use database developed as part of their General Plan update process, that parcel has a land use designation of Retail Service for both existing and buildout development conditions.

APN 126-160-150 is 0.75 acres and has frontage on West Monte Vista Avenue. Per the land use database, that parcel has a land use designation of Private Recreation for both existing and buildout development conditions and is shown as occupied.

PROJECT FLOW GENERATION

Per Table DS 6-1 of the City of Vacaville Sanitary Sewer System Design Standards, average dry weather flow (Q_a) generation in units of gallons per day (gpd) per residential dwelling unit (DU) shall be based on the following “where the actual allowable dwelling unit and bedroom count is known and subject to no further changes by virtue of an executed development agreement or similar instrument”:

- Residential – One Bedroom: 120 gpd/DU
- Residential – Two Bedroom: 160 gpd/DU
- Residential – Three Bedroom: 200 gpd/DU

For all other residential development, a Q_a flow generation factor of 240 gpd/DU is to be assumed. Technically, an approved development agreement does not yet exist for the Project; therefore, the 240 gpd/DU factor is applicable. On the other hand, if the current plan is approved, the residential unit count is not subject to change. Accordingly, for this analysis, flow generation numbers will be considered using both sets of factors.

Per City standards, the Q_a generation factors for the General Plan-designated land uses of the Project parcels are as follows:

- Retail Service: 1,900 gpd/acre
- Private Recreation: 1,500 gpd/acre

Also per City standards, a peaking factor of 2.5 is to be applied to the Q_a value to obtain a peak dry weather flow (Q_{pdwf}). Also per City standards, an infiltration and inflow (I&I) rate of 1,000 gpd/acre is assumed, which is then added to the Q_{pdwf} to obtain a design flow (Q_d) that is the basis for sizing of sewer facilities and assessment of downstream impacts.

Table 1 shows a comparison of the Q_d calculations for General Plan-designated land uses versus the proposed Project for both sets of flow factors discussed above. As indicated, the Project would add either 16,580 gpd or 30,880 gpd of additional design flow over and above the General Plan designated land use flow generation, depending on the assumed flow factors.

EXISTING SEWER FACILITIES AND FLOW IMPACTS

The layout of site utilities, including sewer laterals serving the complex, has not been specified, so the point of connection has not been established. There are two possible points of connection adjacent to the site, both of which are indicated on Figure 1. One is located on West Monte Vista Avenue, and the other is located on the southern boundary of the site adjacent to the fire station.

Table 1. Proposed Project Flow Generation vs. General Plan-Designated Land Uses				
Parameter	Units	General Plan Development	Approved Residential Development	Non-Approved Residential Development
Parcel Area	acres	2.12	2.12	2.12
Unit Count	DU	0	67	67
Q _a	gpd	3,728	10,360	16,080
Q _{pdwf}	gpd	9,320	25,900	40,200
I&I	gpd	2,120	2,120	2,120
Q_d	gpd	11,440	28,020	42,320
Q_d Increase	gpd	0	16,580	30,880

Along West Monte Vista Avenue, there is an existing 8-inch diameter sewer line with an upstream terminus at the intersection of West Monte Vista Avenue and Orchard Avenue. According to record drawings for that sewer (included in Attachment A of this TM), the crown of that pipe was approximately 5½ feet below grade at the time of construction, although confirmation of that depth is needed before connecting any onsite sewer laterals.

The downstream flow path along West Monte Vista Avenue is shown on Figure 2. Sewer record drawings for that line indicate that between Orchard Avenue and Stinson Avenue, the 8-inch diameter line has pipe slopes of 0.0040, 0.0102, 0.0052, and 0.0278 in successive segments. These slopes equate to full-pipe capacities ranging from approximately 0.50 million gallons per day (mgd) to approximately 1.31 mgd. According to the Citywide wastewater collection system model, that line carries an estimated peak flow of approximately 0.25 mgd at the downstream end. Therefore, even under peak flow conditions, this line has significant additional capacity available, and the addition of 30,880 gallons of flow (0.31 mgd) is expected to have no significant impact.

The physical condition of the sewer line from Orchard Avenue to Stinson Avenue is not known. Portions of that line were variously constructed in the early 1950s and early 1960s. Record drawings indicate vitrified clay pipe (VCP) construction, so pipe corrosion is not expected to be an issue. City staff have authorized closed-circuit television (CCTV) inspections to be performed for the entire stretch of the West Monte Vista Avenue sewer from Orchard Avenue to Stinson Avenue to confirm that it is in satisfactory structural condition.

Further downstream between Stinson Avenue and Dobbins Street, the West Monte Vista Avenue sewer is known to be undersized with no available capacity to accommodate additional development. However, the City is currently in the process of initiating a design project to upsize that sewer, with construction tentatively expected in 2021. Therefore, the proposed development Project would be able to connect to the West Monte Vista Avenue sewer, provided the downstream portion of that sewer between Stinson Avenue and Dobbins Street has been constructed and is in operation.

Downstream of West Monte Vista Avenue, there are no known flow restrictions under existing conditions, and any theoretical restrictions under buildout conditions are in large trunk lines with capacities several orders of magnitude greater than the flows generated by the proposed Project. Accordingly, the proposed Project is expected to have no measurable impact on those downstream trunk sewers.

One other possible point of connection for the Project exists on the southern boundary of the site. Record drawings included in Attachment A of this TM indicate that an 8-inch diameter sewer terminates at a cleanout approximately 5 feet below grade (subject to confirmation). The cleanout is located at the northeast corner of the 1.36-acre parcel (APN 126-160-170) that is occupied by Vacaville Fire Station #71. City staff have confirmed that this line exists and is a viable connection point for the Project. The line in question flows south behind the fire station, then east through an alley where it connects to an 8-inch diameter sewer on Morales Court. The flow path then travels south-southeast in an 8-inch diameter line along Camellia Way before it joins the 18-inch diameter Walnut Avenue trunk sewer, which according to the Citywide collection system model is not known or suspected of being undersized.

The 8-inch diameter line serving Morales Court and Camellia Way is not directly modeled in the City-wide collection system model. Nevertheless, peak flows in that line can be estimated using current master planning assumptions. Along the flow pathway between the Project site and the Walnut Avenue trunk sewer, there are 141 residential units, including 91 single-family units and 52 multi-family units, with the fire station (designated as Public Medium land use) being the only non-residential flow input. As per current master planning standards, existing residential development is assumed to have a flow generation rate of 200 gpd/DU, while Public Medium land use parcels are assumed to have a flow generation rate of 1,200 gpd/acre. The total tributary area to the downstream end of the Camellia Way sewer is 21.4 acres, with an assumed I&I rate of 1,000 gpd/acre, per City standards.

Based on these inputs and flow factors, the estimated flows at the downstream end of the Camellia Way sewer, both with and without the proposed Project, are summarized in Table 2. It should be noted that an 8-inch diameter pipe at a standard minimum slope of 0.0035 has a full-pipe capacity of approximately 460,000 gpd and an allowable flow capacity of approximately 320,000 gpd. Per City record drawings, the line in question has a pipe slope that ranges from 0.0033 to 0.0116. Accordingly, the addition of flows from the proposed Project is not expected to have any downstream impacts along that flow path.

Table 2. Estimated Flows in the Camellia Way Sewer		
Parameter	Quantity	Units
Single-Family Residential Development	91	DU
Multi-Family Residential Development	52	DU
Public Medium Development	1.36	acres
Q _a	30,232	gpd
Q _{pdwf}	75,580	gpd
Total Tributary Area	21.4	acres
I&I Rate	1,000	gpd/acre
I&I	21,400	gpd
Q _d	96,980	gpd
Project Site Q _d	42,320	gpd
Revised Q _d with Project	139,300	gpd

The physical condition of the sewer line from the fire station to Walnut Avenue is not known. The portion of that line along Camellia Way was constructed in the early 1950s, although an approximately 600-foot segment of that line portion of the line was replaced in 2019 to eliminate a sewer siphon on Buck Avenue. Record drawings indicate vitrified clay pipe (VCP) construction, so pipe corrosion is not expected to be an issue. However, it is advisable for the line in question to be inspected to determine if any repairs may be needed. If a connection is planned for that flow path, it will be the responsibility of the City to confirm that the lines in question are in satisfactory structural condition.

A potential concern exists where sewers are not located within a road right-of-way. Gravity sewers require access under all weather conditions for routine and emergency maintenance. When a sewer is not located in a street, the City requires a permanent easement for equipment access along the sewer route. Planting of trees over or near sewer lines should also be prohibited as roots can damage sewers and mature trees can impede future repair work. Therefore, in the case of the potential southern point of connection for the Project, the City should require the Project to provide permanent access to a maintenance hole at the point of connection to the public sewer, unless such access is already secure via the Fire Department. In addition, the City should verify that the Fire Department is aware of the need for access to and protection of the existing sewer on the Fire Station #71 site.

Downstream of Walnut Avenue, there are no known flow restrictions under existing conditions, and any theoretical restrictions under buildout conditions are in large trunk lines with capacities several orders of magnitude greater than the flows generated by the proposed Project. Accordingly, the proposed Project is expected to have no measurable impact on those downstream trunk sewers.

CONCLUSIONS

Based on the results of this analysis, the proposed Project would be able to connect to the West Monte Vista Avenue sewer, provided that downstream improvements of the portion of that sewer between Stinson Avenue and Dobbins Street have been constructed and are in operation. The portion of the West Monte Vista Avenue sewer from Orchard Avenue to Stinson Avenue has been scheduled for inspection to assess its physical condition and to determine if any repairs may be needed. It is the responsibility of the City to confirm that all such lines are in satisfactory structural condition.

It is also concluded from this analysis that the proposed Project could connect to the 8-inch diameter sewer behind the fire station, subject to confirmation of the depth and configuration of that line. If a connection is planned for that flow path, it is recommended that the sewer lines from the point of connection to Walnut Avenue (with the exception of the newly constructed portion along Camellia Way) be inspected to assess physical condition of those lines and to determine the possible need for any repairs. Access for periodic maintenance at the point of connection to the public sewer would need to be provided by the Project in the form of a permanent easement if such access is not available via the Fire Department. City staff have confirmed that this line exists and is a viable connection point for the Project.



WEST YOST - C:\Users\locannon\Desktop\Vacaville\GIS\MXD\Figure 1. Proposed Project Site.mxd - cocomor - 10/19/2020

- Sewer Mains
- ▨ Project Area
- Parcels

NOTES

1. Access for periodic maintenance at the point of connection to the public sewer needs to be provided by the Project in the form of a permanent easement if such access is not available via the Fire Department.

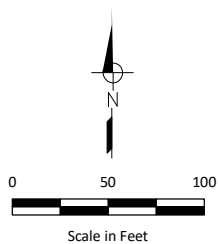
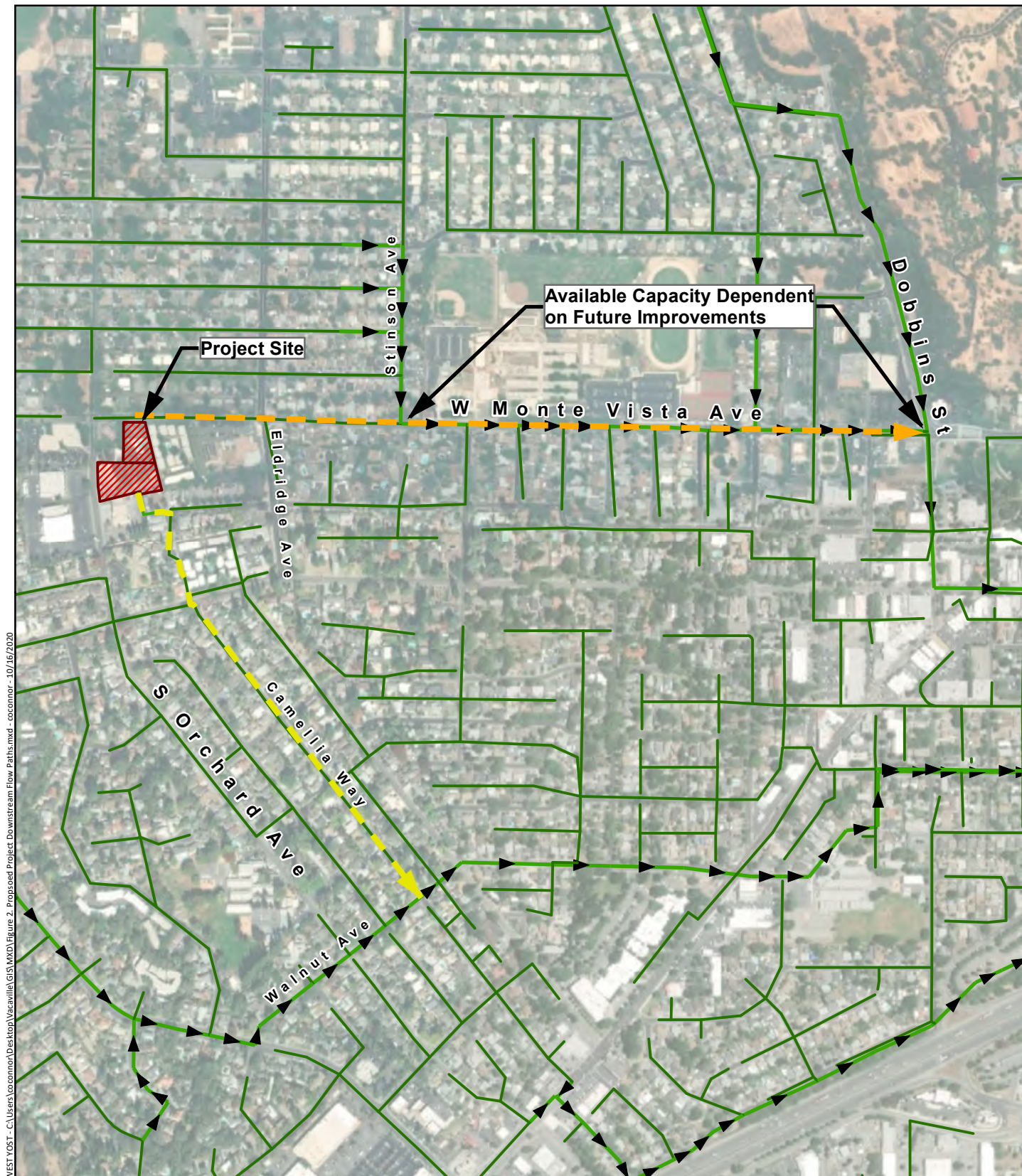







Figure 1
Proposed Project Site

Oak Grove Apartments
Sewer Impact Analysis



WEST YOST - C:\Users\ccommon\Desktop\Vacaville\GIS\MXD\Figure 2. Proposed Project Downstream Flow Paths.mxd - ccommon - 10/16/2020

-  Project Area
-  Unmodeled Sewer
-  Modeled Trunk Sewer
-  Southern Flow Path
-  Eastern Flow Path

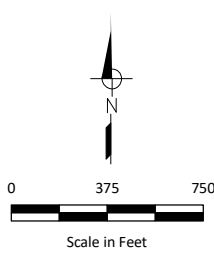
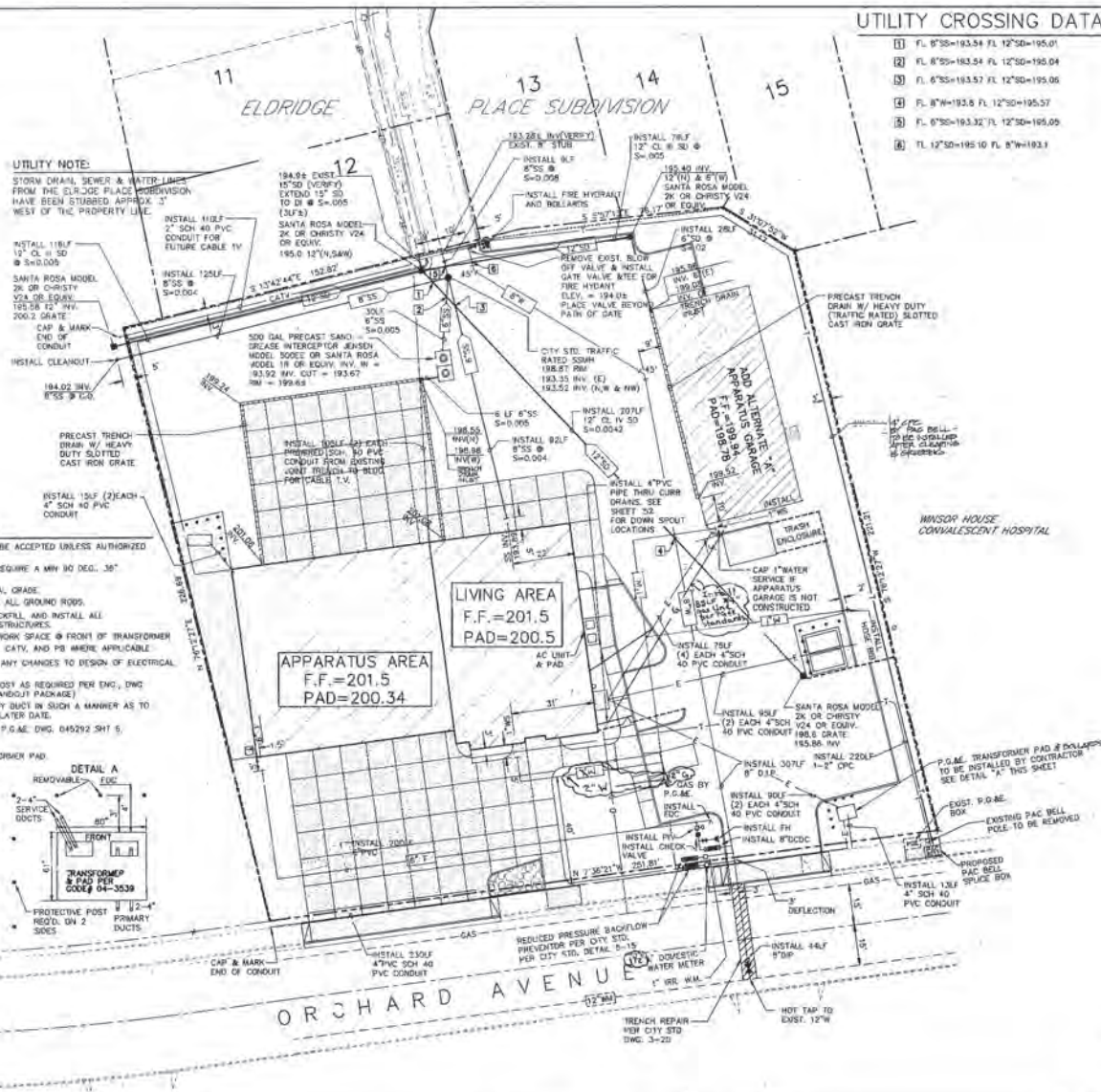


Figure 2
Proposed Project
Downstream Flow Paths

Oak Grove Apartments
Sewer Impact Analysis

Attachment A

Record Drawings



UTILITY CROSSING DATA

- 1) FL 8'35"-193.54 FL 12'50"-195.01
- 2) FL 8'35"-193.54 FL 12'50"-195.04
- 3) FL 8'35"-193.57 FL 12'50"-195.06
- 4) FL 8'35"-193.58 FL 12'50"-195.07
- 5) FL 8'35"-193.32 FL 12'50"-195.05
- 6) FL 12'50"-195.10 FL 8'35"-193.1

PAC BELL NOTES

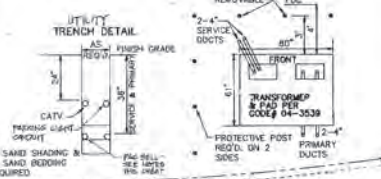
- 1. ALL WORK TO CONFORM TO PACIFIC BELL STANDARDS.
- 2. 24" MINIMUM COVER ON ALL AREAS THAT ARE TO FINAL GRADE AND WILL NOT HAVE EQUIPMENT TRAFFIC.
- 3. AREAS THAT WILL HAVE HEAVY EQUIPMENT TRAFFIC MUST HAVE 30" OF UNDISTURBED EARTH OR 12" AND CONCRETE CAP WITH 4" BORDS (CAPS 3'-4" THICK).
- 4. CONDUIT: 4" - D-PC OR SCH 40 PVC (2" WHERE INDICATED ON DRAWINGS).
- 5. 12" MINIMUM SEPARATION FROM POWER (ELECTRIC).
- 6. 8" MINIMUM SEPARATION FROM GAS.
- 7. RANDOM SEPARATION FROM CATV.
- 8. 4" DUCTS-5" MINIMUM RADIUS ON 90 DEGREE BENDS, 3" MIN. ON 45 DEGREE BENDS.
- 9. CONCRETE ENCASE ALL 90 DEGREE BENDS (4" THICK).
- 10. AFTER WORK COMPLETE-ALL DUCTS TO BE PROVEN WITH 4" MANDREL AND PULL ROPES TO BE PLACED IN EACH DUCT (3/8" NYLON ROPE).
- 11. ALL DUCTS TO BE CAPPED AS SHOWN ON PRINTS.
- 12. SPLICE BOXES PLACED IN AN AREA SUBJECT TO VEHICLE TRAFFIC MUST BE TRAFFIC RATED AND EQUIPPED WITH ALL GRP COATED STEEL LID.
- 13. PLACE ALL SPLICE BOXES TO FINAL GRADE.
- 14. ALL WALL TO WALL LENGTHS BETWEEN BOXES TO BE FIELD VERIFIED BY CONTRACTOR. REPORT AS-BUILT FOOTAGE TO LISA BUNTING AT (707) 258-3128. OWNERS CONTRACTOR MUST REPORT THIS FOOTAGE 60 DAYS PRIOR TO SERVICE REQUIREMENTS FOR MATERIAL ORDERING AND JOB SCHEDULING.
- 15. ALL WORK TO BE COMPLETED TO CITY OR COUNTY SPECIFICATIONS.
- 16. ALL PERMITS TO BE SUPPLIED BY THE DEVELOPER.
- 17. BACKFILL PER CITY OR COUNTY SPECIFICATIONS.
- 18. LOCATE ALL SUB-SURFACE STRUCTURES 48 HOURS BEFORE DIGGING- CALL U.S.A. 1-800-842-2444.
- 19. PACIFIC BELL WILL NOT BE RESPONSIBLE FOR LOSS, BREAKAGE, OR DAMAGE TO ANY FACILITIES ARISING DIRECTLY OR INDIRECTLY OUT OF OR IN CONNECTION WITH WORK TO BE PERFORMED BY CONTRACTOR.
- 20. ANY CHANGES MUST BE APPROVED BY SUBWAY INSPECTOR (PACIFIC BELL) BEFORE BEING DONE.
- 21. EQUIP ALL SPLICE BOXES WITH UNISTRUT RACKING.
- 22. CONTRACTOR TO BE RESPONSIBLE FOR REPAIRING ANY DUCTS CRUSHED DURING CONSTRUCTION.

P.G.&E. NOTES:

- 1. NO SUBSTITUTION OF BENDS WILL BE ACCEPTED UNLESS AUTHORIZED BY P.G.&E. ELEC. ENG.
- 2. ALL 4" AND 6" CONDUIT BENDS REQUIRE A MIN 90 DEG. 36" RADIUS.
- 3. MIN. CONDUIT COVER IS FROM FINAL GRADE.
- 4. APPLICANT TO FURNISH & INSTALL ALL GROUND RODS.
- 5. APPLICANT TO TRENCH, SAND, BACKFILL AND INSTALL ALL TRANSFORMER PAD, AND ALL SUBSTRUCTURES.
- 6. MAINTAIN MIN 1' CLEAR & LEVEL WORK SPACE @ FRONT OF TRANSFORMER.
- 7. TRENCH TO BE JOINT WITH ELEC., CATV, AND PB WHERE APPLICABLE.
- 8. CONTACT P.G.&E. BEFORE MAKING ANY CHANGES TO DESIGN OF ELECTRICAL FACILITIES.
- 9. APPLICANT TO INSTALL BARRIER POSTS AS REQUIRED PER ENG., DWG 051122 SH1, 687 (INCLUDE 1/4 HANDOUT PACKAGE).
- 10. APPLICANT TO INSTALL 4" PRIMARY DUCTS IN SUCH A MANNER AS TO ALLOW P.G.&E. TO TIE INTO AT A LATER DATE.
- 11. TRANSFORMER & PAD TO BE PER P.G.&E. DWG. 045292 SH1 5.
- 12. P.G.E. TO INSTALL TRANSFORMER.
- 13. CONTRACTOR TO INSTALL TRANSFORMER PAD.

NOTES:

- 1. CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATIONS OF EXISTING WATER, SEWER AND STORM DRAIN PIPES AT THE IN LOCATIONS PRIOR TO STAKING BY CITY. ANY DISCREPANCIES WITH THESE PLANS SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
- 2. ALL 2" AND 4" PVC CONDUITS SHALL BE EQUIPPED WITH A PULL ROPE. ENDS OF CONDUIT SHALL BE MARKED.
- 3. ALL PVC AND CPC CONDUITS SHALL HAVE A 4" MIN. SAND BEDDING WITH 36" COVER MIN. FOR ELECTRICAL CONDUITS & 18" COVER MIN. FOR CABLE TV CONDUITS.



DESIGNED BY:	DLE	REV.	DATE	DESCRIPTION	BY	APP'D
DRAFTED BY:	ALN					
CHECKED BY:	SWL					

FEI
CITY ENGINEERING
CIVIL ENGINEERING • LAND SURVEYING
400 WASHINGTON STREET • VACAVILLE, CA 94999
FAX: (707) 451-8100 • PHONE: (707) 451-8100

ADDENDUM NO. 1

CITY of VACAVILLE
department of public works
FIRE STATION #1
FOR THE CITY OF VACAVILLE
UTILITY PLAN

RECOMMENDED FOR APPROVAL BY:

DATE: 12-15-94

RECOMMENDED FOR APPROVAL BY:

DATE: 12-15-94

DWG. BY: A.L.N.
CHKD. BY: DLE
SCALE: 1"=20'

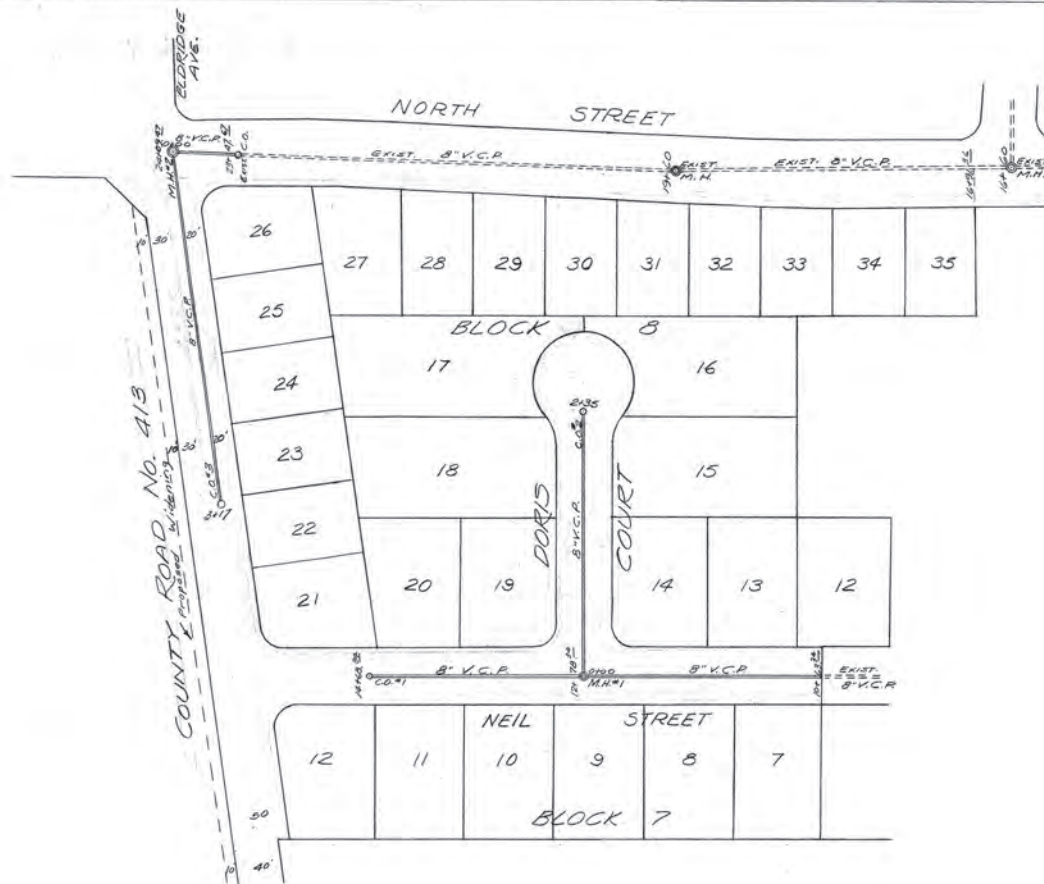
APPROVED BY:
DIRECTOR OF PUBLIC WORKS
DATE: 12-15-94

DWG. NO. 920550.DWG P20 V1

SHEET: C3 OF C6

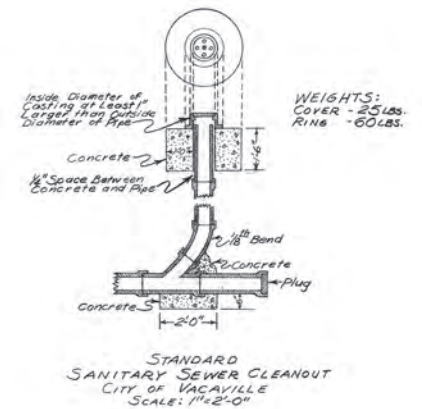
APPROVAL DATE: 12-15-94

Sheet C3(R)



PLAN
SCALE: 1"=50'

APPROVED BY John R. Burnham
CITY ENGINEER, CITY OF VACAVILLE,
COUNTY OF SOLANO, STATE OF CALIF.

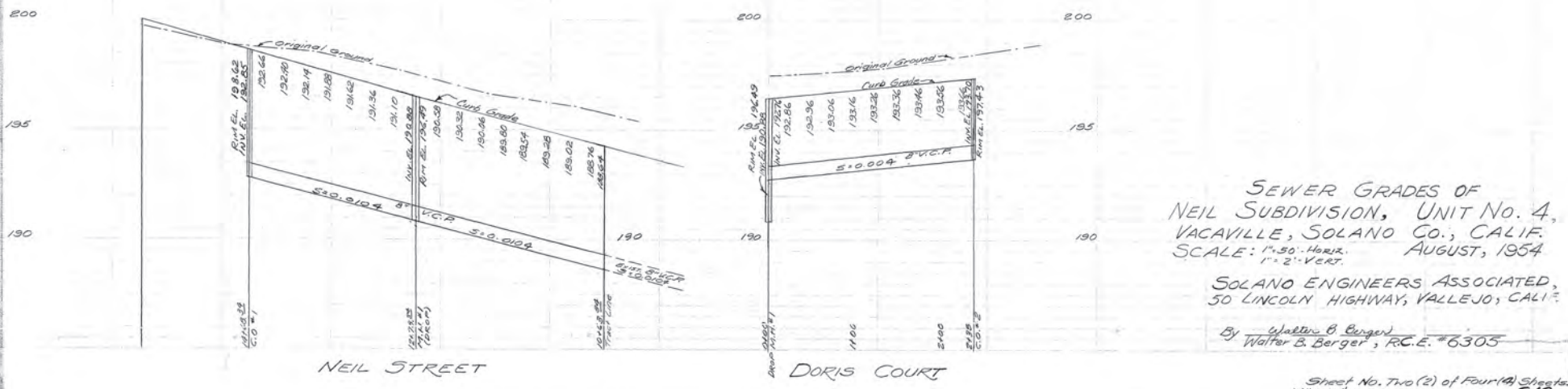


SEWER PLAN OF
NEIL SUBDIVISION, UNIT No. 4
VACAVILLE, SOLANO CO., CALIF.
SCALE: AS SHOWN AUGUST, 1954

SOLANO ENGINEERS ASSOCIATED,
50 LINCOLN HIGHWAY, VALLEJO, CALIF.

By Walter B. Berger
Walter B. Berger, R.C.E. #6305

APPROVED BY: John R. Burnham
 CITY ENGINEER, CITY OF VACAVILLE,
 COUNTY OF SOLANO, STATE OF CALIF.

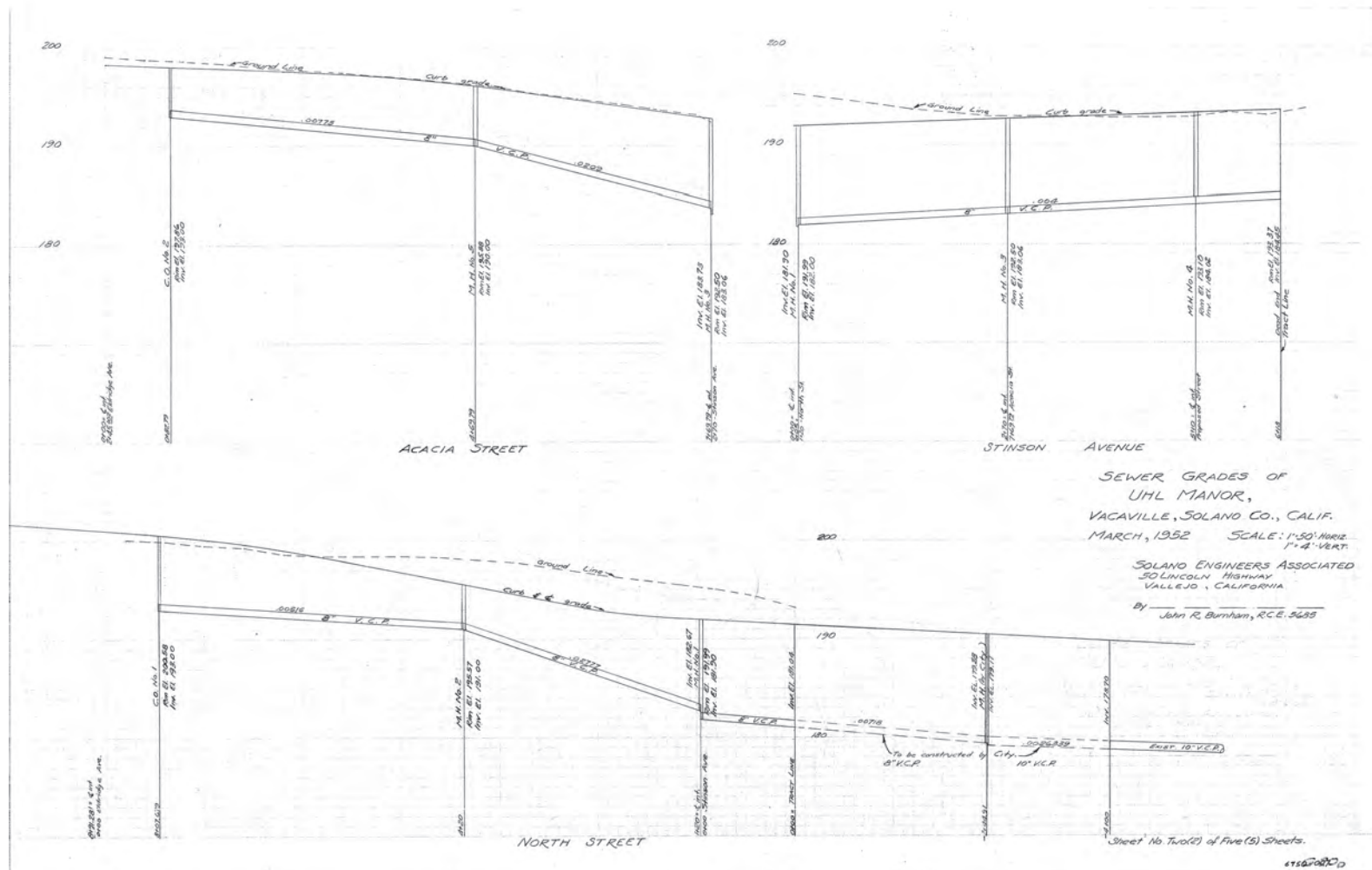


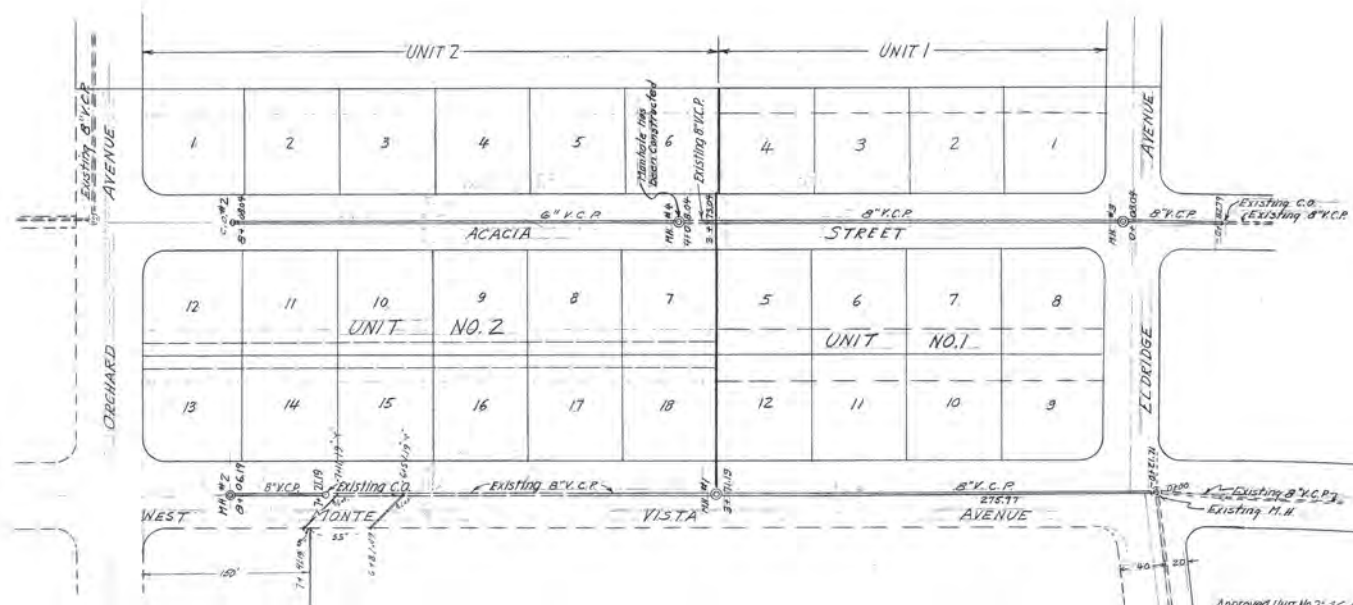
SEWER GRADES OF
 NEIL SUBDIVISION, UNIT No. 4,
 VACAVILLE, SOLANO CO., CALIF.
 SCALE: 1"=50' HORIZ.
 1"=2' VERT.
 AUGUST, 1954

SOLANO ENGINEERS ASSOCIATED,
 50 LINCOLN HIGHWAY, VALLEJO, CALIF.
 By Walter B. Berger
 Walter B. Berger, R.C.E. #6305



Sheet No One (1) of Five (5) Sheets.

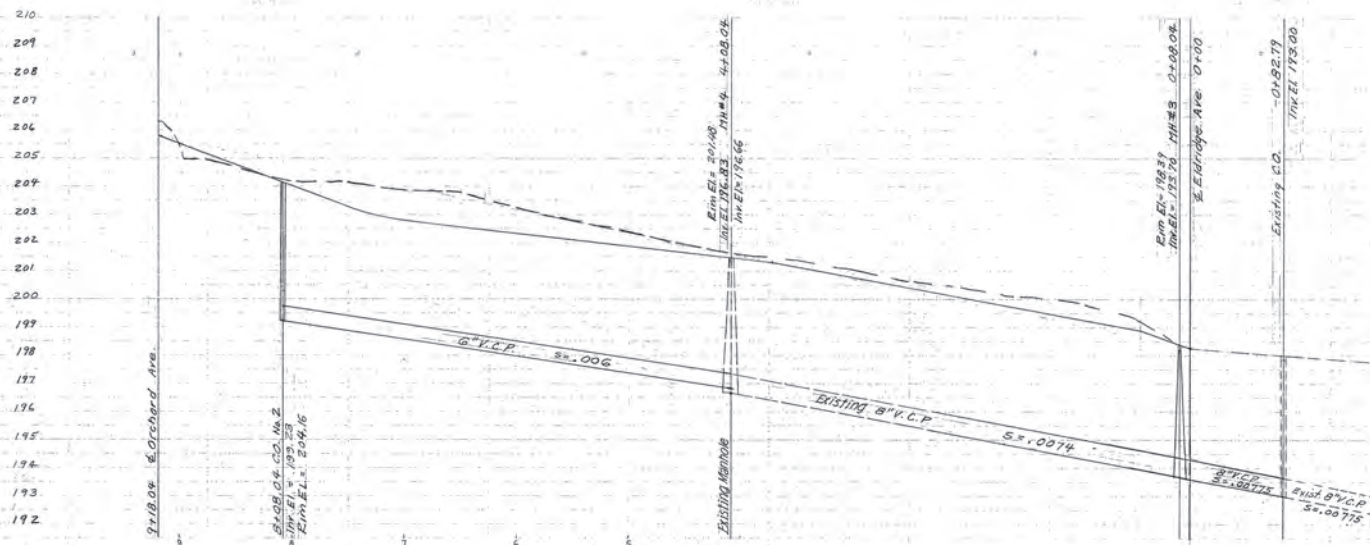




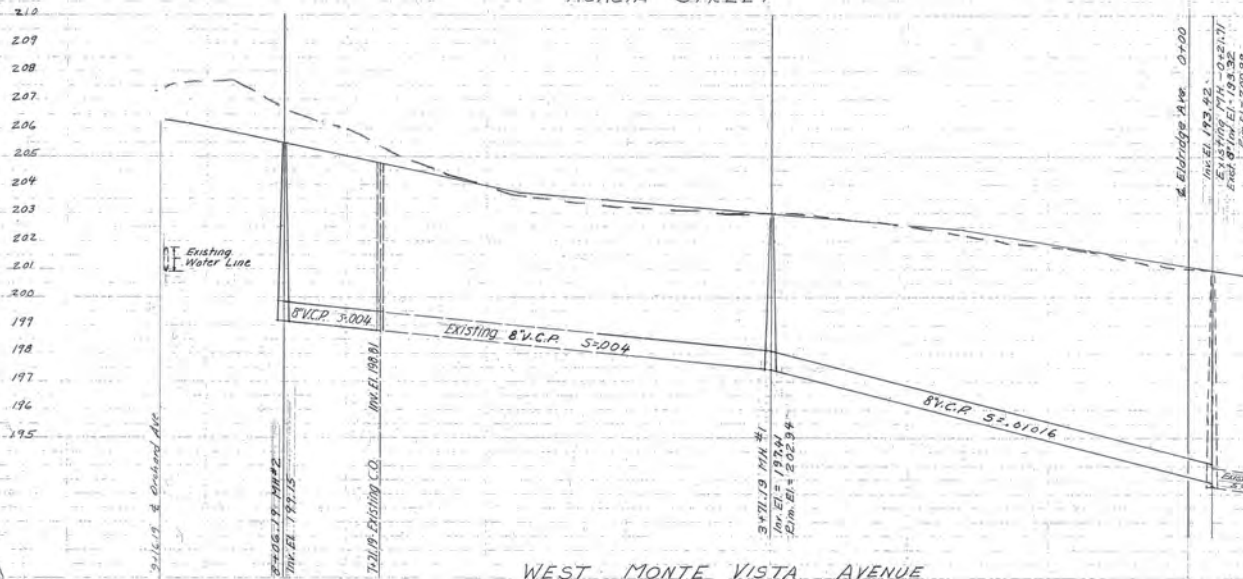
Approved, UNIT NO. 2: *Arthur K. Thompson* Date: 2-15-65
 Director of Public Works
 Approved: *Kenneth P. Thompson*
 Director of Public Works
 City of Vacaville
 Date: 2-6-65

REVISED 1-79-64, 1-19-65, 3-9-65	
SEWER PLAN	
VISTA MANOR UNITS 1 & 2	
VACAVILLE, CALIFORNIA	
SCALE: 1"=50'	FEBRUARY 18, 1963
SOLAND ENGINEERS ASSOCIATED 1809 CAPITOL ST., VALLEJO, CALIFORNIA	
BY <i>John R. Burnham</i> John R. Burnham, R.C.E. No. 5685	

57460-004



ACACIA STREET



WEST MONTE VISTA AVENUE

APPROVED UNIT NO. 2: 26th St. to Harbor Date: 2-6-64
Director of Public Works
Approved: Kenneth A. Thompson
Director of Public Works
City of Vacaville
Date: 2-6-64

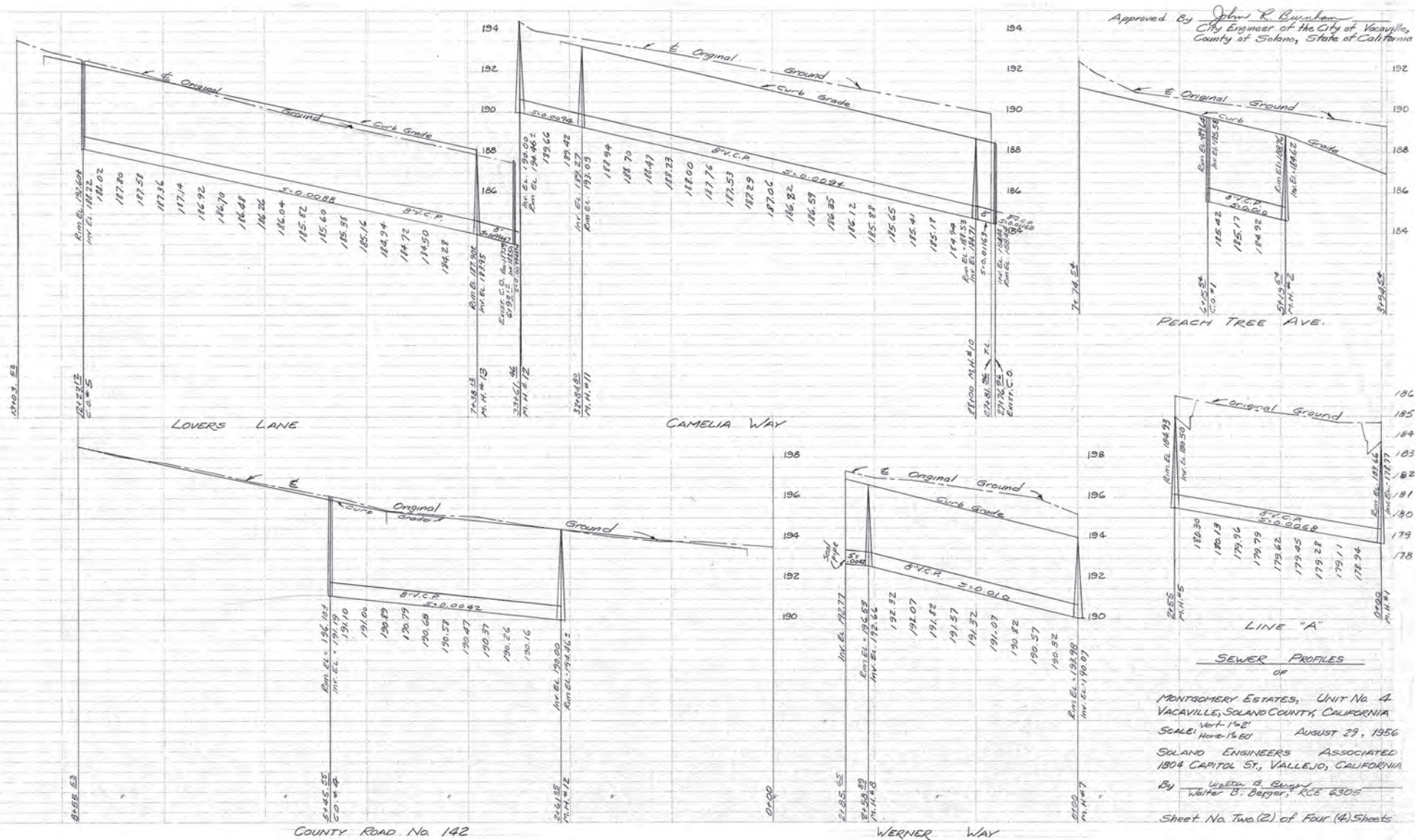
REVISED 9-11-63, 1-19-65, 3-9-65	
SEWER PROFILES	
VISTA MANOR UNITS 1 & 2	
VACAVILLE, CALIFORNIA	
SCALE: 1"=50' Horiz. 1"=2' Vert.	FEBRUARY 18 1963
SOLANO ENGINEERS ASSOCIATED 1804 CAPITOL ST. VALLEJO, CALIFORNIA	
By: John R. Burnham JOHN R. BURNHAM R.C.E.N.O. 5685	



SEWER PLANS
 OF
 MONTGOMERY ESTATES, UNIT No. 4
 VACAVILLE, SOLANO COUNTY, CALIFORNIA
 SCALE: 1"=50' AUGUST 29, 1956

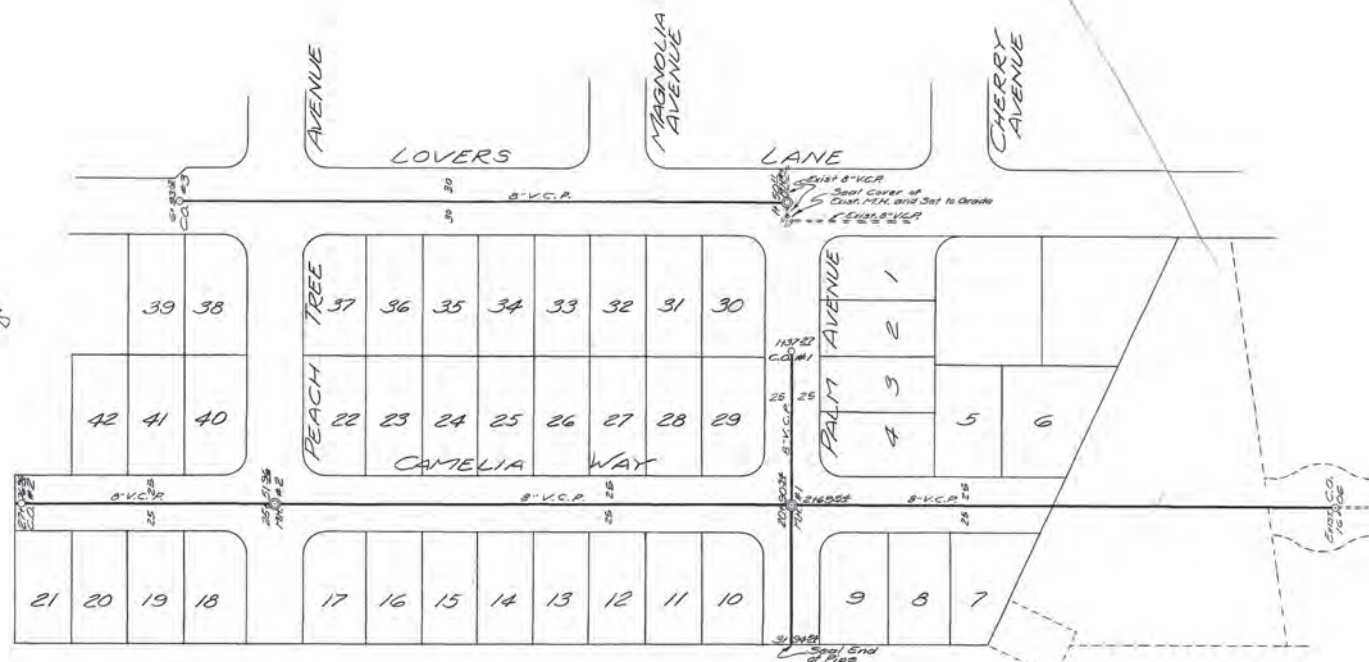
SOLANO ENGINEERS ASSOCIATED
 1804 CAPITOL STREET, VALLEJO, CALIF.
 By Walter B. Berger RCE 6305
 Sheet No. One (1) of Four (4) Sheets

Approved By John R. Cunningham
 City Engineer of the City of Vacaville,
 County of Solano, State of California



SOLANO ENGINEERS ASSOCIATED,
50 LINCOLN HIGHWAY, VALLEJO, CALIF.

By Walter B. Berger
Walter B. Berger, RGE. No. 6305



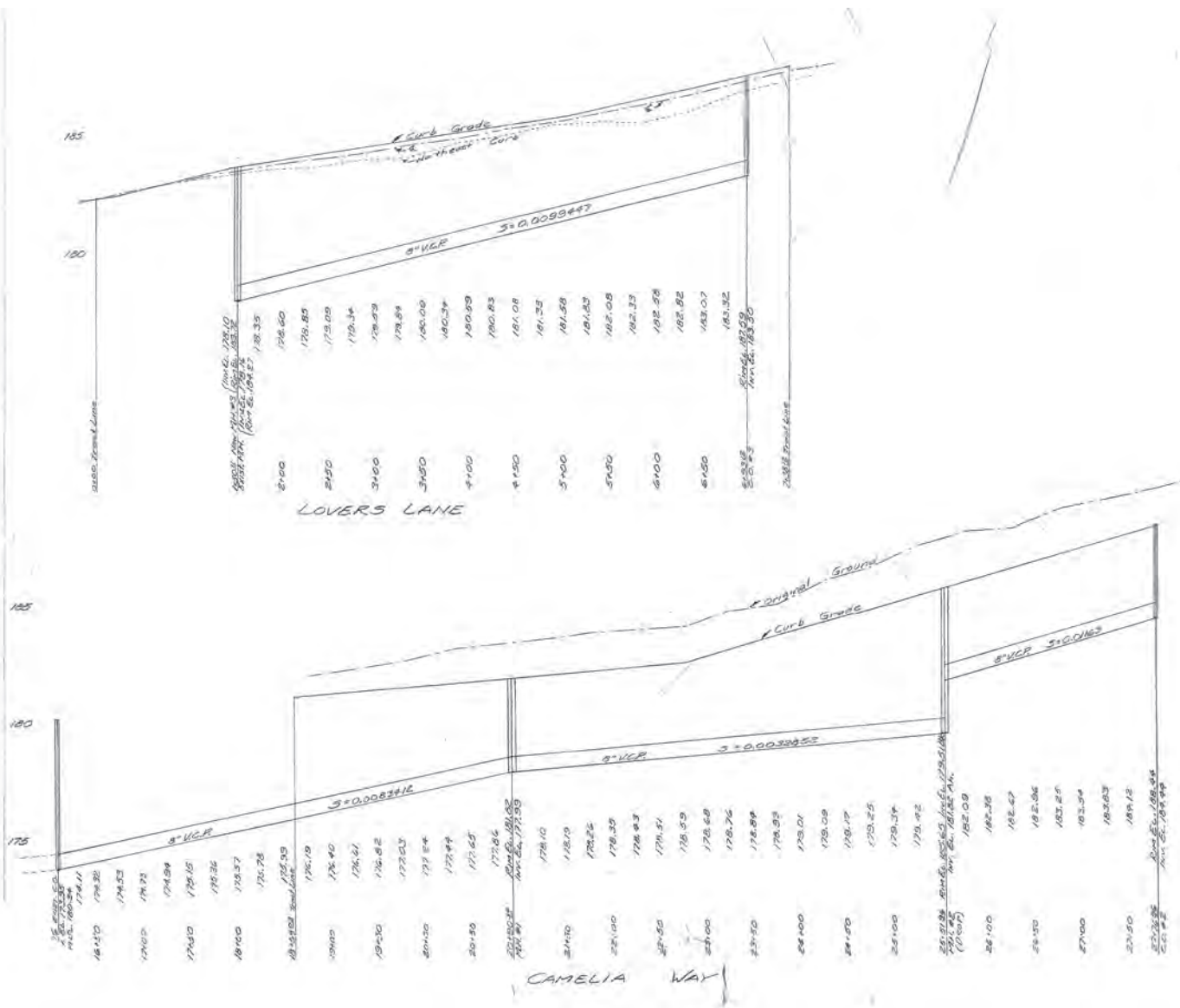
SEWER PLAN
SCALE 1"=30'

SEWER GRADES
 JUNNY GARDENS SUBDIVISION,
 VACAVILLE, SOLANO COUNTY, CALIF.
 SCALE: Horiz. 1"=50' Vert. 1"=2' JULY, 1954

SOLANO ENGINEERS ASSOCIATED,
 50 LINCOLN HIGHWAY, VALLEJO, CALIF.

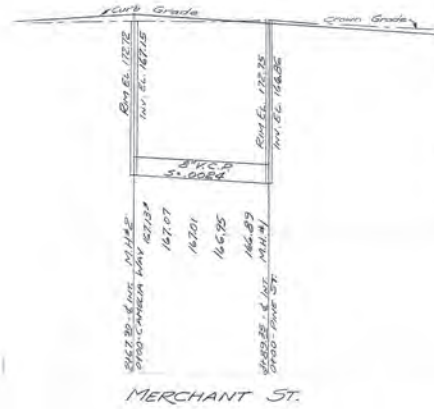
By Walter B. Berger
 Walter B. Berger, S.F.F. No. 6305

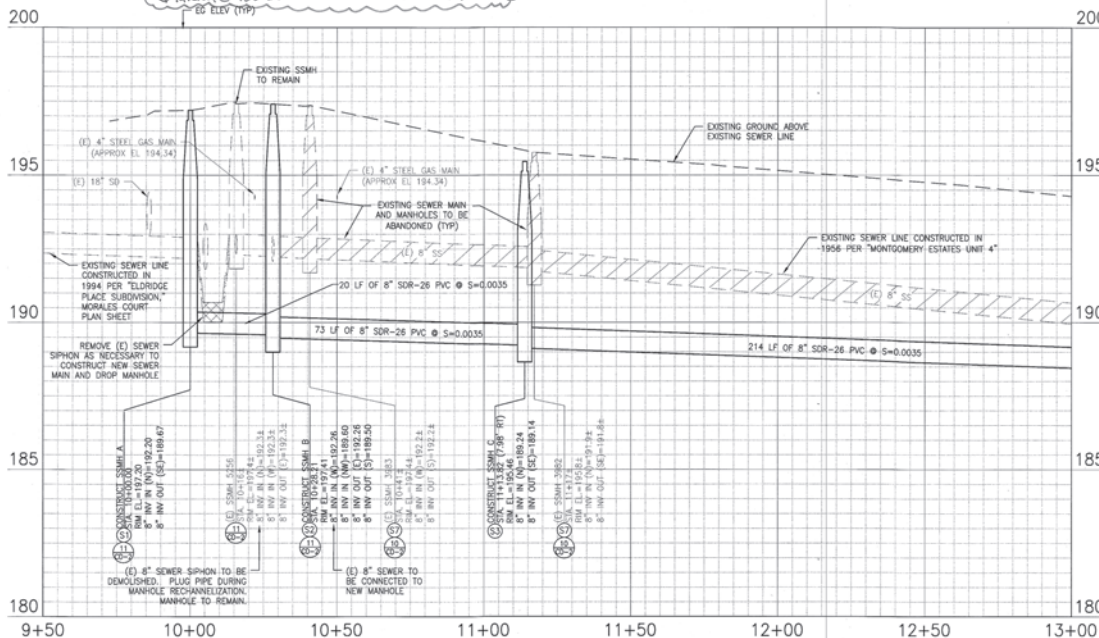
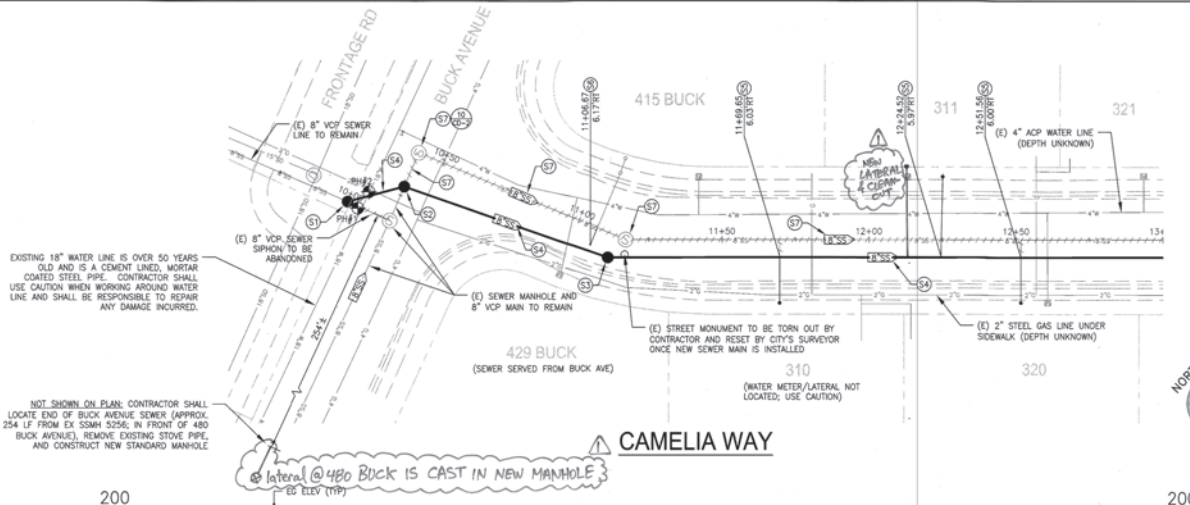
APPROVED BY John L. Burdick
 City Engineer of the City of Vacaville,
 County of Solano, State of California



SEWER GRADES
TOWN AND COUNTRY MANOR,
VACAVILLE, SOLANO CO., CALIFORNIA
SCALE: 1"=30' HORIZ
1"=4' VERT
MAY, 1952
SOLANO ENGINEERS ASSOCIATED
50 LINCOLN HIGHWAY
VALLEJO, CALIF.

By John R. Cunningham
John R. Cunningham, C.E. 5685





RECORD DRAWING
Project Complete 9/14/2019
Inspector AR for PS
Revisions By AR

SEWER KEYNOTES

- 51 DEMOLISH EXISTING SEWER MANHOLE AND REPLACE WITH NEW DROP SEWER MANHOLE PER DETAILS 2, 3, AND 4, SHEET CD-1. CONTRACTOR SHALL SUBMIT AND RECEIVE APPROVAL ON A BYPASS PLAN PRIOR TO BEGINNING WORK IN ORDER TO DIVERT FLOWS DURING MANHOLE REMOVAL AND CONSTRUCTION. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
- 52 CONSTRUCT NEW DROP SEWER MANHOLE PER DETAILS 2, 3, AND 4, SHEET CD-1.
- 53 CONSTRUCT NEW STANDARD SEWER MANHOLE PER DETAIL 2 AND 3, SHEET CD-1.
- 54 INSTALL NEW SEWER MAIN BY OPEN CUT EXCAVATION (SIZE, SLOPE, AND MATERIAL PER PLAN). TRENCHING AND BACKFILL SHALL BE PER DETAIL 1, SHEET CD-1.
- 55 REPLACE EXISTING SEWER LATERAL AND INSTALL CLEANOUT PER DETAILS 9 AND 6, SHEET CD-1.
- 56 CONNECT EXISTING LATERAL, HAVING AN EXISTING CLEANOUT TO NEW MAIN PER DETAIL 10, SHEET CD-2 AND THE SPECIAL PROVISIONS.
- 57 ABANDON EXISTING SEWER MANHOLE AND PIPING PER DETAIL 10, SHEET CD-2 AND THE SPECIAL PROVISIONS.

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR STAGING CONSTRUCTION IN A MANNER THAT LIMITS SEWER SERVICE INTERRUPTIONS FOR CURRENT CUSTOMERS. ONCE FACILITIES ARE CONFIRMED TO BE NO LONGER IN SERVICE, PORTIONS OF ABANDONED FACILITIES OR FACILITIES TO BE ABANDONED WITH THIS PROJECT MAY BE REMOVED BY THE CONTRACTOR IN ORDER TO CONSTRUCT NEW FACILITIES.
2. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE PROVISIONS OF THE APPROVED TRAFFIC CONTROL PLAN AT ALL TIMES. ALL PAVEMENT STRIPPING AND MARKERS DAMAGED OR REMOVED BY THE CONTRACTOR SHALL BE REPLACED TO THE SATISFACTION OF THE ENGINEER AND ACCORDING TO THE DETAILS AND SPECIAL PROVISIONS.
3. CURB, GUTTER, AND SIDEWALK REMOVED DURING TRENCHING SHALL BE RESTORED PER DETAILS 8 AND 9, SHEET CD-2 AND THE SPECIAL PROVISIONS.
4. GAS MAIN AND LATERAL LOCATIONS WERE TAKEN FROM PG&E MAPS AND NOT VERIFIED IN THE FIELD. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY AFTER DISCOVERING ANY CONFLICTS WITH THE PROPOSED IMPROVEMENTS.
5. EXISTING MANHOLE NUMBERING CORRESPONDS TO CURRENT GIS FACILITY IDS.
6. SIZE AND MATERIAL OF EXISTING SEWER LATERALS ARE UNKNOWN (ASSUMED TO BE 4-INCH DIAMETER LATERALS). CONTRACTOR SHALL POT-HOLE AND VERIFY SIZE AND MATERIAL OF EACH LATERAL WITHIN THE PROJECT LIMITS PRIOR TO ORDERING PIPING AND COUPLINGS.
7. ALL NEW SEWER LATERAL PIPING SHALL BE SDR-26 PVC AND SHALL MATCH THE DIAMETER OF THE EXISTING LATERAL TO BE RE-CONNECTED TO THE NEW SEWER MAIN.

LEGEND

PH# POT-HOLE LOCATION

POT-HOLE INFORMATION

PH#	UTILITY	MATERIAL	DEPTH	ROADWAY SECTION
1	8" SEWER SIPHON	VCP	75" TO TOP OF PIPE	6" AC / 11" AB
2	18" WATER 2" GAS	CONC/STEEL STEEL	47" TO TOP OF PIPE 35" TO TOP OF PIPE	6" AC / 11" AB

EXISTING UTILITIES

APPROXIMATE LOCATIONS ARE GIVEN FOR EXISTING UTILITIES. CONTRACTOR ASSUMES RESPONSIBILITY FOR VERIFYING SUBSTRUCTURE LOCATIONS BY POT-HOLING AND USE OF HAND TOOLS BEFORE TRENCHING. CALL UNDERGROUND SERVICE ALERT (USA) 2 WORKING DAYS IN ADVANCE PRIOR TO ANY CONSTRUCTION AT 800-642-2444.

Drawn: 6/13/2019, 10:47 AM, Drawn: 6/13/2019, 10:47 AM, 6/13/2019, 10:47 AM

NO.	DATE	DESCRIPTION	BY
1	5/2/19	CONFORMED SET	AB



REGISTERED CIVIL ENGINEER
APRIL 12, 2019
PLANS APPROVAL DATE
CITY OF VACAVILLE
DEPARTMENT OF PUBLIC WORKS
500 MERCHANT STREET
VACAVILLE, CA 95688

APPROVED BY:
APPROVED ON TITLE SHEET
SHAWN L. CUNNINGHAM R.C.E. 51420
DIRECTOR OF PUBLIC WORKS

RECOMMENDED APPROVAL BY:
APPROVED ON TITLE SHEET
TIMOTHY F. BURKE R.C.E. 52989
ASSISTANT DIRECTOR OF PUBLIC WORKS

DRAWN BY: RV/AB
DESIGN BY: RV/AB
QUANTITIES BY: RV/AB
SCALE: HORIZONTAL: 1"=20'
VERTICAL: 1"=2'

CHECKED BY: AB/TR
CHECKED BY: AB/TR
CHECKED BY: AB
CITY OF VACAVILLE
DEPARTMENT OF PUBLIC WORKS



BUCK AVENUE SEWER REHABILITATION PROJECT
CAMELIA WAY SEWER PLAN AND PROFILE
PP-1
Level of Submission: FINAL
CIP: 947
Project Account: 850096
DISSEMINATED PRINTS BEARING DATE PLOTTED: 05/07/19
SHEET 3 OF 7

APPENDIX C

AIR QUALITY AND GHG MODEL RUNS

Oak Grove Apartments Project - Solano-Sacramento County, Annual

Oak Grove Apartments Project

Solano-Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	67.00	Dwelling Unit	2.11	73,785.00	192

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	56
Climate Zone	4			Operational Year	2023
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 - Project Description

Demolition -

Grading -

Vehicle Trips - 30% reduction for affordable housing.

Woodstoves - No fireplaces or woodstoves.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Oak Grove Apartments Project - Solano-Sacramento County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
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tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	4,558.40	0.00
tblFireplaces	NumberGas	36.85	0.00
tblFireplaces	NumberNoFireplace	6.70	0.00
tblFireplaces	NumberWood	23.45	0.00
tblFleetMix	HHD	0.05	0.02
tblFleetMix	LDA	0.59	0.57
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT2	0.17	0.18
tblFleetMix	LHD1	0.02	0.02
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Oak Grove Apartments Project - Solano-Sacramento County, Annual

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Oak Grove Apartments Project - Solano-Sacramento County, Annual

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Oak Grove Apartments Project - Solano-Sacramento County, Annual

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tblVehicleEF	HHD	2.26	5.3000e-003
tblVehicleEF	HHD	5,388.64	1,039.23
tblVehicleEF	HHD	1,509.52	1,409.20
tblVehicleEF	HHD	6.25	0.04
tblVehicleEF	HHD	15.91	5.34
tblVehicleEF	HHD	1.82	2.66
tblVehicleEF	HHD	20.12	2.36
tblVehicleEF	HHD	5.8150e-003	2.6000e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8940e-003	0.02
tblVehicleEF	HHD	6.0000e-005	0.00
tblVehicleEF	HHD	5.5640e-003	2.5000e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9170e-003	8.9000e-003
tblVehicleEF	HHD	5.6390e-003	0.02
tblVehicleEF	HHD	5.5000e-005	0.00
tblVehicleEF	HHD	2.0000e-005	0.00
tblVehicleEF	HHD	3.2580e-003	1.0000e-004
tblVehicleEF	HHD	0.57	0.42
tblVehicleEF	HHD	1.0000e-005	0.00
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	2.4700e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.05	9.7000e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.0000e-004	0.00

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tblVehicleEF	HHD	2.0000e-005	0.00
tblVehicleEF	HHD	3.2580e-003	1.0000e-004
tblVehicleEF	HHD	0.65	0.49
tblVehicleEF	HHD	1.0000e-005	0.00
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	2.4700e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	LDA	3.6200e-003	1.8000e-003
tblVehicleEF	LDA	5.2610e-003	0.05
tblVehicleEF	LDA	0.48	0.52
tblVehicleEF	LDA	1.17	2.15
tblVehicleEF	LDA	249.06	239.59
tblVehicleEF	LDA	55.13	50.81
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.17
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	1.7390e-003	1.3000e-003
tblVehicleEF	LDA	2.3030e-003	1.7000e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	1.6020e-003	1.2000e-003
tblVehicleEF	LDA	2.1180e-003	1.6000e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	9.1120e-003	6.6000e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.21

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tblVehicleEF	LDA	2.4930e-003	2.4000e-003
tblVehicleEF	LDA	5.7100e-004	5.0000e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.6000e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.0830e-003	1.8000e-003
tblVehicleEF	LDA	4.3130e-003	0.05
tblVehicleEF	LDA	0.57	0.52
tblVehicleEF	LDA	0.92	2.15
tblVehicleEF	LDA	270.44	239.59
tblVehicleEF	LDA	55.13	50.81
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	1.7390e-003	1.3000e-003
tblVehicleEF	LDA	2.3030e-003	1.7000e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	1.6020e-003	1.2000e-003
tblVehicleEF	LDA	2.1180e-003	1.6000e-003
tblVehicleEF	LDA	0.08	0.04
tblVehicleEF	LDA	0.11	0.09
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	0.01	6.6000e-003
tblVehicleEF	LDA	0.03	0.03

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tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.7080e-003	2.4000e-003
tblVehicleEF	LDA	5.6700e-004	5.0000e-004
tblVehicleEF	LDA	0.08	0.04
tblVehicleEF	LDA	0.11	0.09
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	0.01	9.6000e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.06	0.23
tblVehicleEF	LDA	3.4830e-003	1.8000e-003
tblVehicleEF	LDA	6.2410e-003	0.05
tblVehicleEF	LDA	0.46	0.52
tblVehicleEF	LDA	1.44	2.15
tblVehicleEF	LDA	244.68	239.59
tblVehicleEF	LDA	55.13	50.81
tblVehicleEF	LDA	0.05	0.03
tblVehicleEF	LDA	0.08	0.17
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	1.7390e-003	1.3000e-003
tblVehicleEF	LDA	2.3030e-003	1.7000e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	1.6020e-003	1.2000e-003
tblVehicleEF	LDA	2.1180e-003	1.6000e-003
tblVehicleEF	LDA	9.2250e-003	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	7.2270e-003	0.04
tblVehicleEF	LDA	8.7740e-003	6.6000e-003

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tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.21
tblVehicleEF	LDA	2.4490e-003	2.4000e-003
tblVehicleEF	LDA	5.7600e-004	5.0000e-004
tblVehicleEF	LDA	9.2250e-003	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	7.2270e-003	0.04
tblVehicleEF	LDA	0.01	9.6000e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDT1	8.5530e-003	3.8000e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.00	0.87
tblVehicleEF	LDT1	2.84	2.34
tblVehicleEF	LDT1	311.56	287.73
tblVehicleEF	LDT1	68.99	61.75
tblVehicleEF	LDT1	0.11	0.07
tblVehicleEF	LDT1	0.16	0.24
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	2.3590e-003	1.7000e-003
tblVehicleEF	LDT1	3.2330e-003	2.2000e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.1720e-003	1.5000e-003
tblVehicleEF	LDT1	2.9730e-003	2.0000e-003
tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.26	0.18
tblVehicleEF	LDT1	0.08	0.08

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tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.17	0.08
tblVehicleEF	LDT1	0.19	0.32
tblVehicleEF	LDT1	3.1260e-003	2.8000e-003
tblVehicleEF	LDT1	7.4000e-004	6.0000e-004
tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.26	0.18
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.17	0.08
tblVehicleEF	LDT1	0.21	0.35
tblVehicleEF	LDT1	9.5630e-003	3.8000e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.18	0.87
tblVehicleEF	LDT1	2.23	2.34
tblVehicleEF	LDT1	337.37	287.73
tblVehicleEF	LDT1	68.99	61.75
tblVehicleEF	LDT1	0.10	0.07
tblVehicleEF	LDT1	0.14	0.24
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	2.3590e-003	1.7000e-003
tblVehicleEF	LDT1	3.2330e-003	2.2000e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.1720e-003	1.5000e-003
tblVehicleEF	LDT1	2.9730e-003	2.0000e-003
tblVehicleEF	LDT1	0.25	0.09
tblVehicleEF	LDT1	0.31	0.18

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tblVehicleEF	LDT1	0.18	0.08
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.16	0.32
tblVehicleEF	LDT1	3.3870e-003	2.8000e-003
tblVehicleEF	LDT1	7.2900e-004	6.0000e-004
tblVehicleEF	LDT1	0.25	0.09
tblVehicleEF	LDT1	0.31	0.18
tblVehicleEF	LDT1	0.18	0.08
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.17	0.35
tblVehicleEF	LDT1	8.3070e-003	3.8000e-003
tblVehicleEF	LDT1	0.02	0.07
tblVehicleEF	LDT1	0.99	0.87
tblVehicleEF	LDT1	3.53	2.34
tblVehicleEF	LDT1	306.25	287.73
tblVehicleEF	LDT1	68.99	61.75
tblVehicleEF	LDT1	0.12	0.07
tblVehicleEF	LDT1	0.18	0.24
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	2.3590e-003	1.7000e-003
tblVehicleEF	LDT1	3.2330e-003	2.2000e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.1720e-003	1.5000e-003
tblVehicleEF	LDT1	2.9730e-003	2.0000e-003
tblVehicleEF	LDT1	0.03	0.09

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tblVehicleEF	LDT1	0.27	0.18
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.21	0.08
tblVehicleEF	LDT1	0.23	0.32
tblVehicleEF	LDT1	3.0730e-003	2.8000e-003
tblVehicleEF	LDT1	7.5200e-004	6.0000e-004
tblVehicleEF	LDT1	0.03	0.09
tblVehicleEF	LDT1	0.27	0.18
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.21	0.08
tblVehicleEF	LDT1	0.25	0.35
tblVehicleEF	LDT2	5.0900e-003	2.9000e-003
tblVehicleEF	LDT2	6.8920e-003	0.06
tblVehicleEF	LDT2	0.63	0.70
tblVehicleEF	LDT2	1.50	2.74
tblVehicleEF	LDT2	350.59	307.00
tblVehicleEF	LDT2	77.29	66.18
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.11	0.26
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	1.7480e-003	1.3000e-003
tblVehicleEF	LDT2	2.3380e-003	1.7000e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	1.6080e-003	1.2000e-003
tblVehicleEF	LDT2	2.1490e-003	1.6000e-003

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tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.05
tblVehicleEF	LDT2	0.09	0.29
tblVehicleEF	LDT2	3.5100e-003	3.0000e-003
tblVehicleEF	LDT2	7.9800e-004	7.0000e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.05
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.7340e-003	2.9000e-003
tblVehicleEF	LDT2	5.6500e-003	0.06
tblVehicleEF	LDT2	0.75	0.70
tblVehicleEF	LDT2	1.19	2.74
tblVehicleEF	LDT2	380.18	307.00
tblVehicleEF	LDT2	77.29	66.18
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.26
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	1.7480e-003	1.3000e-003
tblVehicleEF	LDT2	2.3380e-003	1.7000e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	1.6080e-003	1.2000e-003

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tblVehicleEF	LDT2	2.1490e-003	1.6000e-003
tblVehicleEF	LDT2	0.10	0.06
tblVehicleEF	LDT2	0.13	0.12
tblVehicleEF	LDT2	0.09	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.08	0.29
tblVehicleEF	LDT2	3.8070e-003	3.0000e-003
tblVehicleEF	LDT2	7.9300e-004	7.0000e-004
tblVehicleEF	LDT2	0.10	0.06
tblVehicleEF	LDT2	0.13	0.12
tblVehicleEF	LDT2	0.09	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.08	0.32
tblVehicleEF	LDT2	4.8950e-003	2.9000e-003
tblVehicleEF	LDT2	8.1790e-003	0.06
tblVehicleEF	LDT2	0.61	0.70
tblVehicleEF	LDT2	1.85	2.74
tblVehicleEF	LDT2	344.50	307.00
tblVehicleEF	LDT2	77.29	66.18
tblVehicleEF	LDT2	0.08	0.06
tblVehicleEF	LDT2	0.13	0.26
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	1.7480e-003	1.3000e-003
tblVehicleEF	LDT2	2.3380e-003	1.7000e-003
tblVehicleEF	LDT2	0.02	0.02

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tblVehicleEF	LDT2	1.6080e-003	1.2000e-003
tblVehicleEF	LDT2	2.1490e-003	1.6000e-003
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.08	0.05
tblVehicleEF	LDT2	0.11	0.29
tblVehicleEF	LDT2	3.4490e-003	3.0000e-003
tblVehicleEF	LDT2	8.0400e-004	7.0000e-004
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.05
tblVehicleEF	LDT2	0.12	0.32
tblVehicleEF	LHD1	4.8180e-003	4.8000e-003
tblVehicleEF	LHD1	0.02	8.4000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.19	0.77
tblVehicleEF	LHD1	2.43	0.99
tblVehicleEF	LHD1	9.31	9.11
tblVehicleEF	LHD1	684.49	776.98
tblVehicleEF	LHD1	28.50	10.85
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	1.83	0.94

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tblVehicleEF	LHD1	0.92	0.30
tblVehicleEF	LHD1	1.0370e-003	9.0000e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.9000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.8500e-004	2.0000e-004
tblVehicleEF	LHD1	9.9200e-004	9.0000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5670e-003	2.5000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.1400e-004	2.0000e-004
tblVehicleEF	LHD1	2.5700e-003	1.8000e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.2770e-003	1.0000e-003
tblVehicleEF	LHD1	0.15	0.10
tblVehicleEF	LHD1	0.33	0.20
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD1	9.3000e-005	1.0000e-004
tblVehicleEF	LHD1	6.7040e-003	7.6000e-003
tblVehicleEF	LHD1	3.3100e-004	1.0000e-004
tblVehicleEF	LHD1	2.5700e-003	1.8000e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.2770e-003	1.0000e-003
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.33	0.20

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tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	4.8180e-003	4.8000e-003
tblVehicleEF	LHD1	0.02	8.4000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.22	0.77
tblVehicleEF	LHD1	2.24	0.99
tblVehicleEF	LHD1	9.31	9.11
tblVehicleEF	LHD1	684.49	776.98
tblVehicleEF	LHD1	28.50	10.85
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	1.73	0.94
tblVehicleEF	LHD1	0.86	0.30
tblVehicleEF	LHD1	1.0370e-003	9.0000e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.9000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.8500e-004	2.0000e-004
tblVehicleEF	LHD1	9.9200e-004	9.0000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5670e-003	2.5000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.1400e-004	2.0000e-004
tblVehicleEF	LHD1	6.0450e-003	1.8000e-003
tblVehicleEF	LHD1	0.12	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.9690e-003	1.0000e-003

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tblVehicleEF	LHD1	0.15	0.10
tblVehicleEF	LHD1	0.32	0.20
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.3000e-005	1.0000e-004
tblVehicleEF	LHD1	6.7050e-003	7.6000e-003
tblVehicleEF	LHD1	3.2700e-004	1.0000e-004
tblVehicleEF	LHD1	6.0450e-003	1.8000e-003
tblVehicleEF	LHD1	0.12	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.9690e-003	1.0000e-003
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.32	0.20
tblVehicleEF	LHD1	0.25	0.08
tblVehicleEF	LHD1	4.8180e-003	4.8000e-003
tblVehicleEF	LHD1	0.02	8.4000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.17	0.77
tblVehicleEF	LHD1	2.70	0.99
tblVehicleEF	LHD1	9.31	9.11
tblVehicleEF	LHD1	684.49	776.98
tblVehicleEF	LHD1	28.50	10.85
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	1.87	0.94
tblVehicleEF	LHD1	1.00	0.30
tblVehicleEF	LHD1	1.0370e-003	9.0000e-004
tblVehicleEF	LHD1	0.08	0.08

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tblVehicleEF	LHD1	0.01	9.9000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.8500e-004	2.0000e-004
tblVehicleEF	LHD1	9.9200e-004	9.0000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5670e-003	2.5000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.1400e-004	2.0000e-004
tblVehicleEF	LHD1	7.5600e-004	1.8000e-003
tblVehicleEF	LHD1	0.11	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	3.6800e-004	1.0000e-003
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.37	0.20
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.3000e-005	1.0000e-004
tblVehicleEF	LHD1	6.7040e-003	7.6000e-003
tblVehicleEF	LHD1	3.3600e-004	1.0000e-004
tblVehicleEF	LHD1	7.5600e-004	1.8000e-003
tblVehicleEF	LHD1	0.11	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	3.6800e-004	1.0000e-003
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.37	0.20
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD2	3.2520e-003	2.9000e-003
tblVehicleEF	LHD2	7.9390e-003	6.9000e-003

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tblVehicleEF	LHD2	6.6760e-003	7.3000e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.62	0.64
tblVehicleEF	LHD2	1.08	0.55
tblVehicleEF	LHD2	14.35	14.31
tblVehicleEF	LHD2	709.33	754.66
tblVehicleEF	LHD2	22.79	7.04
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.07	0.98
tblVehicleEF	LHD2	0.45	0.17
tblVehicleEF	LHD2	1.3010e-003	1.5000e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6600e-004	1.0000e-004
tblVehicleEF	LHD2	1.2450e-003	1.4000e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.7030e-003	2.7000e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.3600e-004	1.0000e-004
tblVehicleEF	LHD2	7.7700e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.2600e-004	5.0000e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.04

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tblVehicleEF	LHD2	1.4000e-004	1.0000e-004
tblVehicleEF	LHD2	6.8930e-003	7.3000e-003
tblVehicleEF	LHD2	2.4700e-004	1.0000e-004
tblVehicleEF	LHD2	7.7700e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.2600e-004	5.0000e-004
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.2520e-003	2.9000e-003
tblVehicleEF	LHD2	8.0460e-003	6.9000e-003
tblVehicleEF	LHD2	6.3020e-003	7.3000e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.63	0.64
tblVehicleEF	LHD2	1.00	0.55
tblVehicleEF	LHD2	14.35	14.31
tblVehicleEF	LHD2	709.33	754.66
tblVehicleEF	LHD2	22.79	7.04
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.01	0.98
tblVehicleEF	LHD2	0.42	0.17
tblVehicleEF	LHD2	1.3010e-003	1.5000e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6600e-004	1.0000e-004

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tblVehicleEF	LHD2	1.2450e-003	1.4000e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.7030e-003	2.7000e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.3600e-004	1.0000e-004
tblVehicleEF	LHD2	1.7990e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	9.7100e-004	5.0000e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.4000e-004	1.0000e-004
tblVehicleEF	LHD2	6.8930e-003	7.3000e-003
tblVehicleEF	LHD2	2.4600e-004	1.0000e-004
tblVehicleEF	LHD2	1.7990e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	9.7100e-004	5.0000e-004
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	3.2520e-003	2.9000e-003
tblVehicleEF	LHD2	7.8260e-003	6.9000e-003
tblVehicleEF	LHD2	7.1150e-003	7.3000e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.62	0.64

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tblVehicleEF	LHD2	1.18	0.55
tblVehicleEF	LHD2	14.35	14.31
tblVehicleEF	LHD2	709.33	754.66
tblVehicleEF	LHD2	22.79	7.04
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.09	0.98
tblVehicleEF	LHD2	0.48	0.17
tblVehicleEF	LHD2	1.3010e-003	1.5000e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6600e-004	1.0000e-004
tblVehicleEF	LHD2	1.2450e-003	1.4000e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.7030e-003	2.7000e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.3600e-004	1.0000e-004
tblVehicleEF	LHD2	2.5400e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.3000e-004	5.0000e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	1.4000e-004	1.0000e-004
tblVehicleEF	LHD2	6.8930e-003	7.3000e-003
tblVehicleEF	LHD2	2.4900e-004	1.0000e-004

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tblVehicleEF	LHD2	2.5400e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.3000e-004	5.0000e-004
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	MCY	0.47	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	22.14	20.00
tblVehicleEF	MCY	10.23	9.07
tblVehicleEF	MCY	180.28	213.40
tblVehicleEF	MCY	46.50	61.71
tblVehicleEF	MCY	1.20	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1180e-003	2.0000e-003
tblVehicleEF	MCY	3.8850e-003	3.0000e-003
tblVehicleEF	MCY	5.0400e-003	5.0000e-003
tblVehicleEF	MCY	1.9830e-003	1.9000e-003
tblVehicleEF	MCY	3.6660e-003	2.8000e-003
tblVehicleEF	MCY	1.01	0.89
tblVehicleEF	MCY	0.82	0.75
tblVehicleEF	MCY	0.55	0.56
tblVehicleEF	MCY	2.44	2.29
tblVehicleEF	MCY	0.58	0.56
tblVehicleEF	MCY	2.27	1.98

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tblVehicleEF	MCY	2.2350e-003	2.1000e-003
tblVehicleEF	MCY	6.9900e-004	6.0000e-004
tblVehicleEF	MCY	1.01	0.89
tblVehicleEF	MCY	0.82	0.75
tblVehicleEF	MCY	0.55	0.56
tblVehicleEF	MCY	3.01	2.82
tblVehicleEF	MCY	0.58	0.56
tblVehicleEF	MCY	2.47	2.15
tblVehicleEF	MCY	0.46	0.34
tblVehicleEF	MCY	0.14	0.26
tblVehicleEF	MCY	21.52	20.00
tblVehicleEF	MCY	9.00	9.07
tblVehicleEF	MCY	180.28	213.40
tblVehicleEF	MCY	46.50	61.71
tblVehicleEF	MCY	1.03	1.16
tblVehicleEF	MCY	0.29	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1180e-003	2.0000e-003
tblVehicleEF	MCY	3.8850e-003	3.0000e-003
tblVehicleEF	MCY	5.0400e-003	5.0000e-003
tblVehicleEF	MCY	1.9830e-003	1.9000e-003
tblVehicleEF	MCY	3.6660e-003	2.8000e-003
tblVehicleEF	MCY	2.69	0.89
tblVehicleEF	MCY	1.15	0.75
tblVehicleEF	MCY	1.67	0.56
tblVehicleEF	MCY	2.35	2.29
tblVehicleEF	MCY	0.55	0.56

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tblVehicleEF	MCY	1.88	1.98
tblVehicleEF	MCY	2.2220e-003	2.1000e-003
tblVehicleEF	MCY	6.6700e-004	6.0000e-004
tblVehicleEF	MCY	2.69	0.89
tblVehicleEF	MCY	1.15	0.75
tblVehicleEF	MCY	1.67	0.56
tblVehicleEF	MCY	2.90	2.82
tblVehicleEF	MCY	0.55	0.56
tblVehicleEF	MCY	2.05	2.15
tblVehicleEF	MCY	0.50	0.34
tblVehicleEF	MCY	0.20	0.26
tblVehicleEF	MCY	24.75	20.00
tblVehicleEF	MCY	12.30	9.07
tblVehicleEF	MCY	180.28	213.40
tblVehicleEF	MCY	46.50	61.71
tblVehicleEF	MCY	1.31	1.16
tblVehicleEF	MCY	0.35	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1180e-003	2.0000e-003
tblVehicleEF	MCY	3.8850e-003	3.0000e-003
tblVehicleEF	MCY	5.0400e-003	5.0000e-003
tblVehicleEF	MCY	1.9830e-003	1.9000e-003
tblVehicleEF	MCY	3.6660e-003	2.8000e-003
tblVehicleEF	MCY	0.17	0.89
tblVehicleEF	MCY	0.89	0.75
tblVehicleEF	MCY	0.10	0.56
tblVehicleEF	MCY	2.60	2.29

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tblVehicleEF	MCY	0.68	0.56
tblVehicleEF	MCY	2.79	1.98
tblVehicleEF	MCY	2.2820e-003	2.1000e-003
tblVehicleEF	MCY	7.4900e-004	6.0000e-004
tblVehicleEF	MCY	0.17	0.89
tblVehicleEF	MCY	0.89	0.75
tblVehicleEF	MCY	0.10	0.56
tblVehicleEF	MCY	3.19	2.82
tblVehicleEF	MCY	0.68	0.56
tblVehicleEF	MCY	3.04	2.15
tblVehicleEF	MDV	9.5200e-003	3.8000e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.98	0.82
tblVehicleEF	MDV	3.06	3.10
tblVehicleEF	MDV	477.60	379.50
tblVehicleEF	MDV	105.03	81.06
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.27	0.32
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	1.8010e-003	1.5000e-003
tblVehicleEF	MDV	2.4620e-003	1.8000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.6590e-003	1.3000e-003
tblVehicleEF	MDV	2.2640e-003	1.7000e-003
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.06	0.08

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tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.12	0.06
tblVehicleEF	MDV	0.23	0.38
tblVehicleEF	MDV	4.7800e-003	3.8000e-003
tblVehicleEF	MDV	1.1040e-003	8.0000e-004
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.06
tblVehicleEF	MDV	0.26	0.42
tblVehicleEF	MDV	0.01	3.8000e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.17	0.82
tblVehicleEF	MDV	2.42	3.10
tblVehicleEF	MDV	516.76	379.50
tblVehicleEF	MDV	105.03	81.06
tblVehicleEF	MDV	0.12	0.08
tblVehicleEF	MDV	0.24	0.32
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	1.8010e-003	1.5000e-003
tblVehicleEF	MDV	2.4620e-003	1.8000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.6590e-003	1.3000e-003
tblVehicleEF	MDV	2.2640e-003	1.7000e-003
tblVehicleEF	MDV	0.16	0.07
tblVehicleEF	MDV	0.21	0.15

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tblVehicleEF	MDV	0.14	0.08
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.19	0.38
tblVehicleEF	MDV	5.1740e-003	3.8000e-003
tblVehicleEF	MDV	1.0930e-003	8.0000e-004
tblVehicleEF	MDV	0.16	0.07
tblVehicleEF	MDV	0.21	0.15
tblVehicleEF	MDV	0.14	0.08
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.21	0.42
tblVehicleEF	MDV	9.1910e-003	3.8000e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.96	0.82
tblVehicleEF	MDV	3.79	3.10
tblVehicleEF	MDV	469.55	379.50
tblVehicleEF	MDV	105.03	81.06
tblVehicleEF	MDV	0.15	0.08
tblVehicleEF	MDV	0.30	0.32
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	1.8010e-003	1.5000e-003
tblVehicleEF	MDV	2.4620e-003	1.8000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.6590e-003	1.3000e-003
tblVehicleEF	MDV	2.2640e-003	1.7000e-003
tblVehicleEF	MDV	0.02	0.07

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tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.14	0.06
tblVehicleEF	MDV	0.28	0.38
tblVehicleEF	MDV	4.6990e-003	3.8000e-003
tblVehicleEF	MDV	1.1170e-003	8.0000e-004
tblVehicleEF	MDV	0.02	0.07
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.14	0.06
tblVehicleEF	MDV	0.30	0.42
tblVehicleEF	MH	0.03	9.3000e-003
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.18	0.85
tblVehicleEF	MH	5.81	1.96
tblVehicleEF	MH	1,228.74	1,512.95
tblVehicleEF	MH	59.90	17.73
tblVehicleEF	MH	1.50	1.52
tblVehicleEF	MH	0.87	0.24
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0780e-003	2.0000e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2140e-003	3.3000e-003

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tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.9100e-004	2.0000e-004
tblVehicleEF	MH	0.93	0.58
tblVehicleEF	MH	0.08	0.05
tblVehicleEF	MH	0.33	0.23
tblVehicleEF	MH	0.10	0.07
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	7.0000e-004	2.0000e-004
tblVehicleEF	MH	0.93	0.58
tblVehicleEF	MH	0.08	0.05
tblVehicleEF	MH	0.33	0.23
tblVehicleEF	MH	0.14	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.03	9.3000e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.28	0.85
tblVehicleEF	MH	5.22	1.96
tblVehicleEF	MH	1,228.74	1,512.95
tblVehicleEF	MH	59.90	17.73
tblVehicleEF	MH	1.40	1.52
tblVehicleEF	MH	0.81	0.24
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03

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tblVehicleEF	MH	1.0780e-003	2.0000e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2140e-003	3.3000e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.9100e-004	2.0000e-004
tblVehicleEF	MH	2.19	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.79	0.23
tblVehicleEF	MH	0.11	0.07
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.31	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9000e-004	2.0000e-004
tblVehicleEF	MH	2.19	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.79	0.23
tblVehicleEF	MH	0.15	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.03	9.3000e-003
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.09	0.85
tblVehicleEF	MH	6.55	1.96
tblVehicleEF	MH	1,228.74	1,512.95
tblVehicleEF	MH	59.90	17.73
tblVehicleEF	MH	1.56	1.52
tblVehicleEF	MH	0.94	0.24

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tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0780e-003	2.0000e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2140e-003	3.3000e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.9100e-004	2.0000e-004
tblVehicleEF	MH	0.27	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.10	0.23
tblVehicleEF	MH	0.10	0.07
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.37	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	7.1300e-004	2.0000e-004
tblVehicleEF	MH	0.27	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.10	0.23
tblVehicleEF	MH	0.13	0.08
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.40	0.10
tblVehicleEF	MHD	0.02	4.0000e-003
tblVehicleEF	MHD	6.8630e-003	2.1000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.42	0.43
tblVehicleEF	MHD	0.49	0.27

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tblVehicleEF	MHD	7.35	1.19
tblVehicleEF	MHD	113.68	84.01
tblVehicleEF	MHD	1,200.34	1,109.33
tblVehicleEF	MHD	70.97	10.07
tblVehicleEF	MHD	0.32	0.52
tblVehicleEF	MHD	1.11	1.47
tblVehicleEF	MHD	8.67	1.66
tblVehicleEF	MHD	1.2800e-004	5.0000e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	3.1720e-003	7.2000e-003
tblVehicleEF	MHD	1.0480e-003	1.0000e-004
tblVehicleEF	MHD	1.2200e-004	5.0000e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0240e-003	6.9000e-003
tblVehicleEF	MHD	9.6300e-004	1.0000e-004
tblVehicleEF	MHD	1.2090e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	6.1800e-004	2.0000e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.44	0.05
tblVehicleEF	MHD	1.0990e-003	8.0000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	8.3800e-004	1.0000e-004
tblVehicleEF	MHD	1.2090e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02

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tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	6.1800e-004	2.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.48	0.06
tblVehicleEF	MHD	0.01	4.0000e-003
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tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.29	0.43
tblVehicleEF	MHD	0.50	0.27
tblVehicleEF	MHD	6.73	1.19
tblVehicleEF	MHD	120.59	84.01
tblVehicleEF	MHD	1,200.34	1,109.33
tblVehicleEF	MHD	70.97	10.07
tblVehicleEF	MHD	0.33	0.52
tblVehicleEF	MHD	1.05	1.47
tblVehicleEF	MHD	8.60	1.66
tblVehicleEF	MHD	1.0800e-004	5.0000e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	3.1720e-003	7.2000e-003
tblVehicleEF	MHD	1.0480e-003	1.0000e-004
tblVehicleEF	MHD	1.0300e-004	5.0000e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0240e-003	6.9000e-003
tblVehicleEF	MHD	9.6300e-004	1.0000e-004
tblVehicleEF	MHD	2.8930e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02

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tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.4930e-003	2.0000e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.41	0.05
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tblVehicleEF	MHD	8.2800e-004	1.0000e-004
tblVehicleEF	MHD	2.8930e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	1.4930e-003	2.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.45	0.06
tblVehicleEF	MHD	0.02	4.0000e-003
tblVehicleEF	MHD	6.6670e-003	2.1000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.55	0.43
tblVehicleEF	MHD	0.48	0.27
tblVehicleEF	MHD	8.16	1.19
tblVehicleEF	MHD	104.56	84.01
tblVehicleEF	MHD	1,200.34	1,109.33
tblVehicleEF	MHD	70.97	10.07
tblVehicleEF	MHD	0.30	0.52
tblVehicleEF	MHD	1.14	1.47
tblVehicleEF	MHD	8.76	1.66

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tblVehicleEF	MHD	1.5500e-004	5.0000e-004
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tblVehicleEF	MHD	3.1720e-003	7.2000e-003
tblVehicleEF	MHD	1.0480e-003	1.0000e-004
tblVehicleEF	MHD	1.4900e-004	5.0000e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0240e-003	6.9000e-003
tblVehicleEF	MHD	9.6300e-004	1.0000e-004
tblVehicleEF	MHD	3.4900e-004	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.7500e-004	2.0000e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.47	0.05
tblVehicleEF	MHD	1.0140e-003	8.0000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	8.5200e-004	1.0000e-004
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tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.51	0.06
tblVehicleEF	OBUS	0.01	8.8000e-003
tblVehicleEF	OBUS	6.9350e-003	9.0000e-003

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tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.24	0.50
tblVehicleEF	OBUS	0.50	0.98
tblVehicleEF	OBUS	5.39	2.88
tblVehicleEF	OBUS	164.62	65.66
tblVehicleEF	OBUS	1,310.12	1,496.24
tblVehicleEF	OBUS	62.12	21.75
tblVehicleEF	OBUS	0.38	0.23
tblVehicleEF	OBUS	1.05	1.13
tblVehicleEF	OBUS	4.22	0.68
tblVehicleEF	OBUS	3.5000e-005	1.0000e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	2.9720e-003	6.1000e-003
tblVehicleEF	OBUS	7.6100e-004	2.0000e-004
tblVehicleEF	OBUS	3.3000e-005	1.0000e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	2.8290e-003	5.8000e-003
tblVehicleEF	OBUS	7.0000e-004	2.0000e-004
tblVehicleEF	OBUS	1.3180e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	5.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.33	0.14
tblVehicleEF	OBUS	1.5820e-003	6.0000e-004
tblVehicleEF	OBUS	0.01	0.01

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tblVehicleEF	OBUS	7.1600e-004	2.0000e-004
tblVehicleEF	OBUS	1.3180e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	5.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.06	0.07
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.36	0.15
tblVehicleEF	OBUS	0.01	8.8000e-003
tblVehicleEF	OBUS	7.1340e-003	9.0000e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.23	0.50
tblVehicleEF	OBUS	0.51	0.98
tblVehicleEF	OBUS	4.87	2.88
tblVehicleEF	OBUS	173.50	65.66
tblVehicleEF	OBUS	1,310.12	1,496.24
tblVehicleEF	OBUS	62.12	21.75
tblVehicleEF	OBUS	0.39	0.23
tblVehicleEF	OBUS	1.00	1.13
tblVehicleEF	OBUS	4.16	0.68
tblVehicleEF	OBUS	2.9000e-005	1.0000e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	2.9720e-003	6.1000e-003
tblVehicleEF	OBUS	7.6100e-004	2.0000e-004
tblVehicleEF	OBUS	2.8000e-005	1.0000e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	2.8290e-003	5.8000e-003

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tblVehicleEF	OBUS	7.0000e-004	2.0000e-004
tblVehicleEF	OBUS	3.0540e-003	1.7000e-003
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tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.3570e-003	8.0000e-004
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.31	0.14
tblVehicleEF	OBUS	1.6660e-003	6.0000e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.0700e-004	2.0000e-004
tblVehicleEF	OBUS	3.0540e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	1.3570e-003	8.0000e-004
tblVehicleEF	OBUS	0.06	0.07
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.34	0.15
tblVehicleEF	OBUS	0.01	8.8000e-003
tblVehicleEF	OBUS	6.7320e-003	9.0000e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.26	0.50
tblVehicleEF	OBUS	0.49	0.98
tblVehicleEF	OBUS	6.01	2.88
tblVehicleEF	OBUS	152.37	65.66
tblVehicleEF	OBUS	1,310.12	1,496.24
tblVehicleEF	OBUS	62.12	21.75

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tblVehicleEF	OBUS	0.36	0.23
tblVehicleEF	OBUS	1.08	1.13
tblVehicleEF	OBUS	4.29	0.68
tblVehicleEF	OBUS	4.2000e-005	1.0000e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	2.9720e-003	6.1000e-003
tblVehicleEF	OBUS	7.6100e-004	2.0000e-004
tblVehicleEF	OBUS	4.0000e-005	1.0000e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	2.8290e-003	5.8000e-003
tblVehicleEF	OBUS	7.0000e-004	2.0000e-004
tblVehicleEF	OBUS	4.7600e-004	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	1.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	0.03	0.09
tblVehicleEF	OBUS	0.36	0.14
tblVehicleEF	OBUS	1.4650e-003	6.0000e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.2600e-004	2.0000e-004
tblVehicleEF	OBUS	4.7600e-004	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	1.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.06	0.07
tblVehicleEF	OBUS	0.03	0.09

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tblVehicleEF	OBUS	0.39	0.15
tblVehicleEF	SBUS	0.83	0.02
tblVehicleEF	SBUS	0.02	2.6000e-003
tblVehicleEF	SBUS	0.08	1.3000e-003
tblVehicleEF	SBUS	7.92	1.26
tblVehicleEF	SBUS	1.16	0.22
tblVehicleEF	SBUS	10.10	0.19
tblVehicleEF	SBUS	1,123.16	299.60
tblVehicleEF	SBUS	1,031.23	991.09
tblVehicleEF	SBUS	54.39	1.09
tblVehicleEF	SBUS	8.75	2.23
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tblVehicleEF	SBUS	8.3510e-003	1.5000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.9200e-004	0.00
tblVehicleEF	SBUS	7.9900e-003	1.5000e-003
tblVehicleEF	SBUS	2.5940e-003	2.9000e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.2000e-004	0.00
tblVehicleEF	SBUS	3.8720e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	0.94	0.09
tblVehicleEF	SBUS	1.6120e-003	0.00
tblVehicleEF	SBUS	0.11	0.04
tblVehicleEF	SBUS	0.02	1.6000e-003

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tblVehicleEF	SBUS	0.49	7.3000e-003
tblVehicleEF	SBUS	0.01	2.8000e-003
tblVehicleEF	SBUS	9.9720e-003	9.4000e-003
tblVehicleEF	SBUS	7.1800e-004	0.00
tblVehicleEF	SBUS	3.8720e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	1.36	0.12
tblVehicleEF	SBUS	1.6120e-003	0.00
tblVehicleEF	SBUS	0.14	0.05
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.54	8.0000e-003
tblVehicleEF	SBUS	0.83	0.02
tblVehicleEF	SBUS	0.02	2.6000e-003
tblVehicleEF	SBUS	0.07	1.3000e-003
tblVehicleEF	SBUS	7.81	1.26
tblVehicleEF	SBUS	1.19	0.22
tblVehicleEF	SBUS	7.27	0.19
tblVehicleEF	SBUS	1,173.95	299.60
tblVehicleEF	SBUS	1,031.23	991.09
tblVehicleEF	SBUS	54.39	1.09
tblVehicleEF	SBUS	9.03	2.23
tblVehicleEF	SBUS	3.41	2.75
tblVehicleEF	SBUS	12.35	1.56
tblVehicleEF	SBUS	7.0400e-003	1.5000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.9200e-004	0.00

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tblVehicleEF	SBUS	6.7350e-003	1.5000e-003
tblVehicleEF	SBUS	2.5940e-003	2.9000e-003
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tblVehicleEF	SBUS	8.2000e-004	0.00
tblVehicleEF	SBUS	8.9700e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	0.94	0.09
tblVehicleEF	SBUS	3.7630e-003	0.00
tblVehicleEF	SBUS	0.11	0.04
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.41	7.3000e-003
tblVehicleEF	SBUS	0.01	2.8000e-003
tblVehicleEF	SBUS	9.9730e-003	9.4000e-003
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tblVehicleEF	SBUS	8.9700e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	1.36	0.12
tblVehicleEF	SBUS	3.7630e-003	0.00
tblVehicleEF	SBUS	0.14	0.05
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.45	8.0000e-003
tblVehicleEF	SBUS	0.83	0.02
tblVehicleEF	SBUS	0.02	2.6000e-003
tblVehicleEF	SBUS	0.10	1.3000e-003
tblVehicleEF	SBUS	8.07	1.26
tblVehicleEF	SBUS	1.13	0.22
tblVehicleEF	SBUS	13.59	0.19

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tblVehicleEF	SBUS	1,053.02	299.60
tblVehicleEF	SBUS	1,031.23	991.09
tblVehicleEF	SBUS	54.39	1.09
tblVehicleEF	SBUS	8.37	2.23
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tblVehicleEF	SBUS	12.47	1.56
tblVehicleEF	SBUS	0.01	1.5000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.9200e-004	0.00
tblVehicleEF	SBUS	9.7220e-003	1.5000e-003
tblVehicleEF	SBUS	2.5940e-003	2.9000e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.2000e-004	0.00
tblVehicleEF	SBUS	1.3480e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	0.94	0.09
tblVehicleEF	SBUS	5.3900e-004	0.00
tblVehicleEF	SBUS	0.11	0.04
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.58	7.3000e-003
tblVehicleEF	SBUS	0.01	2.8000e-003
tblVehicleEF	SBUS	9.9720e-003	9.4000e-003
tblVehicleEF	SBUS	7.7500e-004	0.00
tblVehicleEF	SBUS	1.3480e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	1.36	0.12

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tblVehicleEF	SBUS	5.3900e-004	0.00
tblVehicleEF	SBUS	0.14	0.05
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.64	8.0000e-003
tblVehicleEF	UBUS	0.77	1.10
tblVehicleEF	UBUS	0.07	1.5000e-003
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tblVehicleEF	UBUS	12.61	0.25
tblVehicleEF	UBUS	1,968.87	1,559.20
tblVehicleEF	UBUS	135.63	2.75
tblVehicleEF	UBUS	6.64	0.64
tblVehicleEF	UBUS	13.28	0.03
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.11	4.9000e-003
tblVehicleEF	UBUS	1.3350e-003	0.00
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	7.2000e-003
tblVehicleEF	UBUS	0.11	4.7000e-003
tblVehicleEF	UBUS	1.2280e-003	0.00
tblVehicleEF	UBUS	5.4590e-003	1.0000e-004
tblVehicleEF	UBUS	0.10	8.0000e-004
tblVehicleEF	UBUS	2.6600e-003	1.0000e-004
tblVehicleEF	UBUS	0.60	0.02
tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	1.00	5.3000e-003
tblVehicleEF	UBUS	0.02	0.01

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tblVehicleEF	UBUS	1.5850e-003	0.00
tblVehicleEF	UBUS	5.4590e-003	1.0000e-004
tblVehicleEF	UBUS	0.10	8.0000e-004
tblVehicleEF	UBUS	2.6600e-003	1.0000e-004
tblVehicleEF	UBUS	1.42	1.12
tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	1.10	5.8000e-003
tblVehicleEF	UBUS	0.78	1.10
tblVehicleEF	UBUS	0.06	1.5000e-003
tblVehicleEF	UBUS	6.24	8.13
tblVehicleEF	UBUS	9.84	0.25
tblVehicleEF	UBUS	1,968.87	1,559.20
tblVehicleEF	UBUS	135.63	2.75
tblVehicleEF	UBUS	6.29	0.64
tblVehicleEF	UBUS	13.16	0.03
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.11	4.9000e-003
tblVehicleEF	UBUS	1.3350e-003	0.00
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	7.2000e-003
tblVehicleEF	UBUS	0.11	4.7000e-003
tblVehicleEF	UBUS	1.2280e-003	0.00
tblVehicleEF	UBUS	0.01	1.0000e-004
tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	6.1220e-003	1.0000e-004
tblVehicleEF	UBUS	0.61	0.02

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tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	0.86	5.3000e-003
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.5370e-003	0.00
tblVehicleEF	UBUS	0.01	1.0000e-004
tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	6.1220e-003	1.0000e-004
tblVehicleEF	UBUS	1.45	1.12
tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	0.95	5.8000e-003
tblVehicleEF	UBUS	0.77	1.10
tblVehicleEF	UBUS	0.09	1.5000e-003
tblVehicleEF	UBUS	6.05	8.13
tblVehicleEF	UBUS	16.19	0.25
tblVehicleEF	UBUS	1,968.87	1,559.20
tblVehicleEF	UBUS	135.63	2.75
tblVehicleEF	UBUS	6.78	0.64
tblVehicleEF	UBUS	13.41	0.03
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.11	4.9000e-003
tblVehicleEF	UBUS	1.3350e-003	0.00
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	7.2000e-003
tblVehicleEF	UBUS	0.11	4.7000e-003
tblVehicleEF	UBUS	1.2280e-003	0.00
tblVehicleEF	UBUS	1.6270e-003	1.0000e-004

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tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	9.0600e-004	1.0000e-004
tblVehicleEF	UBUS	0.58	0.02
tblVehicleEF	UBUS	0.03	1.0000e-004
tblVehicleEF	UBUS	1.17	5.3000e-003
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.6470e-003	0.00
tblVehicleEF	UBUS	1.6270e-003	1.0000e-004
tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	9.0600e-004	1.0000e-004
tblVehicleEF	UBUS	1.40	1.12
tblVehicleEF	UBUS	0.03	1.0000e-004
tblVehicleEF	UBUS	1.28	5.8000e-003
tblVehicleTrips	ST_TR	6.39	3.81
tblVehicleTrips	SU_TR	5.86	3.81
tblVehicleTrips	WD_TR	6.65	3.81
tblWoodstoves	NumberCatalytic	3.35	0.00
tblWoodstoves	NumberNoncatalytic	3.35	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	4,558.40	0.00

2.0 Emissions Summary

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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					
2022	0.0611	0.5391	0.4684	9.7000e-004	1.0127	0.0243	1.0370	0.1109	0.0230	0.1339	0.0000	83.7970	83.7970	0.0160	0.0000	84.1957
2023	0.6389	1.3579	1.4713	2.8800e-003	3.7671	0.0592	3.8263	0.3820	0.0567	0.4387	0.0000	243.6028	243.6028	0.0398	0.0000	244.5983
Maximum	0.6389	1.3579	1.4713	2.8800e-003	3.7671	0.0592	3.8263	0.3820	0.0567	0.4387	0.0000	243.6028	243.6028	0.0398	0.0000	244.5983

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					
2022	0.0611	0.5391	0.4684	9.7000e-004	0.6199	0.0243	0.6441	0.0671	0.0230	0.0901	0.0000	83.7970	83.7970	0.0160	0.0000	84.1956
2023	0.6389	1.3579	1.4713	2.8800e-003	2.3202	0.0592	2.3794	0.2373	0.0567	0.2940	0.0000	243.6025	243.6025	0.0398	0.0000	244.5981
Maximum	0.6389	1.3579	1.4713	2.8800e-003	2.3202	0.0592	2.3794	0.2373	0.0567	0.2940	0.0000	243.6025	243.6025	0.0398	0.0000	244.5981

	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
Percent Reduction	0.00	0.00	0.00	0.00	38.49	0.00	37.83	38.25	0.00	32.93	0.00	0.00	0.00	0.00	0.00	0.00

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-1-2022	12-31-2022	0.6108	0.6108
2	1-1-2023	3-31-2023	0.5176	0.5176
3	4-1-2023	6-30-2023	0.5226	0.5226
4	7-1-2023	9-30-2023	0.5513	0.5513
		Highest	0.6108	0.6108

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	0.3493	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322
Energy	3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	111.3552	111.3552	4.2300e-003	1.3200e-003	111.8541
Mobile	0.0708	0.1588	0.7858	2.4500e-003	15.1939	1.9200e-003	15.1958	1.5530	1.7900e-003	1.5548	0.0000	226.3110	226.3110	9.2500e-003	0.0000	226.5422
Waste						0.0000	0.0000		0.0000	0.0000	6.2562	0.0000	6.2562	0.3697	0.0000	15.4994
Water						0.0000	0.0000		0.0000	0.0000	1.3849	9.6737	11.0586	0.1427	3.4500e-003	15.6535
Total	0.4232	0.1912	1.2947	2.6500e-003	15.1939	6.8300e-003	15.2007	1.5530	6.7000e-003	1.5597	7.6411	348.1525	355.7936	0.5267	4.7700e-003	370.3813

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2.2 Overall Operational**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	0.3493	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322
Energy	3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	111.3552	111.3552	4.2300e-003	1.3200e-003	111.8541
Mobile	0.0654	0.1239	0.6259	1.7400e-003	10.6357	1.3900e-003	10.6371	1.0871	1.3000e-003	1.0884	0.0000	160.6549	160.6549	7.9800e-003	0.0000	160.8543
Waste						0.0000	0.0000		0.0000	0.0000	6.2562	0.0000	6.2562	0.3697	0.0000	15.4994
Water						0.0000	0.0000		0.0000	0.0000	1.3849	9.6737	11.0586	0.1427	3.4500e-003	15.6535
Total	0.4178	0.1563	1.1349	1.9400e-003	10.6357	6.3000e-003	10.6420	1.0871	6.2100e-003	1.0933	7.6411	282.4964	290.1375	0.5254	4.7700e-003	304.6934

	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
Percent Reduction	1.29	18.26	12.35	26.79	30.00	7.76	29.99	30.00	7.31	29.90	0.00	18.86	18.45	0.24	0.00	17.74

3.0 Construction Detail**Construction Phase**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/1/2022	10/28/2022	5	20	
2	Site Preparation	Site Preparation	10/29/2022	11/2/2022	5	3	
3	Grading	Grading	11/3/2022	11/10/2022	5	6	
4	Building Construction	Building Construction	11/11/2022	9/14/2023	5	220	
5	Paving	Paving	9/15/2023	9/28/2023	5	10	
6	Architectural Coating	Architectural Coating	9/29/2023	10/12/2023	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 149,415; Residential Outdoor: 49,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	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	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	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

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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
Demolition	5	13.00	0.00	11.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	175.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	48.00	7.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022**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					1.4100e-003	0.0000	1.4100e-003	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0169	0.1662	0.1396	2.4000e-004		8.3800e-003	8.3800e-003		7.8300e-003	7.8300e-003	0.0000	21.0777	21.0777	5.3700e-003	0.0000	21.2120
Total	0.0169	0.1662	0.1396	2.4000e-004	1.4100e-003	8.3800e-003	9.7900e-003	2.1000e-004	7.8300e-003	8.0400e-003	0.0000	21.0777	21.0777	5.3700e-003	0.0000	21.2120

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3.2 Demolition - 2022**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	1.2800e-003	2.4000e-004	0.0000	8.3100e-003	0.0000	8.3200e-003	8.5000e-004	0.0000	8.5000e-004	0.0000	0.4115	0.4115	2.0000e-005	0.0000	0.4118
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	3.8000e-004	2.5000e-004	2.5600e-003	1.0000e-005	0.0981	1.0000e-005	0.0981	9.9400e-003	1.0000e-005	9.9500e-003	0.0000	0.8096	0.8096	2.0000e-005	0.0000	0.8101
Total	4.2000e-004	1.5300e-003	2.8000e-003	1.0000e-005	0.1064	1.0000e-005	0.1064	0.0108	1.0000e-005	0.0108	0.0000	1.2211	1.2211	4.0000e-005	0.0000	1.2219

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					6.4000e-004	0.0000	6.4000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0169	0.1662	0.1396	2.4000e-004		8.3800e-003	8.3800e-003		7.8300e-003	7.8300e-003	0.0000	21.0777	21.0777	5.3700e-003	0.0000	21.2119
Total	0.0169	0.1662	0.1396	2.4000e-004	6.4000e-004	8.3800e-003	9.0200e-003	1.0000e-004	7.8300e-003	7.9300e-003	0.0000	21.0777	21.0777	5.3700e-003	0.0000	21.2119

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3.2 Demolition - 2022**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	1.2800e-003	2.4000e-004	0.0000	5.1200e-003	0.0000	5.1300e-003	5.3000e-004	0.0000	5.3000e-004	0.0000	0.4115	0.4115	2.0000e-005	0.0000	0.4118
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	3.8000e-004	2.5000e-004	2.5600e-003	1.0000e-005	0.0604	1.0000e-005	0.0604	6.1700e-003	1.0000e-005	6.1800e-003	0.0000	0.8096	0.8096	2.0000e-005	0.0000	0.8101
Total	4.2000e-004	1.5300e-003	2.8000e-003	1.0000e-005	0.0655	1.0000e-005	0.0655	6.7000e-003	1.0000e-005	6.7100e-003	0.0000	1.2211	1.2211	4.0000e-005	0.0000	1.2219

3.3 Site Preparation - 2022**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					2.7300e-003	0.0000	2.7300e-003	3.1000e-004	0.0000	3.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0700e-003	0.0235	0.0151	4.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	3.2321	3.2321	1.0500e-003	0.0000	3.2582
Total	2.0700e-003	0.0235	0.0151	4.0000e-005	2.7300e-003	8.9000e-004	3.6200e-003	3.1000e-004	8.2000e-004	1.1300e-003	0.0000	3.2321	3.2321	1.0500e-003	0.0000	3.2582

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3.3 Site Preparation - 2022**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	6.3000e-004	0.0204	3.8700e-003	7.0000e-005	0.1322	6.0000e-005	0.1323	0.0135	6.0000e-005	0.0135	0.0000	6.5458	6.5458	2.4000e-004	0.0000	6.5519
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	4.0000e-005	2.0000e-005	2.4000e-004	0.0000	9.0500e-003	0.0000	9.0500e-003	9.2000e-004	0.0000	9.2000e-004	0.0000	0.0747	0.0747	0.0000	0.0000	0.0748
Total	6.7000e-004	0.0204	4.1100e-003	7.0000e-005	0.1413	6.0000e-005	0.1414	0.0144	6.0000e-005	0.0144	0.0000	6.6205	6.6205	2.4000e-004	0.0000	6.6266

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					1.2300e-003	0.0000	1.2300e-003	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0700e-003	0.0235	0.0151	4.0000e-005		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	3.2321	3.2321	1.0500e-003	0.0000	3.2582
Total	2.0700e-003	0.0235	0.0151	4.0000e-005	1.2300e-003	8.9000e-004	2.1200e-003	1.4000e-004	8.2000e-004	9.6000e-004	0.0000	3.2321	3.2321	1.0500e-003	0.0000	3.2582

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3.3 Site Preparation - 2022**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	6.3000e-004	0.0204	3.8700e-003	7.0000e-005	0.0815	6.0000e-005	0.0816	8.3700e-003	6.0000e-005	8.4300e-003	0.0000	6.5458	6.5458	2.4000e-004	0.0000	6.5519
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	4.0000e-005	2.0000e-005	2.4000e-004	0.0000	5.5800e-003	0.0000	5.5800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0747	0.0747	0.0000	0.0000	0.0748
Total	6.7000e-004	0.0204	4.1100e-003	7.0000e-005	0.0871	6.0000e-005	0.0872	8.9400e-003	6.0000e-005	9.0000e-003	0.0000	6.6205	6.6205	2.4000e-004	0.0000	6.6266

3.4 Grading - 2022**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					0.0197	0.0000	0.0197	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6200e-003	0.0510	0.0277	6.0000e-005		2.2300e-003	2.2300e-003		2.0500e-003	2.0500e-003	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747
Total	4.6200e-003	0.0510	0.0277	6.0000e-005	0.0197	2.2300e-003	0.0219	0.0101	2.0500e-003	0.0122	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747

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3.4 Grading - 2022**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	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
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	9.0000e-005	6.0000e-005	5.9000e-004	0.0000	0.0226	0.0000	0.0226	2.2900e-003	0.0000	2.3000e-003	0.0000	0.1868	0.1868	0.0000	0.0000	0.1869
Total	9.0000e-005	6.0000e-005	5.9000e-004	0.0000	0.0226	0.0000	0.0226	2.2900e-003	0.0000	2.3000e-003	0.0000	0.1868	0.1868	0.0000	0.0000	0.1869

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					8.8500e-003	0.0000	8.8500e-003	4.5500e-003	0.0000	4.5500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6200e-003	0.0510	0.0277	6.0000e-005		2.2300e-003	2.2300e-003		2.0500e-003	2.0500e-003	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747
Total	4.6200e-003	0.0510	0.0277	6.0000e-005	8.8500e-003	2.2300e-003	0.0111	4.5500e-003	2.0500e-003	6.6000e-003	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747

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3.4 Grading - 2022**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	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
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	9.0000e-005	6.0000e-005	5.9000e-004	0.0000	0.0139	0.0000	0.0139	1.4200e-003	0.0000	1.4300e-003	0.0000	0.1868	0.1868	0.0000	0.0000	0.1869
Total	9.0000e-005	6.0000e-005	5.9000e-004	0.0000	0.0139	0.0000	0.0139	1.4200e-003	0.0000	1.4300e-003	0.0000	0.1868	0.1868	0.0000	0.0000	0.1869

3.5 Building Construction - 2022**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	0.0334	0.2629	0.2584	4.5000e-004		0.0126	0.0126		0.0121	0.0121	0.0000	37.3824	37.3824	7.2100e-003	0.0000	37.5627
Total	0.0334	0.2629	0.2584	4.5000e-004		0.0126	0.0126		0.0121	0.0121	0.0000	37.3824	37.3824	7.2100e-003	0.0000	37.5627

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3.5 Building Construction - 2022**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	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
Vendor	4.2000e-004	0.0120	3.2000e-003	3.0000e-005	0.0667	3.0000e-005	0.0667	6.8000e-003	3.0000e-005	6.8300e-003	0.0000	3.2649	3.2649	1.6000e-004	0.0000	3.2689
Worker	2.5600e-003	1.6500e-003	0.0170	6.0000e-005	0.6519	4.0000e-005	0.6519	0.0661	4.0000e-005	0.0661	0.0000	5.3808	5.3808	1.2000e-004	0.0000	5.3837
Total	2.9800e-003	0.0136	0.0202	9.0000e-005	0.7186	7.0000e-005	0.7187	0.0729	7.0000e-005	0.0729	0.0000	8.6457	8.6457	2.8000e-004	0.0000	8.6527

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	0.0334	0.2629	0.2584	4.5000e-004		0.0126	0.0126		0.0121	0.0121	0.0000	37.3824	37.3824	7.2100e-003	0.0000	37.5627
Total	0.0334	0.2629	0.2584	4.5000e-004		0.0126	0.0126		0.0121	0.0121	0.0000	37.3824	37.3824	7.2100e-003	0.0000	37.5627

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3.5 Building Construction - 2022**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	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
Vendor	4.2000e-004	0.0120	3.2000e-003	3.0000e-005	0.0411	3.0000e-005	0.0412	4.2400e-003	3.0000e-005	4.2700e-003	0.0000	3.2649	3.2649	1.6000e-004	0.0000	3.2689
Worker	2.5600e-003	1.6500e-003	0.0170	6.0000e-005	0.4015	4.0000e-005	0.4015	0.0410	4.0000e-005	0.0411	0.0000	5.3808	5.3808	1.2000e-004	0.0000	5.3837
Total	2.9800e-003	0.0136	0.0202	9.0000e-005	0.4426	7.0000e-005	0.4427	0.0453	7.0000e-005	0.0453	0.0000	8.6457	8.6457	2.8000e-004	0.0000	8.6527

3.5 Building Construction - 2023**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	0.1577	1.2534	1.3077	2.3000e-003		0.0565	0.0565		0.0541	0.0541	0.0000	191.0859	191.0859	0.0361	0.0000	191.9893
Total	0.1577	1.2534	1.3077	2.3000e-003		0.0565	0.0565		0.0541	0.0541	0.0000	191.0859	191.0859	0.0361	0.0000	191.9893

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3.5 Building Construction - 2023**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	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
Vendor	1.6200e-003	0.0471	0.0142	1.7000e-004	0.3409	5.0000e-005	0.3409	0.0348	5.0000e-005	0.0348	0.0000	16.2940	16.2940	6.0000e-004	0.0000	16.3089
Worker	0.0122	7.5800e-003	0.0797	2.9000e-004	3.3319	2.1000e-004	3.3321	0.3376	1.9000e-004	0.3378	0.0000	26.4415	26.4415	5.4000e-004	0.0000	26.4548
Total	0.0138	0.0547	0.0938	4.6000e-004	3.6728	2.6000e-004	3.6730	0.3724	2.4000e-004	0.3726	0.0000	42.7354	42.7354	1.1400e-003	0.0000	42.7638

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	0.1577	1.2534	1.3077	2.3000e-003		0.0565	0.0565		0.0541	0.0541	0.0000	191.0857	191.0857	0.0361	0.0000	191.9891
Total	0.1577	1.2534	1.3077	2.3000e-003		0.0565	0.0565		0.0541	0.0541	0.0000	191.0857	191.0857	0.0361	0.0000	191.9891

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3.5 Building Construction - 2023**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	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
Vendor	1.6200e-003	0.0471	0.0142	1.7000e-004	0.2102	5.0000e-005	0.2103	0.0217	5.0000e-005	0.0217	0.0000	16.2940	16.2940	6.0000e-004	0.0000	16.3089
Worker	0.0122	7.5800e-003	0.0797	2.9000e-004	2.0519	2.1000e-004	2.0521	0.2096	1.9000e-004	0.2098	0.0000	26.4415	26.4415	5.4000e-004	0.0000	26.4548
Total	0.0138	0.0547	0.0938	4.6000e-004	2.2621	2.6000e-004	2.2624	0.2313	2.4000e-004	0.2316	0.0000	42.7354	42.7354	1.1400e-003	0.0000	42.7638

3.6 Paving - 2023**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	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8179
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8179

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3.6 Paving - 2023**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	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
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	2.1000e-004	1.3000e-004	1.3500e-003	0.0000	0.0566	0.0000	0.0566	5.7300e-003	0.0000	5.7400e-003	0.0000	0.4491	0.4491	1.0000e-005	0.0000	0.4493
Total	2.1000e-004	1.3000e-004	1.3500e-003	0.0000	0.0566	0.0000	0.0566	5.7300e-003	0.0000	5.7400e-003	0.0000	0.4491	0.4491	1.0000e-005	0.0000	0.4493

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	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8178
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8178

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3.6 Paving - 2023**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	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
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	2.1000e-004	1.3000e-004	1.3500e-003	0.0000	0.0349	0.0000	0.0349	3.5600e-003	0.0000	3.5600e-003	0.0000	0.4491	0.4491	1.0000e-005	0.0000	0.4493
Total	2.1000e-004	1.3000e-004	1.3500e-003	0.0000	0.0349	0.0000	0.0349	3.5600e-003	0.0000	3.5600e-003	0.0000	0.4491	0.4491	1.0000e-005	0.0000	0.4493

3.7 Architectural Coating - 2023**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	0.4617					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	0.4627	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785

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3.7 Architectural Coating - 2023**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	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
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	1.4000e-004	9.0000e-005	9.0000e-004	0.0000	0.0377	0.0000	0.0377	3.8200e-003	0.0000	3.8300e-003	0.0000	0.2994	0.2994	1.0000e-005	0.0000	0.2995
Total	1.4000e-004	9.0000e-005	9.0000e-004	0.0000	0.0377	0.0000	0.0377	3.8200e-003	0.0000	3.8300e-003	0.0000	0.2994	0.2994	1.0000e-005	0.0000	0.2995

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	0.4617					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	0.4627	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785

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3.7 Architectural Coating - 2023**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	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
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	1.4000e-004	9.0000e-005	9.0000e-004	0.0000	0.0232	0.0000	0.0232	2.3700e-003	0.0000	2.3800e-003	0.0000	0.2994	0.2994	1.0000e-005	0.0000	0.2995
Total	1.4000e-004	9.0000e-005	9.0000e-004	0.0000	0.0232	0.0000	0.0232	2.3700e-003	0.0000	2.3800e-003	0.0000	0.2994	0.2994	1.0000e-005	0.0000	0.2995

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Increase Density

Increase Transit Accessibility

Integrate Below Market Rate Housing

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	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	0.0654	0.1239	0.6259	1.7400e-003	10.6357	1.3900e-003	10.6371	1.0871	1.3000e-003	1.0884	0.0000	160.6549	160.6549	7.9800e-003	0.0000	160.8543
Unmitigated	0.0708	0.1588	0.7858	2.4500e-003	15.1939	1.9200e-003	15.1958	1.5530	1.7900e-003	1.5548	0.0000	226.3110	226.3110	9.2500e-003	0.0000	226.5422

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	255.27	255.27	255.27	669,894	468,926
Total	255.27	255.27	255.27	669,894	468,926

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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 Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.569666	0.055696	0.181867	0.121259	0.023191	0.005512	0.010894	0.022819	0.000852	0.000912	0.005267	0.001222	0.000843

5.0 Energy Detail

Historical Energy Use: N

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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	80.4660	80.4660	3.6400e-003	7.5000e-004	80.7812
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	80.4660	80.4660	3.6400e-003	7.5000e-004	80.7812
NaturalGas Mitigated	3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	30.8893	30.8893	5.9000e-004	5.7000e-004	31.0728
NaturalGas Unmitigated	3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	30.8893	30.8893	5.9000e-004	5.7000e-004	31.0728

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					
Apartments Mid Rise	578843	3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	30.8893	30.8893	5.9000e-004	5.7000e-004	31.0728
Total		3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	30.8893	30.8893	5.9000e-004	5.7000e-004	31.0728

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5.2 Energy by Land Use - NaturalGas**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					
Apartments Mid Rise	578843	3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	30.8893	30.8893	5.9000e-004	5.7000e-004	31.0728
Total		3.1200e-003	0.0267	0.0114	1.7000e-004		2.1600e-003	2.1600e-003		2.1600e-003	2.1600e-003	0.0000	30.8893	30.8893	5.9000e-004	5.7000e-004	31.0728

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	276599	80.4660	3.6400e-003	7.5000e-004	80.7812
Total		80.4660	3.6400e-003	7.5000e-004	80.7812

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5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	276599	80.4660	3.6400e-003	7.5000e-004	80.7812
Total		80.4660	3.6400e-003	7.5000e-004	80.7812

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	0.3493	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322
Unmitigated	0.3493	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322

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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	0.0462					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2882					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	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
Landscaping	0.0150	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322
Total	0.3493	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322

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6.2 Area by SubCategory**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	0.0462					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2882					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	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
Landscaping	0.0150	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322
Total	0.3493	5.7400e-003	0.4976	3.0000e-005		2.7500e-003	2.7500e-003		2.7500e-003	2.7500e-003	0.0000	0.8126	0.8126	7.8000e-004	0.0000	0.8322

7.0 Water Detail**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	11.0586	0.1427	3.4500e-003	15.6535
Unmitigated	11.0586	0.1427	3.4500e-003	15.6535

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	4.36532 / 2.75205	11.0586	0.1427	3.4500e-003	15.6535
Total		11.0586	0.1427	3.4500e-003	15.6535

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	4.36532 / 2.75205	11.0586	0.1427	3.4500e-003	15.6535
Total		11.0586	0.1427	3.4500e-003	15.6535

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.2562	0.3697	0.0000	15.4994
Unmitigated	6.2562	0.3697	0.0000	15.4994

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	30.82	6.2562	0.3697	0.0000	15.4994
Total		6.2562	0.3697	0.0000	15.4994

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	30.82	6.2562	0.3697	0.0000	15.4994
Total		6.2562	0.3697	0.0000	15.4994

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Oak Grove Apartments Project - Solano-Sacramento County, Summer

Oak Grove Apartments Project

Solano-Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	67.00	Dwelling Unit	2.11	73,785.00	192

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	56
Climate Zone	4			Operational Year	2023
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 - Project Description

Demolition -

Grading -

Woodstoves - No fireplaces or woodstoves.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Vehicle Trips - 30% reduction for affordable housing.

Oak Grove Apartments Project - Solano-Sacramento County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	4,558.40	0.00
tblFireplaces	NumberGas	36.85	0.00
tblFireplaces	NumberNoFireplace	6.70	0.00
tblFireplaces	NumberWood	23.45	0.00
tblFleetMix	HHD	0.05	0.02
tblFleetMix	LDA	0.59	0.57
tblFleetMix	LDT1	0.04	0.06
tblFleetMix	LDT2	0.17	0.18
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	5.2300e-003	5.5120e-003
tblFleetMix	MCY	6.2660e-003	5.2670e-003
tblFleetMix	MDV	0.11	0.12
tblFleetMix	MH	9.3500e-004	8.4300e-004
tblFleetMix	MHD	9.3870e-003	0.01
tblFleetMix	OBUS	3.2800e-003	8.5200e-004
tblFleetMix	SBUS	6.1200e-004	1.2220e-003
tblFleetMix	UBUS	2.1100e-003	9.1200e-004
tblGrading	MaterialExported	0.00	700.00
tblGrading	MaterialImported	0.00	700.00
tblLandUse	LandUseSquareFeet	67,000.00	73,785.00
tblLandUse	LotAcreage	1.76	2.11
tblVehicleEF	HHD	0.60	0.02
tblVehicleEF	HHD	0.02	0.05

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tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	1.97	6.28
tblVehicleEF	HHD	0.66	0.40
tblVehicleEF	HHD	2.04	5.3000e-003
tblVehicleEF	HHD	5,870.25	1,039.23
tblVehicleEF	HHD	1,509.52	1,409.20
tblVehicleEF	HHD	6.25	0.04
tblVehicleEF	HHD	16.65	5.34
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tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8940e-003	0.02
tblVehicleEF	HHD	6.0000e-005	0.00
tblVehicleEF	HHD	4.5730e-003	2.5000e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9170e-003	8.9000e-003
tblVehicleEF	HHD	5.6390e-003	0.02
tblVehicleEF	HHD	5.5000e-005	0.00
tblVehicleEF	HHD	6.1000e-005	0.00
tblVehicleEF	HHD	3.1840e-003	1.0000e-004
tblVehicleEF	HHD	0.53	0.42
tblVehicleEF	HHD	3.7000e-005	0.00
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	2.2300e-004	0.00
tblVehicleEF	HHD	0.06	0.00

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	HHD	0.06	9.7000e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	9.6000e-005	0.00
tblVehicleEF	HHD	6.1000e-005	0.00
tblVehicleEF	HHD	3.1840e-003	1.0000e-004
tblVehicleEF	HHD	0.60	0.49
tblVehicleEF	HHD	3.7000e-005	0.00
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	2.2300e-004	0.00
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tblVehicleEF	HHD	0.57	0.02
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	1.43	6.28
tblVehicleEF	HHD	0.67	0.40
tblVehicleEF	HHD	1.86	5.3000e-003
tblVehicleEF	HHD	6,219.01	1,039.23
tblVehicleEF	HHD	1,509.52	1,409.20
tblVehicleEF	HHD	6.25	0.04
tblVehicleEF	HHD	17.19	5.34
tblVehicleEF	HHD	1.70	2.66
tblVehicleEF	HHD	20.09	2.36
tblVehicleEF	HHD	4.0300e-003	2.6000e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8940e-003	0.02
tblVehicleEF	HHD	6.0000e-005	0.00

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tblVehicleEF	HHD	3.8560e-003	2.5000e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9170e-003	8.9000e-003
tblVehicleEF	HHD	5.6390e-003	0.02
tblVehicleEF	HHD	5.5000e-005	0.00
tblVehicleEF	HHD	1.4700e-004	0.00
tblVehicleEF	HHD	3.5040e-003	1.0000e-004
tblVehicleEF	HHD	0.50	0.42
tblVehicleEF	HHD	8.8000e-005	0.00
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	2.1900e-004	0.00
tblVehicleEF	HHD	0.05	0.00
tblVehicleEF	HHD	0.06	9.7000e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	9.3000e-005	0.00
tblVehicleEF	HHD	1.4700e-004	0.00
tblVehicleEF	HHD	3.5040e-003	1.0000e-004
tblVehicleEF	HHD	0.57	0.49
tblVehicleEF	HHD	8.8000e-005	0.00
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	2.1900e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.65	0.02
tblVehicleEF	HHD	0.02	0.05
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	2.72	6.28
tblVehicleEF	HHD	0.66	0.40

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tblVehicleEF	HHD	2.26	5.3000e-003
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tblVehicleEF	HHD	1,509.52	1,409.20
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tblVehicleEF	HHD	15.91	5.34
tblVehicleEF	HHD	1.82	2.66
tblVehicleEF	HHD	20.12	2.36
tblVehicleEF	HHD	5.8150e-003	2.6000e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.8940e-003	0.02
tblVehicleEF	HHD	6.0000e-005	0.00
tblVehicleEF	HHD	5.5640e-003	2.5000e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9170e-003	8.9000e-003
tblVehicleEF	HHD	5.6390e-003	0.02
tblVehicleEF	HHD	5.5000e-005	0.00
tblVehicleEF	HHD	2.0000e-005	0.00
tblVehicleEF	HHD	3.2580e-003	1.0000e-004
tblVehicleEF	HHD	0.57	0.42
tblVehicleEF	HHD	1.0000e-005	0.00
tblVehicleEF	HHD	0.08	0.03
tblVehicleEF	HHD	2.4700e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.05	9.7000e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.0000e-004	0.00

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tblVehicleEF	HHD	2.0000e-005	0.00
tblVehicleEF	HHD	3.2580e-003	1.0000e-004
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tblVehicleEF	HHD	1.0000e-005	0.00
tblVehicleEF	HHD	0.11	0.07
tblVehicleEF	HHD	2.4700e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	LDA	3.6200e-003	1.8000e-003
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tblVehicleEF	LDA	0.48	0.52
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tblVehicleEF	LDA	0.04	0.03
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tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	1.7390e-003	1.3000e-003
tblVehicleEF	LDA	2.3030e-003	1.7000e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	1.6020e-003	1.2000e-003
tblVehicleEF	LDA	2.1180e-003	1.6000e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	9.1120e-003	6.6000e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.07	0.21

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tblVehicleEF	LDA	2.4930e-003	2.4000e-003
tblVehicleEF	LDA	5.7100e-004	5.0000e-004
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tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.6000e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	4.0830e-003	1.8000e-003
tblVehicleEF	LDA	4.3130e-003	0.05
tblVehicleEF	LDA	0.57	0.52
tblVehicleEF	LDA	0.92	2.15
tblVehicleEF	LDA	270.44	239.59
tblVehicleEF	LDA	55.13	50.81
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	1.7390e-003	1.3000e-003
tblVehicleEF	LDA	2.3030e-003	1.7000e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	1.6020e-003	1.2000e-003
tblVehicleEF	LDA	2.1180e-003	1.6000e-003
tblVehicleEF	LDA	0.08	0.04
tblVehicleEF	LDA	0.11	0.09
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	0.01	6.6000e-003
tblVehicleEF	LDA	0.03	0.03

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tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	2.7080e-003	2.4000e-003
tblVehicleEF	LDA	5.6700e-004	5.0000e-004
tblVehicleEF	LDA	0.08	0.04
tblVehicleEF	LDA	0.11	0.09
tblVehicleEF	LDA	0.06	0.04
tblVehicleEF	LDA	0.01	9.6000e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.06	0.23
tblVehicleEF	LDA	3.4830e-003	1.8000e-003
tblVehicleEF	LDA	6.2410e-003	0.05
tblVehicleEF	LDA	0.46	0.52
tblVehicleEF	LDA	1.44	2.15
tblVehicleEF	LDA	244.68	239.59
tblVehicleEF	LDA	55.13	50.81
tblVehicleEF	LDA	0.05	0.03
tblVehicleEF	LDA	0.08	0.17
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	1.7390e-003	1.3000e-003
tblVehicleEF	LDA	2.3030e-003	1.7000e-003
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	1.6020e-003	1.2000e-003
tblVehicleEF	LDA	2.1180e-003	1.6000e-003
tblVehicleEF	LDA	9.2250e-003	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	7.2270e-003	0.04
tblVehicleEF	LDA	8.7740e-003	6.6000e-003

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tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.08	0.21
tblVehicleEF	LDA	2.4490e-003	2.4000e-003
tblVehicleEF	LDA	5.7600e-004	5.0000e-004
tblVehicleEF	LDA	9.2250e-003	0.04
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	7.2270e-003	0.04
tblVehicleEF	LDA	0.01	9.6000e-003
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.09	0.23
tblVehicleEF	LDT1	8.5530e-003	3.8000e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.00	0.87
tblVehicleEF	LDT1	2.84	2.34
tblVehicleEF	LDT1	311.56	287.73
tblVehicleEF	LDT1	68.99	61.75
tblVehicleEF	LDT1	0.11	0.07
tblVehicleEF	LDT1	0.16	0.24
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	2.3590e-003	1.7000e-003
tblVehicleEF	LDT1	3.2330e-003	2.2000e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.1720e-003	1.5000e-003
tblVehicleEF	LDT1	2.9730e-003	2.0000e-003
tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.26	0.18
tblVehicleEF	LDT1	0.08	0.08

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tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.17	0.08
tblVehicleEF	LDT1	0.19	0.32
tblVehicleEF	LDT1	3.1260e-003	2.8000e-003
tblVehicleEF	LDT1	7.4000e-004	6.0000e-004
tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.26	0.18
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.17	0.08
tblVehicleEF	LDT1	0.21	0.35
tblVehicleEF	LDT1	9.5630e-003	3.8000e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.18	0.87
tblVehicleEF	LDT1	2.23	2.34
tblVehicleEF	LDT1	337.37	287.73
tblVehicleEF	LDT1	68.99	61.75
tblVehicleEF	LDT1	0.10	0.07
tblVehicleEF	LDT1	0.14	0.24
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	2.3590e-003	1.7000e-003
tblVehicleEF	LDT1	3.2330e-003	2.2000e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.1720e-003	1.5000e-003
tblVehicleEF	LDT1	2.9730e-003	2.0000e-003
tblVehicleEF	LDT1	0.25	0.09
tblVehicleEF	LDT1	0.31	0.18

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tblVehicleEF	LDT1	0.18	0.08
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.16	0.32
tblVehicleEF	LDT1	3.3870e-003	2.8000e-003
tblVehicleEF	LDT1	7.2900e-004	6.0000e-004
tblVehicleEF	LDT1	0.25	0.09
tblVehicleEF	LDT1	0.31	0.18
tblVehicleEF	LDT1	0.18	0.08
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.16	0.08
tblVehicleEF	LDT1	0.17	0.35
tblVehicleEF	LDT1	8.3070e-003	3.8000e-003
tblVehicleEF	LDT1	0.02	0.07
tblVehicleEF	LDT1	0.99	0.87
tblVehicleEF	LDT1	3.53	2.34
tblVehicleEF	LDT1	306.25	287.73
tblVehicleEF	LDT1	68.99	61.75
tblVehicleEF	LDT1	0.12	0.07
tblVehicleEF	LDT1	0.18	0.24
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	2.3590e-003	1.7000e-003
tblVehicleEF	LDT1	3.2330e-003	2.2000e-003
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	2.1720e-003	1.5000e-003
tblVehicleEF	LDT1	2.9730e-003	2.0000e-003
tblVehicleEF	LDT1	0.03	0.09

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tblVehicleEF	LDT1	0.27	0.18
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.21	0.08
tblVehicleEF	LDT1	0.23	0.32
tblVehicleEF	LDT1	3.0730e-003	2.8000e-003
tblVehicleEF	LDT1	7.5200e-004	6.0000e-004
tblVehicleEF	LDT1	0.03	0.09
tblVehicleEF	LDT1	0.27	0.18
tblVehicleEF	LDT1	0.02	0.08
tblVehicleEF	LDT1	0.03	0.02
tblVehicleEF	LDT1	0.21	0.08
tblVehicleEF	LDT1	0.25	0.35
tblVehicleEF	LDT2	5.0900e-003	2.9000e-003
tblVehicleEF	LDT2	6.8920e-003	0.06
tblVehicleEF	LDT2	0.63	0.70
tblVehicleEF	LDT2	1.50	2.74
tblVehicleEF	LDT2	350.59	307.00
tblVehicleEF	LDT2	77.29	66.18
tblVehicleEF	LDT2	0.07	0.06
tblVehicleEF	LDT2	0.11	0.26
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	1.7480e-003	1.3000e-003
tblVehicleEF	LDT2	2.3380e-003	1.7000e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	1.6080e-003	1.2000e-003
tblVehicleEF	LDT2	2.1490e-003	1.6000e-003

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tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.05
tblVehicleEF	LDT2	0.09	0.29
tblVehicleEF	LDT2	3.5100e-003	3.0000e-003
tblVehicleEF	LDT2	7.9800e-004	7.0000e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.05
tblVehicleEF	LDT2	0.10	0.32
tblVehicleEF	LDT2	5.7340e-003	2.9000e-003
tblVehicleEF	LDT2	5.6500e-003	0.06
tblVehicleEF	LDT2	0.75	0.70
tblVehicleEF	LDT2	1.19	2.74
tblVehicleEF	LDT2	380.18	307.00
tblVehicleEF	LDT2	77.29	66.18
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.26
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	1.7480e-003	1.3000e-003
tblVehicleEF	LDT2	2.3380e-003	1.7000e-003
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	1.6080e-003	1.2000e-003

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tblVehicleEF	LDT2	2.1490e-003	1.6000e-003
tblVehicleEF	LDT2	0.10	0.06
tblVehicleEF	LDT2	0.13	0.12
tblVehicleEF	LDT2	0.09	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.08	0.29
tblVehicleEF	LDT2	3.8070e-003	3.0000e-003
tblVehicleEF	LDT2	7.9300e-004	7.0000e-004
tblVehicleEF	LDT2	0.10	0.06
tblVehicleEF	LDT2	0.13	0.12
tblVehicleEF	LDT2	0.09	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.05
tblVehicleEF	LDT2	0.08	0.32
tblVehicleEF	LDT2	4.8950e-003	2.9000e-003
tblVehicleEF	LDT2	8.1790e-003	0.06
tblVehicleEF	LDT2	0.61	0.70
tblVehicleEF	LDT2	1.85	2.74
tblVehicleEF	LDT2	344.50	307.00
tblVehicleEF	LDT2	77.29	66.18
tblVehicleEF	LDT2	0.08	0.06
tblVehicleEF	LDT2	0.13	0.26
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	1.7480e-003	1.3000e-003
tblVehicleEF	LDT2	2.3380e-003	1.7000e-003
tblVehicleEF	LDT2	0.02	0.02

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tblVehicleEF	LDT2	1.6080e-003	1.2000e-003
tblVehicleEF	LDT2	2.1490e-003	1.6000e-003
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.08	0.05
tblVehicleEF	LDT2	0.11	0.29
tblVehicleEF	LDT2	3.4490e-003	3.0000e-003
tblVehicleEF	LDT2	8.0400e-004	7.0000e-004
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.11	0.12
tblVehicleEF	LDT2	0.01	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.08	0.05
tblVehicleEF	LDT2	0.12	0.32
tblVehicleEF	LHD1	4.8180e-003	4.8000e-003
tblVehicleEF	LHD1	0.02	8.4000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.19	0.77
tblVehicleEF	LHD1	2.43	0.99
tblVehicleEF	LHD1	9.31	9.11
tblVehicleEF	LHD1	684.49	776.98
tblVehicleEF	LHD1	28.50	10.85
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	1.83	0.94

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tblVehicleEF	LHD1	0.92	0.30
tblVehicleEF	LHD1	1.0370e-003	9.0000e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.9000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.8500e-004	2.0000e-004
tblVehicleEF	LHD1	9.9200e-004	9.0000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5670e-003	2.5000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.1400e-004	2.0000e-004
tblVehicleEF	LHD1	2.5700e-003	1.8000e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.2770e-003	1.0000e-003
tblVehicleEF	LHD1	0.15	0.10
tblVehicleEF	LHD1	0.33	0.20
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD1	9.3000e-005	1.0000e-004
tblVehicleEF	LHD1	6.7040e-003	7.6000e-003
tblVehicleEF	LHD1	3.3100e-004	1.0000e-004
tblVehicleEF	LHD1	2.5700e-003	1.8000e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.2770e-003	1.0000e-003
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.33	0.20

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tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	4.8180e-003	4.8000e-003
tblVehicleEF	LHD1	0.02	8.4000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.22	0.77
tblVehicleEF	LHD1	2.24	0.99
tblVehicleEF	LHD1	9.31	9.11
tblVehicleEF	LHD1	684.49	776.98
tblVehicleEF	LHD1	28.50	10.85
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	1.73	0.94
tblVehicleEF	LHD1	0.86	0.30
tblVehicleEF	LHD1	1.0370e-003	9.0000e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	0.01	9.9000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.8500e-004	2.0000e-004
tblVehicleEF	LHD1	9.9200e-004	9.0000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5670e-003	2.5000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.1400e-004	2.0000e-004
tblVehicleEF	LHD1	6.0450e-003	1.8000e-003
tblVehicleEF	LHD1	0.12	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.9690e-003	1.0000e-003

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tblVehicleEF	LHD1	0.15	0.10
tblVehicleEF	LHD1	0.32	0.20
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.3000e-005	1.0000e-004
tblVehicleEF	LHD1	6.7050e-003	7.6000e-003
tblVehicleEF	LHD1	3.2700e-004	1.0000e-004
tblVehicleEF	LHD1	6.0450e-003	1.8000e-003
tblVehicleEF	LHD1	0.12	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.9690e-003	1.0000e-003
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.32	0.20
tblVehicleEF	LHD1	0.25	0.08
tblVehicleEF	LHD1	4.8180e-003	4.8000e-003
tblVehicleEF	LHD1	0.02	8.4000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.18
tblVehicleEF	LHD1	1.17	0.77
tblVehicleEF	LHD1	2.70	0.99
tblVehicleEF	LHD1	9.31	9.11
tblVehicleEF	LHD1	684.49	776.98
tblVehicleEF	LHD1	28.50	10.85
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	1.87	0.94
tblVehicleEF	LHD1	1.00	0.30
tblVehicleEF	LHD1	1.0370e-003	9.0000e-004
tblVehicleEF	LHD1	0.08	0.08

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tblVehicleEF	LHD1	0.01	9.9000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.8500e-004	2.0000e-004
tblVehicleEF	LHD1	9.9200e-004	9.0000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.5670e-003	2.5000e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	8.1400e-004	2.0000e-004
tblVehicleEF	LHD1	7.5600e-004	1.8000e-003
tblVehicleEF	LHD1	0.11	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	3.6800e-004	1.0000e-003
tblVehicleEF	LHD1	0.14	0.10
tblVehicleEF	LHD1	0.37	0.20
tblVehicleEF	LHD1	0.26	0.07
tblVehicleEF	LHD1	9.3000e-005	1.0000e-004
tblVehicleEF	LHD1	6.7040e-003	7.6000e-003
tblVehicleEF	LHD1	3.3600e-004	1.0000e-004
tblVehicleEF	LHD1	7.5600e-004	1.8000e-003
tblVehicleEF	LHD1	0.11	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	3.6800e-004	1.0000e-003
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.37	0.20
tblVehicleEF	LHD1	0.29	0.08
tblVehicleEF	LHD2	3.2520e-003	2.9000e-003
tblVehicleEF	LHD2	7.9390e-003	6.9000e-003

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tblVehicleEF	LHD2	6.6760e-003	7.3000e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.62	0.64
tblVehicleEF	LHD2	1.08	0.55
tblVehicleEF	LHD2	14.35	14.31
tblVehicleEF	LHD2	709.33	754.66
tblVehicleEF	LHD2	22.79	7.04
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.07	0.98
tblVehicleEF	LHD2	0.45	0.17
tblVehicleEF	LHD2	1.3010e-003	1.5000e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6600e-004	1.0000e-004
tblVehicleEF	LHD2	1.2450e-003	1.4000e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.7030e-003	2.7000e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.3600e-004	1.0000e-004
tblVehicleEF	LHD2	7.7700e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.2600e-004	5.0000e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.04

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tblVehicleEF	LHD2	1.4000e-004	1.0000e-004
tblVehicleEF	LHD2	6.8930e-003	7.3000e-003
tblVehicleEF	LHD2	2.4700e-004	1.0000e-004
tblVehicleEF	LHD2	7.7700e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.2600e-004	5.0000e-004
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.2520e-003	2.9000e-003
tblVehicleEF	LHD2	8.0460e-003	6.9000e-003
tblVehicleEF	LHD2	6.3020e-003	7.3000e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.63	0.64
tblVehicleEF	LHD2	1.00	0.55
tblVehicleEF	LHD2	14.35	14.31
tblVehicleEF	LHD2	709.33	754.66
tblVehicleEF	LHD2	22.79	7.04
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.01	0.98
tblVehicleEF	LHD2	0.42	0.17
tblVehicleEF	LHD2	1.3010e-003	1.5000e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6600e-004	1.0000e-004

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tblVehicleEF	LHD2	1.2450e-003	1.4000e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.7030e-003	2.7000e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.3600e-004	1.0000e-004
tblVehicleEF	LHD2	1.7990e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	9.7100e-004	5.0000e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.08	0.04
tblVehicleEF	LHD2	1.4000e-004	1.0000e-004
tblVehicleEF	LHD2	6.8930e-003	7.3000e-003
tblVehicleEF	LHD2	2.4600e-004	1.0000e-004
tblVehicleEF	LHD2	1.7990e-003	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	9.7100e-004	5.0000e-004
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	3.2520e-003	2.9000e-003
tblVehicleEF	LHD2	7.8260e-003	6.9000e-003
tblVehicleEF	LHD2	7.1150e-003	7.3000e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.62	0.64

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tblVehicleEF	LHD2	1.18	0.55
tblVehicleEF	LHD2	14.35	14.31
tblVehicleEF	LHD2	709.33	754.66
tblVehicleEF	LHD2	22.79	7.04
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.09	0.98
tblVehicleEF	LHD2	0.48	0.17
tblVehicleEF	LHD2	1.3010e-003	1.5000e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.6600e-004	1.0000e-004
tblVehicleEF	LHD2	1.2450e-003	1.4000e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	2.7030e-003	2.7000e-003
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.3600e-004	1.0000e-004
tblVehicleEF	LHD2	2.5400e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.3000e-004	5.0000e-004
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	1.4000e-004	1.0000e-004
tblVehicleEF	LHD2	6.8930e-003	7.3000e-003
tblVehicleEF	LHD2	2.4900e-004	1.0000e-004

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tblVehicleEF	LHD2	2.5400e-004	8.0000e-004
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.3000e-004	5.0000e-004
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.11	0.04
tblVehicleEF	MCY	0.47	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	22.14	20.00
tblVehicleEF	MCY	10.23	9.07
tblVehicleEF	MCY	180.28	213.40
tblVehicleEF	MCY	46.50	61.71
tblVehicleEF	MCY	1.20	1.16
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1180e-003	2.0000e-003
tblVehicleEF	MCY	3.8850e-003	3.0000e-003
tblVehicleEF	MCY	5.0400e-003	5.0000e-003
tblVehicleEF	MCY	1.9830e-003	1.9000e-003
tblVehicleEF	MCY	3.6660e-003	2.8000e-003
tblVehicleEF	MCY	1.01	0.89
tblVehicleEF	MCY	0.82	0.75
tblVehicleEF	MCY	0.55	0.56
tblVehicleEF	MCY	2.44	2.29
tblVehicleEF	MCY	0.58	0.56
tblVehicleEF	MCY	2.27	1.98

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tblVehicleEF	MCY	2.2350e-003	2.1000e-003
tblVehicleEF	MCY	6.9900e-004	6.0000e-004
tblVehicleEF	MCY	1.01	0.89
tblVehicleEF	MCY	0.82	0.75
tblVehicleEF	MCY	0.55	0.56
tblVehicleEF	MCY	3.01	2.82
tblVehicleEF	MCY	0.58	0.56
tblVehicleEF	MCY	2.47	2.15
tblVehicleEF	MCY	0.46	0.34
tblVehicleEF	MCY	0.14	0.26
tblVehicleEF	MCY	21.52	20.00
tblVehicleEF	MCY	9.00	9.07
tblVehicleEF	MCY	180.28	213.40
tblVehicleEF	MCY	46.50	61.71
tblVehicleEF	MCY	1.03	1.16
tblVehicleEF	MCY	0.29	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1180e-003	2.0000e-003
tblVehicleEF	MCY	3.8850e-003	3.0000e-003
tblVehicleEF	MCY	5.0400e-003	5.0000e-003
tblVehicleEF	MCY	1.9830e-003	1.9000e-003
tblVehicleEF	MCY	3.6660e-003	2.8000e-003
tblVehicleEF	MCY	2.69	0.89
tblVehicleEF	MCY	1.15	0.75
tblVehicleEF	MCY	1.67	0.56
tblVehicleEF	MCY	2.35	2.29
tblVehicleEF	MCY	0.55	0.56

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tblVehicleEF	MCY	1.88	1.98
tblVehicleEF	MCY	2.2220e-003	2.1000e-003
tblVehicleEF	MCY	6.6700e-004	6.0000e-004
tblVehicleEF	MCY	2.69	0.89
tblVehicleEF	MCY	1.15	0.75
tblVehicleEF	MCY	1.67	0.56
tblVehicleEF	MCY	2.90	2.82
tblVehicleEF	MCY	0.55	0.56
tblVehicleEF	MCY	2.05	2.15
tblVehicleEF	MCY	0.50	0.34
tblVehicleEF	MCY	0.20	0.26
tblVehicleEF	MCY	24.75	20.00
tblVehicleEF	MCY	12.30	9.07
tblVehicleEF	MCY	180.28	213.40
tblVehicleEF	MCY	46.50	61.71
tblVehicleEF	MCY	1.31	1.16
tblVehicleEF	MCY	0.35	0.27
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.1180e-003	2.0000e-003
tblVehicleEF	MCY	3.8850e-003	3.0000e-003
tblVehicleEF	MCY	5.0400e-003	5.0000e-003
tblVehicleEF	MCY	1.9830e-003	1.9000e-003
tblVehicleEF	MCY	3.6660e-003	2.8000e-003
tblVehicleEF	MCY	0.17	0.89
tblVehicleEF	MCY	0.89	0.75
tblVehicleEF	MCY	0.10	0.56
tblVehicleEF	MCY	2.60	2.29

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tblVehicleEF	MCY	0.68	0.56
tblVehicleEF	MCY	2.79	1.98
tblVehicleEF	MCY	2.2820e-003	2.1000e-003
tblVehicleEF	MCY	7.4900e-004	6.0000e-004
tblVehicleEF	MCY	0.17	0.89
tblVehicleEF	MCY	0.89	0.75
tblVehicleEF	MCY	0.10	0.56
tblVehicleEF	MCY	3.19	2.82
tblVehicleEF	MCY	0.68	0.56
tblVehicleEF	MCY	3.04	2.15
tblVehicleEF	MDV	9.5200e-003	3.8000e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.98	0.82
tblVehicleEF	MDV	3.06	3.10
tblVehicleEF	MDV	477.60	379.50
tblVehicleEF	MDV	105.03	81.06
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.27	0.32
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	1.8010e-003	1.5000e-003
tblVehicleEF	MDV	2.4620e-003	1.8000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.6590e-003	1.3000e-003
tblVehicleEF	MDV	2.2640e-003	1.7000e-003
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.06	0.08

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tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.12	0.06
tblVehicleEF	MDV	0.23	0.38
tblVehicleEF	MDV	4.7800e-003	3.8000e-003
tblVehicleEF	MDV	1.1040e-003	8.0000e-004
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.06	0.08
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.12	0.06
tblVehicleEF	MDV	0.26	0.42
tblVehicleEF	MDV	0.01	3.8000e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.17	0.82
tblVehicleEF	MDV	2.42	3.10
tblVehicleEF	MDV	516.76	379.50
tblVehicleEF	MDV	105.03	81.06
tblVehicleEF	MDV	0.12	0.08
tblVehicleEF	MDV	0.24	0.32
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	1.8010e-003	1.5000e-003
tblVehicleEF	MDV	2.4620e-003	1.8000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.6590e-003	1.3000e-003
tblVehicleEF	MDV	2.2640e-003	1.7000e-003
tblVehicleEF	MDV	0.16	0.07
tblVehicleEF	MDV	0.21	0.15

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tblVehicleEF	MDV	0.14	0.08
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.19	0.38
tblVehicleEF	MDV	5.1740e-003	3.8000e-003
tblVehicleEF	MDV	1.0930e-003	8.0000e-004
tblVehicleEF	MDV	0.16	0.07
tblVehicleEF	MDV	0.21	0.15
tblVehicleEF	MDV	0.14	0.08
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.11	0.06
tblVehicleEF	MDV	0.21	0.42
tblVehicleEF	MDV	9.1910e-003	3.8000e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.96	0.82
tblVehicleEF	MDV	3.79	3.10
tblVehicleEF	MDV	469.55	379.50
tblVehicleEF	MDV	105.03	81.06
tblVehicleEF	MDV	0.15	0.08
tblVehicleEF	MDV	0.30	0.32
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	1.8010e-003	1.5000e-003
tblVehicleEF	MDV	2.4620e-003	1.8000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.6590e-003	1.3000e-003
tblVehicleEF	MDV	2.2640e-003	1.7000e-003
tblVehicleEF	MDV	0.02	0.07

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tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.14	0.06
tblVehicleEF	MDV	0.28	0.38
tblVehicleEF	MDV	4.6990e-003	3.8000e-003
tblVehicleEF	MDV	1.1170e-003	8.0000e-004
tblVehicleEF	MDV	0.02	0.07
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.14	0.06
tblVehicleEF	MDV	0.30	0.42
tblVehicleEF	MH	0.03	9.3000e-003
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.18	0.85
tblVehicleEF	MH	5.81	1.96
tblVehicleEF	MH	1,228.74	1,512.95
tblVehicleEF	MH	59.90	17.73
tblVehicleEF	MH	1.50	1.52
tblVehicleEF	MH	0.87	0.24
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0780e-003	2.0000e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2140e-003	3.3000e-003

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tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.9100e-004	2.0000e-004
tblVehicleEF	MH	0.93	0.58
tblVehicleEF	MH	0.08	0.05
tblVehicleEF	MH	0.33	0.23
tblVehicleEF	MH	0.10	0.07
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	7.0000e-004	2.0000e-004
tblVehicleEF	MH	0.93	0.58
tblVehicleEF	MH	0.08	0.05
tblVehicleEF	MH	0.33	0.23
tblVehicleEF	MH	0.14	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.37	0.10
tblVehicleEF	MH	0.03	9.3000e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.28	0.85
tblVehicleEF	MH	5.22	1.96
tblVehicleEF	MH	1,228.74	1,512.95
tblVehicleEF	MH	59.90	17.73
tblVehicleEF	MH	1.40	1.52
tblVehicleEF	MH	0.81	0.24
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03

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tblVehicleEF	MH	1.0780e-003	2.0000e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2140e-003	3.3000e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.9100e-004	2.0000e-004
tblVehicleEF	MH	2.19	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.79	0.23
tblVehicleEF	MH	0.11	0.07
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.31	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9000e-004	2.0000e-004
tblVehicleEF	MH	2.19	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.79	0.23
tblVehicleEF	MH	0.15	0.08
tblVehicleEF	MH	0.02	0.01
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.03	9.3000e-003
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.09	0.85
tblVehicleEF	MH	6.55	1.96
tblVehicleEF	MH	1,228.74	1,512.95
tblVehicleEF	MH	59.90	17.73
tblVehicleEF	MH	1.56	1.52
tblVehicleEF	MH	0.94	0.24

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tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.0780e-003	2.0000e-004
tblVehicleEF	MH	0.06	0.06
tblVehicleEF	MH	3.2140e-003	3.3000e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	9.9100e-004	2.0000e-004
tblVehicleEF	MH	0.27	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.10	0.23
tblVehicleEF	MH	0.10	0.07
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.37	0.09
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	7.1300e-004	2.0000e-004
tblVehicleEF	MH	0.27	0.58
tblVehicleEF	MH	0.09	0.05
tblVehicleEF	MH	0.10	0.23
tblVehicleEF	MH	0.13	0.08
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.40	0.10
tblVehicleEF	MHD	0.02	4.0000e-003
tblVehicleEF	MHD	6.8630e-003	2.1000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.42	0.43
tblVehicleEF	MHD	0.49	0.27

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tblVehicleEF	MHD	7.35	1.19
tblVehicleEF	MHD	113.68	84.01
tblVehicleEF	MHD	1,200.34	1,109.33
tblVehicleEF	MHD	70.97	10.07
tblVehicleEF	MHD	0.32	0.52
tblVehicleEF	MHD	1.11	1.47
tblVehicleEF	MHD	8.67	1.66
tblVehicleEF	MHD	1.2800e-004	5.0000e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	3.1720e-003	7.2000e-003
tblVehicleEF	MHD	1.0480e-003	1.0000e-004
tblVehicleEF	MHD	1.2200e-004	5.0000e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0240e-003	6.9000e-003
tblVehicleEF	MHD	9.6300e-004	1.0000e-004
tblVehicleEF	MHD	1.2090e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	6.1800e-004	2.0000e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.44	0.05
tblVehicleEF	MHD	1.0990e-003	8.0000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	8.3800e-004	1.0000e-004
tblVehicleEF	MHD	1.2090e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02

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tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	6.1800e-004	2.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.48	0.06
tblVehicleEF	MHD	0.01	4.0000e-003
tblVehicleEF	MHD	7.0540e-003	2.1000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.29	0.43
tblVehicleEF	MHD	0.50	0.27
tblVehicleEF	MHD	6.73	1.19
tblVehicleEF	MHD	120.59	84.01
tblVehicleEF	MHD	1,200.34	1,109.33
tblVehicleEF	MHD	70.97	10.07
tblVehicleEF	MHD	0.33	0.52
tblVehicleEF	MHD	1.05	1.47
tblVehicleEF	MHD	8.60	1.66
tblVehicleEF	MHD	1.0800e-004	5.0000e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	3.1720e-003	7.2000e-003
tblVehicleEF	MHD	1.0480e-003	1.0000e-004
tblVehicleEF	MHD	1.0300e-004	5.0000e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0240e-003	6.9000e-003
tblVehicleEF	MHD	9.6300e-004	1.0000e-004
tblVehicleEF	MHD	2.8930e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02

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tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.4930e-003	2.0000e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.41	0.05
tblVehicleEF	MHD	1.1630e-003	8.0000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	8.2800e-004	1.0000e-004
tblVehicleEF	MHD	2.8930e-003	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	1.4930e-003	2.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.45	0.06
tblVehicleEF	MHD	0.02	4.0000e-003
tblVehicleEF	MHD	6.6670e-003	2.1000e-003
tblVehicleEF	MHD	0.05	0.01
tblVehicleEF	MHD	0.55	0.43
tblVehicleEF	MHD	0.48	0.27
tblVehicleEF	MHD	8.16	1.19
tblVehicleEF	MHD	104.56	84.01
tblVehicleEF	MHD	1,200.34	1,109.33
tblVehicleEF	MHD	70.97	10.07
tblVehicleEF	MHD	0.30	0.52
tblVehicleEF	MHD	1.14	1.47
tblVehicleEF	MHD	8.76	1.66

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	MHD	1.5500e-004	5.0000e-004
tblVehicleEF	MHD	0.13	0.13
tblVehicleEF	MHD	3.1720e-003	7.2000e-003
tblVehicleEF	MHD	1.0480e-003	1.0000e-004
tblVehicleEF	MHD	1.4900e-004	5.0000e-004
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	MHD	3.0240e-003	6.9000e-003
tblVehicleEF	MHD	9.6300e-004	1.0000e-004
tblVehicleEF	MHD	3.4900e-004	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.7500e-004	2.0000e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.47	0.05
tblVehicleEF	MHD	1.0140e-003	8.0000e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	8.5200e-004	1.0000e-004
tblVehicleEF	MHD	3.4900e-004	4.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	1.7500e-004	2.0000e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.51	0.06
tblVehicleEF	OBUS	0.01	8.8000e-003
tblVehicleEF	OBUS	6.9350e-003	9.0000e-003

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tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.24	0.50
tblVehicleEF	OBUS	0.50	0.98
tblVehicleEF	OBUS	5.39	2.88
tblVehicleEF	OBUS	164.62	65.66
tblVehicleEF	OBUS	1,310.12	1,496.24
tblVehicleEF	OBUS	62.12	21.75
tblVehicleEF	OBUS	0.38	0.23
tblVehicleEF	OBUS	1.05	1.13
tblVehicleEF	OBUS	4.22	0.68
tblVehicleEF	OBUS	3.5000e-005	1.0000e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	2.9720e-003	6.1000e-003
tblVehicleEF	OBUS	7.6100e-004	2.0000e-004
tblVehicleEF	OBUS	3.3000e-005	1.0000e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	2.8290e-003	5.8000e-003
tblVehicleEF	OBUS	7.0000e-004	2.0000e-004
tblVehicleEF	OBUS	1.3180e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	5.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.33	0.14
tblVehicleEF	OBUS	1.5820e-003	6.0000e-004
tblVehicleEF	OBUS	0.01	0.01

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tblVehicleEF	OBUS	7.1600e-004	2.0000e-004
tblVehicleEF	OBUS	1.3180e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	5.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.06	0.07
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.36	0.15
tblVehicleEF	OBUS	0.01	8.8000e-003
tblVehicleEF	OBUS	7.1340e-003	9.0000e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.23	0.50
tblVehicleEF	OBUS	0.51	0.98
tblVehicleEF	OBUS	4.87	2.88
tblVehicleEF	OBUS	173.50	65.66
tblVehicleEF	OBUS	1,310.12	1,496.24
tblVehicleEF	OBUS	62.12	21.75
tblVehicleEF	OBUS	0.39	0.23
tblVehicleEF	OBUS	1.00	1.13
tblVehicleEF	OBUS	4.16	0.68
tblVehicleEF	OBUS	2.9000e-005	1.0000e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	2.9720e-003	6.1000e-003
tblVehicleEF	OBUS	7.6100e-004	2.0000e-004
tblVehicleEF	OBUS	2.8000e-005	1.0000e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	2.8290e-003	5.8000e-003

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tblVehicleEF	OBUS	7.0000e-004	2.0000e-004
tblVehicleEF	OBUS	3.0540e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.3570e-003	8.0000e-004
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.31	0.14
tblVehicleEF	OBUS	1.6660e-003	6.0000e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.0700e-004	2.0000e-004
tblVehicleEF	OBUS	3.0540e-003	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	1.3570e-003	8.0000e-004
tblVehicleEF	OBUS	0.06	0.07
tblVehicleEF	OBUS	0.02	0.09
tblVehicleEF	OBUS	0.34	0.15
tblVehicleEF	OBUS	0.01	8.8000e-003
tblVehicleEF	OBUS	6.7320e-003	9.0000e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.26	0.50
tblVehicleEF	OBUS	0.49	0.98
tblVehicleEF	OBUS	6.01	2.88
tblVehicleEF	OBUS	152.37	65.66
tblVehicleEF	OBUS	1,310.12	1,496.24
tblVehicleEF	OBUS	62.12	21.75

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tblVehicleEF	OBUS	0.36	0.23
tblVehicleEF	OBUS	1.08	1.13
tblVehicleEF	OBUS	4.29	0.68
tblVehicleEF	OBUS	4.2000e-005	1.0000e-004
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	2.9720e-003	6.1000e-003
tblVehicleEF	OBUS	7.6100e-004	2.0000e-004
tblVehicleEF	OBUS	4.0000e-005	1.0000e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	2.8290e-003	5.8000e-003
tblVehicleEF	OBUS	7.0000e-004	2.0000e-004
tblVehicleEF	OBUS	4.7600e-004	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.05
tblVehicleEF	OBUS	1.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	0.03	0.09
tblVehicleEF	OBUS	0.36	0.14
tblVehicleEF	OBUS	1.4650e-003	6.0000e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.2600e-004	2.0000e-004
tblVehicleEF	OBUS	4.7600e-004	1.7000e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	1.8400e-004	8.0000e-004
tblVehicleEF	OBUS	0.06	0.07
tblVehicleEF	OBUS	0.03	0.09

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	OBUS	0.39	0.15
tblVehicleEF	SBUS	0.83	0.02
tblVehicleEF	SBUS	0.02	2.6000e-003
tblVehicleEF	SBUS	0.08	1.3000e-003
tblVehicleEF	SBUS	7.92	1.26
tblVehicleEF	SBUS	1.16	0.22
tblVehicleEF	SBUS	10.10	0.19
tblVehicleEF	SBUS	1,123.16	299.60
tblVehicleEF	SBUS	1,031.23	991.09
tblVehicleEF	SBUS	54.39	1.09
tblVehicleEF	SBUS	8.75	2.23
tblVehicleEF	SBUS	3.60	2.75
tblVehicleEF	SBUS	12.41	1.56
tblVehicleEF	SBUS	8.3510e-003	1.5000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.9200e-004	0.00
tblVehicleEF	SBUS	7.9900e-003	1.5000e-003
tblVehicleEF	SBUS	2.5940e-003	2.9000e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.2000e-004	0.00
tblVehicleEF	SBUS	3.8720e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	0.94	0.09
tblVehicleEF	SBUS	1.6120e-003	0.00
tblVehicleEF	SBUS	0.11	0.04
tblVehicleEF	SBUS	0.02	1.6000e-003

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	SBUS	0.49	7.3000e-003
tblVehicleEF	SBUS	0.01	2.8000e-003
tblVehicleEF	SBUS	9.9720e-003	9.4000e-003
tblVehicleEF	SBUS	7.1800e-004	0.00
tblVehicleEF	SBUS	3.8720e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	1.36	0.12
tblVehicleEF	SBUS	1.6120e-003	0.00
tblVehicleEF	SBUS	0.14	0.05
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.54	8.0000e-003
tblVehicleEF	SBUS	0.83	0.02
tblVehicleEF	SBUS	0.02	2.6000e-003
tblVehicleEF	SBUS	0.07	1.3000e-003
tblVehicleEF	SBUS	7.81	1.26
tblVehicleEF	SBUS	1.19	0.22
tblVehicleEF	SBUS	7.27	0.19
tblVehicleEF	SBUS	1,173.95	299.60
tblVehicleEF	SBUS	1,031.23	991.09
tblVehicleEF	SBUS	54.39	1.09
tblVehicleEF	SBUS	9.03	2.23
tblVehicleEF	SBUS	3.41	2.75
tblVehicleEF	SBUS	12.35	1.56
tblVehicleEF	SBUS	7.0400e-003	1.5000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.9200e-004	0.00

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tblVehicleEF	SBUS	6.7350e-003	1.5000e-003
tblVehicleEF	SBUS	2.5940e-003	2.9000e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.2000e-004	0.00
tblVehicleEF	SBUS	8.9700e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	0.94	0.09
tblVehicleEF	SBUS	3.7630e-003	0.00
tblVehicleEF	SBUS	0.11	0.04
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.41	7.3000e-003
tblVehicleEF	SBUS	0.01	2.8000e-003
tblVehicleEF	SBUS	9.9730e-003	9.4000e-003
tblVehicleEF	SBUS	6.7000e-004	0.00
tblVehicleEF	SBUS	8.9700e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	1.36	0.12
tblVehicleEF	SBUS	3.7630e-003	0.00
tblVehicleEF	SBUS	0.14	0.05
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.45	8.0000e-003
tblVehicleEF	SBUS	0.83	0.02
tblVehicleEF	SBUS	0.02	2.6000e-003
tblVehicleEF	SBUS	0.10	1.3000e-003
tblVehicleEF	SBUS	8.07	1.26
tblVehicleEF	SBUS	1.13	0.22
tblVehicleEF	SBUS	13.59	0.19

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	SBUS	1,053.02	299.60
tblVehicleEF	SBUS	1,031.23	991.09
tblVehicleEF	SBUS	54.39	1.09
tblVehicleEF	SBUS	8.37	2.23
tblVehicleEF	SBUS	3.68	2.75
tblVehicleEF	SBUS	12.47	1.56
tblVehicleEF	SBUS	0.01	1.5000e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.9200e-004	0.00
tblVehicleEF	SBUS	9.7220e-003	1.5000e-003
tblVehicleEF	SBUS	2.5940e-003	2.9000e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	8.2000e-004	0.00
tblVehicleEF	SBUS	1.3480e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	0.94	0.09
tblVehicleEF	SBUS	5.3900e-004	0.00
tblVehicleEF	SBUS	0.11	0.04
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.58	7.3000e-003
tblVehicleEF	SBUS	0.01	2.8000e-003
tblVehicleEF	SBUS	9.9720e-003	9.4000e-003
tblVehicleEF	SBUS	7.7500e-004	0.00
tblVehicleEF	SBUS	1.3480e-003	1.0000e-004
tblVehicleEF	SBUS	0.04	8.0000e-004
tblVehicleEF	SBUS	1.36	0.12

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tblVehicleEF	SBUS	5.3900e-004	0.00
tblVehicleEF	SBUS	0.14	0.05
tblVehicleEF	SBUS	0.02	1.6000e-003
tblVehicleEF	SBUS	0.64	8.0000e-003
tblVehicleEF	UBUS	0.77	1.10
tblVehicleEF	UBUS	0.07	1.5000e-003
tblVehicleEF	UBUS	6.14	8.13
tblVehicleEF	UBUS	12.61	0.25
tblVehicleEF	UBUS	1,968.87	1,559.20
tblVehicleEF	UBUS	135.63	2.75
tblVehicleEF	UBUS	6.64	0.64
tblVehicleEF	UBUS	13.28	0.03
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.11	4.9000e-003
tblVehicleEF	UBUS	1.3350e-003	0.00
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	7.2000e-003
tblVehicleEF	UBUS	0.11	4.7000e-003
tblVehicleEF	UBUS	1.2280e-003	0.00
tblVehicleEF	UBUS	5.4590e-003	1.0000e-004
tblVehicleEF	UBUS	0.10	8.0000e-004
tblVehicleEF	UBUS	2.6600e-003	1.0000e-004
tblVehicleEF	UBUS	0.60	0.02
tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	1.00	5.3000e-003
tblVehicleEF	UBUS	0.02	0.01

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	UBUS	1.5850e-003	0.00
tblVehicleEF	UBUS	5.4590e-003	1.0000e-004
tblVehicleEF	UBUS	0.10	8.0000e-004
tblVehicleEF	UBUS	2.6600e-003	1.0000e-004
tblVehicleEF	UBUS	1.42	1.12
tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	1.10	5.8000e-003
tblVehicleEF	UBUS	0.78	1.10
tblVehicleEF	UBUS	0.06	1.5000e-003
tblVehicleEF	UBUS	6.24	8.13
tblVehicleEF	UBUS	9.84	0.25
tblVehicleEF	UBUS	1,968.87	1,559.20
tblVehicleEF	UBUS	135.63	2.75
tblVehicleEF	UBUS	6.29	0.64
tblVehicleEF	UBUS	13.16	0.03
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.11	4.9000e-003
tblVehicleEF	UBUS	1.3350e-003	0.00
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	7.2000e-003
tblVehicleEF	UBUS	0.11	4.7000e-003
tblVehicleEF	UBUS	1.2280e-003	0.00
tblVehicleEF	UBUS	0.01	1.0000e-004
tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	6.1220e-003	1.0000e-004
tblVehicleEF	UBUS	0.61	0.02

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	0.86	5.3000e-003
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.5370e-003	0.00
tblVehicleEF	UBUS	0.01	1.0000e-004
tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	6.1220e-003	1.0000e-004
tblVehicleEF	UBUS	1.45	1.12
tblVehicleEF	UBUS	0.02	1.0000e-004
tblVehicleEF	UBUS	0.95	5.8000e-003
tblVehicleEF	UBUS	0.77	1.10
tblVehicleEF	UBUS	0.09	1.5000e-003
tblVehicleEF	UBUS	6.05	8.13
tblVehicleEF	UBUS	16.19	0.25
tblVehicleEF	UBUS	1,968.87	1,559.20
tblVehicleEF	UBUS	135.63	2.75
tblVehicleEF	UBUS	6.78	0.64
tblVehicleEF	UBUS	13.41	0.03
tblVehicleEF	UBUS	0.52	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.11	4.9000e-003
tblVehicleEF	UBUS	1.3350e-003	0.00
tblVehicleEF	UBUS	0.22	0.03
tblVehicleEF	UBUS	3.0000e-003	7.2000e-003
tblVehicleEF	UBUS	0.11	4.7000e-003
tblVehicleEF	UBUS	1.2280e-003	0.00
tblVehicleEF	UBUS	1.6270e-003	1.0000e-004

Oak Grove Apartments Project - Solano-Sacramento County, Summer

tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	9.0600e-004	1.0000e-004
tblVehicleEF	UBUS	0.58	0.02
tblVehicleEF	UBUS	0.03	1.0000e-004
tblVehicleEF	UBUS	1.17	5.3000e-003
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	1.6470e-003	0.00
tblVehicleEF	UBUS	1.6270e-003	1.0000e-004
tblVehicleEF	UBUS	0.11	8.0000e-004
tblVehicleEF	UBUS	9.0600e-004	1.0000e-004
tblVehicleEF	UBUS	1.40	1.12
tblVehicleEF	UBUS	0.03	1.0000e-004
tblVehicleEF	UBUS	1.28	5.8000e-003
tblVehicleTrips	ST_TR	6.39	3.81
tblVehicleTrips	SU_TR	5.86	3.81
tblVehicleTrips	WD_TR	6.65	3.81
tblWoodstoves	NumberCatalytic	3.35	0.00
tblWoodstoves	NumberNoncatalytic	3.35	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	4,558.40	0.00

2.0 Emissions Summary

Oak Grove Apartments Project - Solano-Sacramento County, Summer

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					
2022	2.0324	28.9572	15.5653	0.0713	112.9345	0.8389	113.5708	11.4754	0.7838	12.0624	0.0000	7,291.121 2	7,291.121 2	0.9408	0.0000	7,314.640 9
2023	92.5600	14.2047	15.3195	0.0304	47.1007	0.6165	47.7172	4.7660	0.5907	5.3566	0.0000	2,830.532 4	2,830.532 4	0.5441	0.0000	2,841.701 7
Maximum	92.5600	28.9572	15.5653	0.0713	112.9345	0.8389	113.5708	11.4754	0.7838	12.0624	0.0000	7,291.121 2	7,291.121 2	0.9408	0.0000	7,314.640 9

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					
2022	2.0324	28.9572	15.5653	0.0713	69.2494	0.8389	69.8858	7.0935	0.7838	7.6804	0.0000	7,291.121 2	7,291.121 2	0.9408	0.0000	7,314.640 9
2023	92.5600	14.2047	15.3195	0.0304	28.9885	0.6165	29.6049	2.9548	0.5907	3.5454	0.0000	2,830.532 4	2,830.532 4	0.5441	0.0000	2,841.701 7
Maximum	92.5600	28.9572	15.5653	0.0713	69.2494	0.8389	69.8858	7.0935	0.7838	7.6804	0.0000	7,291.121 2	7,291.121 2	0.9408	0.0000	7,314.640 9

	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
Percent Reduction	0.00	0.00	0.00	0.00	38.61	0.00	38.31	38.13	0.00	35.55	0.00	0.00	0.00	0.00	0.00	0.00

Oak Grove Apartments Project - Solano-Sacramento County, Summer

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	1.9985	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306	0.0000	9.9530	9.9530	9.5700e-003	0.0000	10.1923
Energy	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819
Mobile	0.3886	0.8737	4.3225	0.0135	83.5266	0.0105	83.5371	8.5439	9.8300e-003	8.5537		1,372.3200	1,372.3200	0.0561		1,373.7220
Total	2.4043	1.0835	9.9135	0.0147	83.5266	0.0530	83.5796	8.5439	0.0523	8.5961	0.0000	1,568.8461	1,568.8461	0.0692	3.4200e-003	1,571.5961

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	1.9985	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306	0.0000	9.9530	9.9530	9.5700e-003	0.0000	10.1923
Energy	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819
Mobile	0.3588	0.6816	3.4432	9.5700e-003	58.4686	7.6700e-003	58.4763	5.9807	7.1600e-003	5.9879		974.1900	974.1900	0.0484		975.3993
Total	2.3744	0.8915	9.0342	0.0108	58.4686	0.0501	58.5187	5.9807	0.0496	6.0303	0.0000	1,170.7162	1,170.7162	0.0615	3.4200e-003	1,173.2734

Oak Grove Apartments Project - Solano-Sacramento County, Summer

	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
Percent Reduction	1.24	17.72	8.87	26.60	30.00	5.42	29.98	30.00	5.11	29.85	0.00	25.38	25.38	11.14	0.00	25.35

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/1/2022	10/28/2022	5	20	
2	Site Preparation	Site Preparation	10/29/2022	11/2/2022	5	3	
3	Grading	Grading	11/3/2022	11/10/2022	5	6	
4	Building Construction	Building Construction	11/11/2022	9/14/2023	5	220	
5	Paving	Paving	9/15/2023	9/28/2023	5	10	
6	Architectural Coating	Architectural Coating	9/29/2023	10/12/2023	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 149,415; Residential Outdoor: 49,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0
(Architectural Coating – sqft)

OffRoad Equipment

Oak Grove Apartments Project - Solano-Sacramento County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	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	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	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

Oak Grove Apartments Project - Solano-Sacramento County, Summer

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
Demolition	5	13.00	0.00	11.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	175.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	48.00	7.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022**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					0.1414	0.0000	0.1414	0.0214	0.0000	0.0214			0.0000			0.0000
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829		2,323.4168	2,323.4168	0.5921		2,338.2191
Total	1.6889	16.6217	13.9605	0.0241	0.1414	0.8379	0.9793	0.0214	0.7829	0.8043		2,323.4168	2,323.4168	0.5921		2,338.2191

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.2 Demolition - 2022**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	3.9200e-003	0.1252	0.0232	4.3000e-004	0.9805	3.8000e-004	0.9809	0.0995	3.7000e-004	0.0998		45.7898	45.7898	1.6200e-003		45.8302
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	0.0417	0.0221	0.2836	9.7000e-004	11.5728	6.4000e-004	11.5735	1.1704	5.9000e-004	1.1710		96.6348	96.6348	2.1000e-003		96.6873
Total	0.0456	0.1473	0.3068	1.4000e-003	12.5533	1.0200e-003	12.5544	1.2699	9.6000e-004	1.2709		142.4246	142.4246	3.7200e-003		142.5175

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					0.0636	0.0000	0.0636	9.6400e-003	0.0000	9.6400e-003			0.0000			0.0000
Off-Road	1.6889	16.6217	13.9605	0.0241		0.8379	0.8379		0.7829	0.7829	0.0000	2,323.4168	2,323.4168	0.5921		2,338.2191
Total	1.6889	16.6217	13.9605	0.0241	0.0636	0.8379	0.9015	9.6400e-003	0.7829	0.7925	0.0000	2,323.4168	2,323.4168	0.5921		2,338.2191

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.2 Demolition - 2022**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	3.9200e-003	0.1252	0.0232	4.3000e-004	0.6039	3.8000e-004	0.6043	0.0618	3.7000e-004	0.0622		45.7898	45.7898	1.6200e-003		45.8302
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	0.0417	0.0221	0.2836	9.7000e-004	7.1218	6.4000e-004	7.1224	0.7253	5.9000e-004	0.7259		96.6348	96.6348	2.1000e-003		96.6873
Total	0.0456	0.1473	0.3068	1.4000e-003	7.7257	1.0200e-003	7.7267	0.7871	9.6000e-004	0.7881		142.4246	142.4246	3.7200e-003		142.5175

3.3 Site Preparation - 2022**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					1.8196	0.0000	1.8196	0.2064	0.0000	0.2064			0.0000			0.0000
Off-Road	1.3784	15.6673	10.0558	0.0245		0.5952	0.5952		0.5476	0.5476		2,375.1569	2,375.1569	0.7682		2,394.3613
Total	1.3784	15.6673	10.0558	0.0245	1.8196	0.5952	2.4148	0.2064	0.5476	0.7540		2,375.1569	2,375.1569	0.7682		2,394.3613

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.3 Site Preparation - 2022**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	0.4160	13.2763	2.4626	0.0461	103.9931	0.0408	104.0339	10.5488	0.0390	10.5878		4,856.4967	4,856.4967	0.1713		4,860.7798
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	0.0257	0.0136	0.1745	6.0000e-004	7.1217	3.9000e-004	7.1221	0.7203	3.6000e-004	0.7206		59.4675	59.4675	1.2900e-003		59.4999
Total	0.4416	13.2899	2.6372	0.0467	111.1149	0.0412	111.1560	11.2690	0.0394	11.3084		4,915.9642	4,915.9642	0.1726		4,920.2797

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					0.8188	0.0000	0.8188	0.0929	0.0000	0.0929			0.0000			0.0000
Off-Road	1.3784	15.6673	10.0558	0.0245		0.5952	0.5952		0.5476	0.5476	0.0000	2,375.1569	2,375.1569	0.7682		2,394.3613
Total	1.3784	15.6673	10.0558	0.0245	0.8188	0.5952	1.4140	0.0929	0.5476	0.6405	0.0000	2,375.1569	2,375.1569	0.7682		2,394.3613

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.3 Site Preparation - 2022**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	0.4160	13.2763	2.4626	0.0461	64.0480	0.0408	64.0887	6.5542	0.0390	6.5932		4,856.4967	4,856.4967	0.1713		4,860.7798
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	0.0257	0.0136	0.1745	6.0000e-004	4.3826	3.9000e-004	4.3830	0.4464	3.6000e-004	0.4467		59.4675	59.4675	1.2900e-003		59.4999
Total	0.4416	13.2899	2.6372	0.0467	68.4306	0.0412	68.4718	7.0006	0.0394	7.0400		4,915.9642	4,915.9642	0.1726		4,920.2797

3.4 Grading - 2022**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					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.5403	16.9836	9.2202	0.0206		0.7423	0.7423		0.6829	0.6829		1,995.4825	1,995.4825	0.6454		2,011.6169
Total	1.5403	16.9836	9.2202	0.0206	6.5523	0.7423	7.2946	3.3675	0.6829	4.0504		1,995.4825	1,995.4825	0.6454		2,011.6169

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.4 Grading - 2022**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	0.0000	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
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	0.0321	0.0170	0.2182	7.5000e-004	8.9022	4.9000e-004	8.9027	0.9003	4.5000e-004	0.9008		74.3344	74.3344	1.6200e-003		74.3748
Total	0.0321	0.0170	0.2182	7.5000e-004	8.9022	4.9000e-004	8.9027	0.9003	4.5000e-004	0.9008		74.3344	74.3344	1.6200e-003		74.3748

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					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	1.5403	16.9836	9.2202	0.0206		0.7423	0.7423		0.6829	0.6829	0.0000	1,995.4825	1,995.4825	0.6454		2,011.6169
Total	1.5403	16.9836	9.2202	0.0206	2.9486	0.7423	3.6908	1.5154	0.6829	2.1983	0.0000	1,995.4825	1,995.4825	0.6454		2,011.6169

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.4 Grading - 2022**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	0.0000	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
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	0.0321	0.0170	0.2182	7.5000e-004	5.4783	4.9000e-004	5.4788	0.5580	4.5000e-004	0.5584		74.3344	74.3344	1.6200e-003		74.3748
Total	0.0321	0.0170	0.2182	7.5000e-004	5.4783	4.9000e-004	5.4788	0.5580	4.5000e-004	0.5584		74.3344	74.3344	1.6200e-003		74.3748

3.5 Building Construction - 2022**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	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731		2,289.2813	2,289.2813	0.4417		2,300.3230
Total	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731		2,289.2813	2,289.2813	0.4417		2,300.3230

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.5 Building Construction - 2022**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	0.0000	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
Vendor	0.0229	0.6588	0.1649	1.9400e-003	4.3703	1.4400e-003	4.3717	0.4444	1.3800e-003	0.4458		202.7655	202.7655	9.4900e-003		203.0027
Worker	0.1540	0.0817	1.0472	3.5800e-003	42.7304	2.3500e-003	42.7328	4.3216	2.1600e-003	4.3238		356.8052	356.8052	7.7500e-003		356.9991
Total	0.1769	0.7404	1.2120	5.5200e-003	47.1007	3.7900e-003	47.1045	4.7660	3.5400e-003	4.7695		559.5708	559.5708	0.0172		560.0018

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	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731	0.0000	2,289.2813	2,289.2813	0.4417		2,300.3230
Total	1.8555	14.6040	14.3533	0.0250		0.7022	0.7022		0.6731	0.6731	0.0000	2,289.2813	2,289.2813	0.4417		2,300.3230

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.5 Building Construction - 2022**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	0.0000	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
Vendor	0.0229	0.6588	0.1649	1.9400e-003	2.6926	1.4400e-003	2.6940	0.2766	1.3800e-003	0.2780		202.7655	202.7655	9.4900e-003		203.0027
Worker	0.1540	0.0817	1.0472	3.5800e-003	26.2959	2.3500e-003	26.2982	2.6781	2.1600e-003	2.6803		356.8052	356.8052	7.7500e-003		356.9991
Total	0.1769	0.7404	1.2120	5.5200e-003	28.9885	3.7900e-003	28.9922	2.9548	3.5400e-003	2.9583		559.5708	559.5708	0.0172		560.0018

3.5 Building Construction - 2023**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	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880		2,289.5233	2,289.5233	0.4330		2,300.3479
Total	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880		2,289.5233	2,289.5233	0.4330		2,300.3479

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.5 Building Construction - 2023**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	0.0000	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
Vendor	0.0172	0.5075	0.1436	1.8900e-003	4.3703	5.4000e-004	4.3708	0.4444	5.1000e-004	0.4449		197.9727	197.9727	6.8400e-003		198.1436
Worker	0.1434	0.0734	0.9615	3.4400e-003	42.7304	2.3000e-003	42.7327	4.3216	2.1100e-003	4.3237		343.0364	343.0364	6.9500e-003		343.2102
Total	0.1607	0.5808	1.1051	5.3300e-003	47.1007	2.8400e-003	47.1036	4.7660	2.6200e-003	4.7686		541.0091	541.0091	0.0138		541.3538

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	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880	0.0000	2,289.5233	2,289.5233	0.4330		2,300.3479
Total	1.7136	13.6239	14.2145	0.0250		0.6136	0.6136		0.5880	0.5880	0.0000	2,289.5233	2,289.5233	0.4330		2,300.3479

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.5 Building Construction - 2023**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	0.0000	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
Vendor	0.0172	0.5075	0.1436	1.8900e-003	2.6926	5.4000e-004	2.6931	0.2766	5.1000e-004	0.2771		197.9727	197.9727	6.8400e-003		198.1436
Worker	0.1434	0.0734	0.9615	3.4400e-003	26.2959	2.3000e-003	26.2982	2.6781	2.1100e-003	2.6803		343.0364	343.0364	6.9500e-003		343.2102
Total	0.1607	0.5808	1.1051	5.3300e-003	28.9885	2.8400e-003	28.9913	2.9548	2.6200e-003	2.9574		541.0091	541.0091	0.0138		541.3538

3.6 Paving - 2023**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	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003		1,709.9926	1,709.9926	0.5420		1,723.5414
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003		1,709.9926	1,709.9926	0.5420		1,723.5414

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.6 Paving - 2023**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	0.0000	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
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	0.0448	0.0229	0.3005	1.0700e-003	13.3533	7.2000e-004	13.3540	1.3505	6.6000e-004	1.3512		107.1989	107.1989	2.1700e-003		107.2532
Total	0.0448	0.0229	0.3005	1.0700e-003	13.3533	7.2000e-004	13.3540	1.3505	6.6000e-004	1.3512		107.1989	107.1989	2.1700e-003		107.2532

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	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003	0.0000	1,709.9926	1,709.9926	0.5420		1,723.5414
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8802	8.6098	11.6840	0.0179		0.4338	0.4338		0.4003	0.4003	0.0000	1,709.9926	1,709.9926	0.5420		1,723.5414

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.6 Paving - 2023**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	0.0000	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
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	0.0448	0.0229	0.3005	1.0700e-003	8.2175	7.2000e-004	8.2182	0.8369	6.6000e-004	0.8376		107.1989	107.1989	2.1700e-003		107.2532
Total	0.0448	0.0229	0.3005	1.0700e-003	8.2175	7.2000e-004	8.2182	0.8369	6.6000e-004	0.8376		107.1989	107.1989	2.1700e-003		107.2532

3.7 Architectural Coating - 2023**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	92.3385					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	92.5301	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.7 Architectural Coating - 2023**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	0.0000	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
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	0.0299	0.0153	0.2003	7.2000e-004	8.9022	4.8000e-004	8.9027	0.9003	4.4000e-004	0.9008		71.4659	71.4659	1.4500e-003		71.5021
Total	0.0299	0.0153	0.2003	7.2000e-004	8.9022	4.8000e-004	8.9027	0.9003	4.4000e-004	0.9008		71.4659	71.4659	1.4500e-003		71.5021

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	92.3385					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	92.5301	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690

Oak Grove Apartments Project - Solano-Sacramento County, Summer

3.7 Architectural Coating - 2023**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	0.0000	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
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	0.0299	0.0153	0.2003	7.2000e-004	5.4783	4.8000e-004	5.4788	0.5580	4.4000e-004	0.5584		71.4659	71.4659	1.4500e-003		71.5021
Total	0.0299	0.0153	0.2003	7.2000e-004	5.4783	4.8000e-004	5.4788	0.5580	4.4000e-004	0.5584		71.4659	71.4659	1.4500e-003		71.5021

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Increase Density

Increase Transit Accessibility

Integrate Below Market Rate Housing

Oak Grove Apartments Project - Solano-Sacramento County, Summer

	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	0.3588	0.6816	3.4432	9.5700e-003	58.4686	7.6700e-003	58.4763	5.9807	7.1600e-003	5.9879		974.1900	974.1900	0.0484		975.3993
Unmitigated	0.3886	0.8737	4.3225	0.0135	83.5266	0.0105	83.5371	8.5439	9.8300e-003	8.5537		1,372.3200	1,372.3200	0.0561		1,373.7220

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	255.27	255.27	255.27	669,894	468,926
Total	255.27	255.27	255.27	669,894	468,926

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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 Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.569666	0.055696	0.181867	0.121259	0.023191	0.005512	0.010894	0.022819	0.000852	0.000912	0.005267	0.001222	0.000843

5.0 Energy Detail

 Historical Energy Use: N

Oak Grove Apartments Project - Solano-Sacramento County, Summer

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	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819
NaturalGas Unmitigated	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819

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					
Apartments Mid Rise	1585.87	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819
Total		0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819

Oak Grove Apartments Project - Solano-Sacramento County, Summer

5.2 Energy by Land Use - NaturalGas**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					
Apartments Mid Rise	1.58587	0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819
Total		0.0171	0.1462	0.0622	9.3000e-004		0.0118	0.0118		0.0118	0.0118		186.5731	186.5731	3.5800e-003	3.4200e-003	187.6819

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	1.9985	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306	0.0000	9.9530	9.9530	9.5700e-003	0.0000	10.1923
Unmitigated	1.9985	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306	0.0000	9.9530	9.9530	9.5700e-003	0.0000	10.1923

Oak Grove Apartments Project - Solano-Sacramento County, Summer

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	0.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5790					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	0.1666	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306		9.9530	9.9530	9.5700e-003		10.1923
Total	1.9985	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306	0.0000	9.9530	9.9530	9.5700e-003	0.0000	10.1923

Oak Grove Apartments Project - Solano-Sacramento County, Summer

6.2 Area by SubCategory**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	0.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5790					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	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
Landscaping	0.1666	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306		9.9530	9.9530	9.5700e-003		10.1923
Total	1.9985	0.0637	5.5288	2.9000e-004		0.0306	0.0306		0.0306	0.0306	0.0000	9.9530	9.9530	9.5700e-003	0.0000	10.1923

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 Stationary Equipment

Oak Grove Apartments Project - Solano-Sacramento County, Summer

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

APPENDIX D

BIOLOGICAL RESOURCES ASSESSMENT



BIOLOGICAL RESOURCES ASSESSMENT

OAK GROVE APARTMENTS PROJECT

CITY OF VACAVILLE, CA

OCTOBER 2020

PREPARED FOR:

City of Vacaville
650 Merchant Street
Vacaville, CA 95688



PREPARED BY:

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811
(916) 447-3479
www.analyticalcorp.com



BIOLOGICAL RESOURCES ASSESSMENT

OAK GROVE APARTMENTS PROJECT

CITY OF VACAVILLE, CA

OCTOBER 2020

PREPARED FOR:

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ATTACHMENTS

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Attachment B	Tree Protection and Removal Plan

1.0 INTRODUCTION

This Biological Resources Assessment analyzes the 2.11-acre property (project site) within the City of Vacaville, California. The Proposed Project includes demolition of the existing Glenbrook Hills Swim Club and the construction of a new residential multi-family 67-unit apartment complex with related property management offices, supportive services offices, and a community room. A biological resources survey of the project site was conducted on September 24, 2020. Survey methodologies, potentially occurring sensitive biological resources, and survey results are discussed herein.

1.1 PROJECT LOCATION

The project site is located at 475 West Monte Vista Avenue in the city of Vacaville (City) in Solano County (County), California (**Figure 1**). The 2.11-acre property consists of two parcels with corresponding assessor's parcel numbers (APN) 126-150-050 and 126-160-150 (**Figure 2**). The northern parcel is currently occupied by the Glenbrook Hills Swim Club, and the southern parcel is currently undeveloped. The project site is bounded to the north by West Monte Vista Avenue, the northwest by a commercial area that contains a gas station and convenience store, the southwest by South Orchard Avenue, the south by the City of Vacaville Fire Station 71, and to the east by residential units (**Figures 1 and 2**). Regional access to the project site is provided by Interstate 80. Vehicular access to the project site is provided via West Monte Avenue and South Orchard Avenue. The project site is relatively level with an elevation of approximately 205 feet above mean sea level.

1.2 PROJECT DESCRIPTION

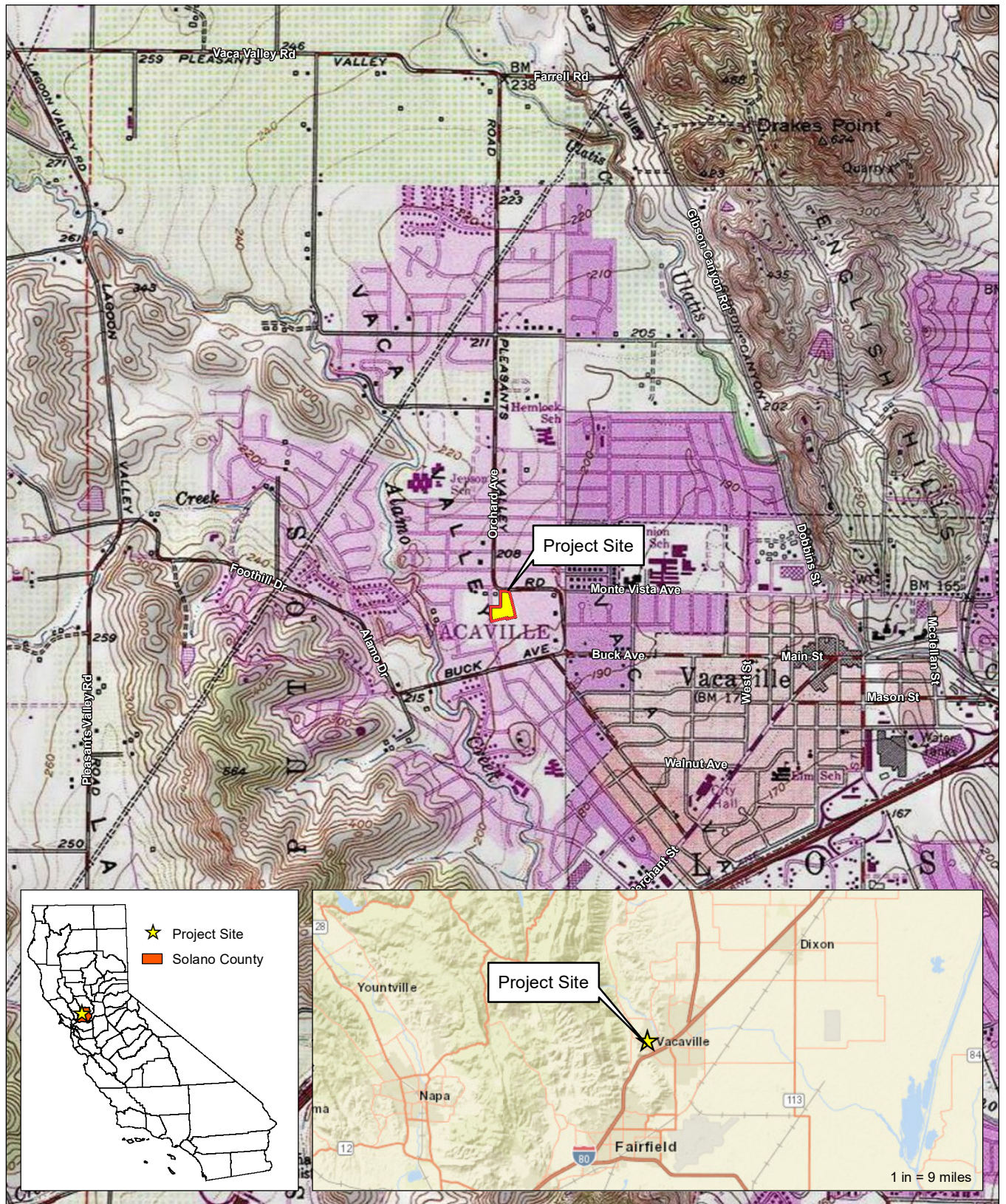
The Proposed Project would result in demolition of the existing Glenbrook Hills Swim Club and the construction of two additional buildings. The first building is an approximately 49,999 square foot (sf), four-story building comprised of 43 residential apartments, leasing office, services office, and community room. The second building is an approximately 23,786 sf, three-story building comprised of 24 residential apartment units and associated common use areas. The four-story building would front West Monte Vista Avenue and the three-story building would front South Orchard Avenue. A total of 60 parking spaces would be installed around the eastern and southern perimeters. A central courtyard would be incorporated within an existing oak tree grove between the two buildings. Project components are shown on **Figure 3**.

2.0 METHODOLOGY

2.1 PRELIMINARY DATA REVIEW

Prior to conducting the biological survey, biological information for the project site was obtained from the following sources, included in **Attachment A**:

- U.S. Fish and Wildlife Service (USFWS) list of special-status species with the potential to occur on and near the project site (USFWS, 2020a);
- California Natural Diversity Database (CNDDDB) query of special-status species with the potential to occur within the Elmira U.S. Geological Survey quadrangle (quad) (CDFW, 2020);
- California Native Plant Society (CNPS) query of special-status species known to occur in the Elmira quad (CNPS, 2020); and
- Custom Soil Report from the Natural Resources Conservation Service (NRCS) (NRCS, 2020).



SOURCE: "Fairfield North, CA" & "Elmira, CA" USGS 7.5 Minute Topographic Quadrangles, T6N R2W, Unsectioned Areas of Fairfield North & Elmira, Mt. Diablo Baseline & Meridian; ESRI, 2020; AES, 9/30/2020

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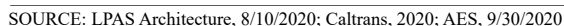
Figure 1
Site and Vicinity



SOURCE: DigitalGlobe Aerial Photograph, 9/1/2018; ESRI, 2020; AES, 9/30/2020

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Figure 2
Aerial Photograph



2.2 SURVEY TECHNIQUES

A biological resources survey of the project site was conducted on September 24, 2020. The survey was conducted by walking meandering transects throughout and around the project site. Data was collected via a Trimble Geo XH hand-held GPS receiver. Survey goals consisted of identifying habitat types, sensitive habitats, wetlands and waters of the U.S., plant and wildlife species, special-status species, and wildlife corridors. Habitat requirements of special-status species were compared to habitats present on and adjacent to the project site based on the biological survey, aerial photographs, and information included in **Attachment A**. Species observed were identified to the lowest taxonomical level possible. Binoculars were utilized as needed, such as to identify birds in flight. Evidence of wildlife dens, nests, or burrows were noted if present.

Surveys were conducted consistent with the California Department of Fish and Wildlife (CDFW) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018). Plants were identified using *The Jepson Manual: Vascular Plants of California* (Hickman, 1993), and *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al., 2012). Additionally, *A Manual of California Vegetation: Second Edition* (Sawyer et al., 2009), *Preliminary Descriptions of the Terrestrial Communities of California* (Holland, 1986), and *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) were consulted.

2.3 WILDLIFE CORRIDORS

Aerial photos were reviewed to assess habitats surrounding the project site for potential wildlife movement or wildlife corridors. Field methodology for identifying corridors for movement included searching for game trails or habitat that would favor movement of wildlife or potential gene flow. Barriers to wildlife movement were also noted.

3.0 ENVIRONMENTAL SETTING

3.1 SOIL TYPES

A soil assessment for the project site was prepared online through the NRCS (NRCS, 2020). The assessment mapped soil units on the project site and provided a summary of major physical characteristics for each soil unit (**Attachment A**). The project site consists largely of Yolo silty clay loam, 0 to 2 percent slopes. Yolo silty clay loam is a well-drained soil with a low runoff potential that can be prime farmland if irrigated properly. A small portion of the project site is comprised of Brentwood clay loam, 0 to 2 percent slopes. This soil type is well-drained, has a medium runoff potential, and has the potential to be prime farmland if irrigated properly.

3.2 HABITAT TYPES

Habitat types observed on the project site include: developed, ruderal/disturbed, and oak woodland. A habitat map is included as **Figure 4**, and site photographs are included as **Figure 5**. Habitat types are discussed further below.

Developed

The northern portion of the project site is currently occupied by the Glenbrook Hills Swim Club. This area is developed with swim club facilities and landscaping. An access driveway occurs along the southern border of the project site. Vegetation observed was predominantly ornamental mixed with weedy species in areas that had not recently been managed.



SOURCE: DigitalGlobe Aerial Photograph, 9/1/2018; ESRI, 2020; AES, 9/30/2020

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Figure 4
Habitat Types



PHOTO 1: Existing development for the Glenbrook Hills Swim Club



PHOTO 3: Ruderal habitat present on the southern parcel of the project site



PHOTO 2: Landscaping and ruderal vegetation surrounding the Glenbrook Hills Swim Club facility



PHOTO 4: Oak woodland on the project site

Trees observed within the developed habitat include sycamore (*Platanus sp.*), silver maple (*Acer saccharinum*), Japanese zelkova (*Zelkova serrata*), ornamental fruit trees (*Prunus sp.*), mulberry tree (*Morus sp.*), and Brazilian pepper (*Schinus terebinthifolia*). Other vegetation observed included English ivy (*Hedera helix*), cottonwood (*Populus sp.*), and sow thistle (*Sonchus sp.*). This habitat type comprises one acre (47.6 percent) of the project site.

Ruderal/Disturbed

The southern portion of the project site is currently undeveloped with the exception of an access road along the southern boundary. Plants growing within this area were predominantly weedy, non-native species. Plant species observed include chicory (*Chichorium intybus*), Japanese privet (*Ligustrum japonicum*), wild oats (*Avena fatua*), prostate knotweed (*Polygonum aviculare*), curly dock (*Rumex crispus*), hawkbit (*Leontodon saxitalis*), sand spurry (*Spergularia sp.*), prickly lettuce (*Lactuca serriola*), and cultivated radish (*Raphanus sativus*). This habitat type comprises 0.5 acres (23.8 percent) of the project site.

Oak Woodland

A group of oak trees was observed on the southern portion of the project site. Oak species observed include valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), and blue oak (*Quercus douglasii*). Possible oak hybrids were also observed. The understory of this habitat, where vegetated, was similar to that of the vegetated areas within the adjacent ruderal/disturbed habitat. This habitat type comprises 0.6 acres (28.5 percent) of the project site.

3.3 WILDLIFE SPECIES OBSERVED

The following animal species were observed on the project site: American crow (*Corvus brachyrhynchos*), European house sparrow (*Passer domesticus*), northern mockingbird (*Mimus polyglottos*), and rock pigeon (*Columba livia*).

3.4 SPECIAL-STATUS SPECIES

Preliminary data review and special-status species searches list 21 special-status plant species and 20 special-status animal species with the potential to occur in the region (**Attachment A**). The name, regulatory status, distribution, habitat requirements, period of identification, and potential to occur on the project site for each special-status species are listed in **Table 1**. Species with no potential to occur were ruled out based on site characteristics such as lack of suitable habitat, soils, elevation, or necessary substrate. No special-status species were observed on the project site during the survey.

3.5 CRITICAL HABITAT

No USFWS proposed or designated Critical Habitat occurs within the project site. The nearest Critical Habitat is for Contra Costa goldfields (*Lasthenia conjugens*), approximately 4.0 miles southeast of the project site (USFWS, 2020b).

3.6 WILDLIFE MOVEMENT

The project site is bounded to the north by West Monte Vista Avenue, to the northwest by a commercial area that contains a gas station and convenience store, to the southwest by South Orchard Avenue, to the south by the City of Vacaville Fire Station 71, and to the east by residential units (**Figures 1 and 2**).

TABLE 1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
PLANTS					
<i>Astragalus tener</i> var. <i>tener</i> Alkali milk-vetch	--/--/1B.2	Known to occur in Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanislaus, and Yolo counties. However it is presumed extirpated in Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties.	Found in alkaline soils and in playas, valley and foothill grassland (adobe clay), and vernal pools. Elevations range from 1-60 meters.	March-June	No. The project site does not contain suitable habitat.
<i>Atriplex cordulata</i> var. <i>cordulata</i> Heartscale	--/--/1B.2	Known to occur in Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Madera, Merced, San Joaquin, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo counties. Presumed extirpated in San Joaquin, Stanislaus, and Yolo counties.	Found in saline or alkaline soils and in chenopod scrub, meadows and seeps, and valley and foothill grassland habitats. Elevations range from 0-560 meters.	April-October	No. The project site does not contain suitable habitat.
<i>Atriplex depressa</i> Brittlescale	--/--/1B.2	Known to occur in Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Solano, Stanislaus, Tulare, and Yolo counties.	Found in alkaline, clay soils, and in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pool habitats. Elevations range from 1-320 meters.	April-October	No. The project site does not contain suitable habitat.
<i>Centromadia parryi</i> ssp. <i>parryi</i> Pappose tarplant	--/--/1B.2	Known to occur in Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, Sonoma, and Yolo Counties.	Found in chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), and valley and foothill grassland (vernally mesic)/often alkaline. Elevations: 2-420 meters.	May- November	No. The project site does not contain suitable habitat.
<i>Cordylanthus mollis</i> ssp. <i>hispidum</i> Hispid salty bird's-beak	--/--/1B.1	Known to occur in Alameda, Fresno, Kern, Merced, Placer and Solano and counties. Extirpated from much of the lower San Joaquin Valley.	Meadows and seeps, playas and valley and foothill grasslands. Elevations range from 1-155 meters.	June- September	No. The project site does not contain suitable habitat.
<i>Delphinium recurvatum</i> Recurved larkspur	--/--/1B.2	Known to occur in Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solano and Tulare counties.	Chenopod scrub, cismontane woodland and valley and foothill grassland (alkaline). Elevation ranges from 3-750 meters.	March-June	No. The project site does not contain suitable habitat.
<i>Downingia pusilla</i> Dwarf downingia	--/--/2B.2	Known to occur in Amador, Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties. Also occurs	Valley and foothill grassland (mesic) and vernal pools and roadside ditches. Elevations: 1-445 meters.	March-May	No. The project site does not contain suitable habitat.

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
		in South America.			
<i>Extriplex joaquinana</i> San Joaquin spearscale	--/--/1B.2	Known to occur in Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Santa Clara, San Joaquin, San Luis Obispo, Solano, Tulare, and Yolo counties. Presumed extirpated in Santa Clara, San Joaquin, and Tulare counties, and its presence is unconfirmed in San Luis Obispo and Tulare counties.	Found in alkaline soils and in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland habitats. Elevations range from 1-835 meters.	April-October	No. The project site does not contain suitable habitat.
<i>Fritilaria pluriflora</i> Adobe lily	--/--/1B.2	Known to occur in Butte, Colusa, Glenn, Lake, Napa, Solano, Tehama and Yolo Counties.	Chaparral, cismontane woodland, and Valley and foothill grassland (often adobe). Elevations; 60 to 705 meters.	February-April	No. The project site does not contain suitable habitat.
<i>Isocoma argute</i> Carquinez goldenbush	--/--/1B.1	Known to occur in Solano county.	A perennial shrub found in valley and foothill grassland (alkaline). Elevation range 1-20 meters.	August-December	No. The project site does not contain suitable habitat.
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE/--/1B.1	Known to occur in Alameda, Sonoma, Contra Costa, Monterey, Marin, and Napa counties, as well as Mendocino, Santa Barbara, and Santa Clara (though may be extirpated).	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, and Vernal pools/mesic. Elevations: 0-470 meters.	March-June	No. The project site does not contain suitable habitat.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tule pea	--/--/1B.2	Known to occur in Contra Costa, Napa, Sacramento, San Joaquin, Solano, Sonoma, and Yolo counties.	Marshes and swamps (freshwater and brackish). Elevations range from 0-5 meters.	May-September	No. The project site does not contain suitable habitat.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	FE/--/1B.1	Predominantly occurs in southern coastal California. Limited occurrences have been documented within the northern central valley.	Usually occurs within wetlands. Suitable habitat includes salt-marsh, playas, vernal-pools, and alkali sinks.	February-June	No. The project site does not contain suitable habitat.
<i>Legenere limosa</i> Legenere	--/--/1B.1	Known to occur in Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties.	Annual herb occurs in wet areas, ponds, and vernal pools. Elevations range from 1-950 meters.	April-June	No. The project site does not contain suitable habitat.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	--/--/1B.1	Known to occur in Colusa, Glenn, Lake, Lassen, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties.	Found in mesic conditions in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. Elevations range from 5-1740 meters.	April-July	No. The project site does not contain suitable habitat.
<i>Orcuttia inaequalis</i>	FT/CE/1B.1	Known range includes Fresno, Madera, Merced,	An annual herb in the grass family	April-	No. The project site

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
San Joaquin Valley orcutt grass		Solano, Stanislaus*, and Tulare Counties	(Poaceae). It occurs in vernal pool communities at elevations ranging from 10 to 755 meters	September	does not contain suitable habitat.
<i>Plagiobothrys hystriculus</i> Bearded popcorn- flower	--/--/1B.1	Known to occur in Napa, Solano, and Yolo counties.	Often found in vernal swales. Also found in valley and foothill grassland (mesic), and vernal pool margin habitats. Elevations range from 0-274 meters.	April-May	No. The project site does not contain suitable habitat.
<i>Puccinellia simplex</i> California alkali grass	--/--/1B.2	Known to occur in Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo counties.	An annual herb found in alkaline, vernal mesic condition within sinks, flats, and lake margins. Also chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools. Elevation range: 2-930 meters.	March-May	No. The project site does not contain suitable habitat.
<i>Symphyotrichum lentum</i> Suisun marsh aster	--/--/1B.2	Known to occur in Contra Costa, Napa, Sacramento, San Joaquin, Solano, and Yolo counties.	Found in marshes and swamps (brackish and freshwater). Elevations range from 0-3 meters.	(April) May- November	No. The project site does not contain suitable habitat.
<i>Trifolium amoenum</i> Two-fork clover (Showy Indian clover)	FE/--/1B.1	Known to occur in Alameda (may be extirpated), Marin, Napa (may be extirpated), Santa Clara (may be extirpated), Solano (may be extirpated), and Sonoma (may be extirpated/uncertain) counties.	Found in coastal bluff scrub and Valley and foothill grassland (sometimes serpentine). Elevations: 5-415 meters.	April-June	No. The project site does not contain suitable habitat.
<i>Trifolium hydrophilum</i> Saline clover	--/--/1B.2	Known to occur in Alameda, Contra Costa, Colusa, Lake, Monterey, Napa, Sacramento, San Benito, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, and Yolo counties. However, this species is unconfirmed in Colusa county.	Annual herb found in marshes and swamps, valley and foothill grassland that are occasionally on mesic, alkaline soils, and vernal pools. Elevations range from 0-300 meters.	April-June	No. The project site does not contain suitable habitat.
ANIMALS					
Mammals					
<i>Taxidea taxus</i> American badger	--/CSC/--	Found throughout most of California in suitable habitat.	Suitable habitat occurs in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas.	All Year	No. The project site does not contain suitable habitat.

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
Birds					
<i>Agelaius tricolor</i> Tricolored blackbird	--/CT, SSC/--	California and Baja California, Mexico.	Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water.	All Year	No. The project site does not contain suitable habitat.
<i>Ammodramus savannarum</i> Grasshopper sparrow	--/CSC/--	Breeding range occurs in portions of western California, including most coastal counties south to northwest Baja California (where resident). Also, the western Sacramento Valley and along the western edge of the Sierra Nevada. Wintering range is extreme Southern California and Baja.	Consists of moderately open grasslands and prairies with patchy bare ground. Selects different components of vegetation depending on grassland ecosystem. In the southwest and west, occupies more lush areas with shrub cover in arid grasslands.	March- September Year Round	No. The project site does not contain suitable habitat.
<i>Athene cunicularia</i> Burrowing owl	--/CSC/--	Formerly common within the described habitats throughout the state except the northwest coastal forests and high mountains.	Yearlong resident of open dry grassland and desert habitats, as well as grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats.	All Year	No. The project site does not contain suitable habitat.
<i>Buteo swainsoni</i> Swainson's hawk	--/CT/--	Breeds in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, Antelope Valley, and in eastern San Luis Obispo County.	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations.	March – October	Yes. This species may nest within trees on the project site, however on-site and adjacent land offers sub-optimal foraging.
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail (formerly California clapper rail)	FE/CE/--	Locally common yearlong in coastal wetlands and brackish areas around San Francisco Bay.	Found in saline emergent wetlands. Nests mostly in lower zones where cordgrass is abundant with nearby tidal sloughs. Builds a platform concealed by a canopy of woven cordgrass stems or pickleweed and gumweed. Also uses dead drift vegetation as platforms. In fresh or brackish water, nests in dense cattail or bulrush. Forages in higher marsh vegetation along vegetation and mudflat interface and tidal creeks.	All year	No. The project site does not contain suitable habitat.
<i>Strix occidentalis caurina</i> Northern spotted owl	FT/--/--	Year-round resident in Northern California, Oregon, and Washington, primarily in old growth or mature forests.	Inhabits forests with dense canopies of mature and old-growth trees, abundant logs, standing snags, and live trees with	Year-round	No. The project site does not contain suitable habitat.

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
			broken tops; prefers older forest stands with variety: multi-layered canopies of several tree species of varying size and age, both standing and fallen dead trees, and open space among lower branches to allow flight under the canopy.		
Amphibians					
<i>Ambystoma californiense</i> California tiger salamander	FT/CT/--	Occurs in Alameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, Stanislaus, Tulare, and Yolo counties.	Occurs in vernal pools, ephemeral wetlands, and seasonal ponds, including constructed stockponds, in grassland and oak savannah plant communities. Elevations; 0-460 meters.	November-February (adults) March 15 – May 15 (larvae)	No. Breeding habitat not present on the project site, and small mammal burrows not observed in ruderal areas. Does not provide dispersal habitat between breeding and upland habitat.
<i>Rana boylei</i> Foothill yellow-legged frog	--/CCT, CSC/--	Known from California and Oregon.	Require shallow, flowing water in moderate sized streams with some cobble substrate.	November-March (breeding) June-August (non-breeding)	No. The project site does not contain suitable habitat.
<i>Rana draytonii</i> California red-legged frog	FT/CSC/--	Year-round resident found primarily in coastal drainages in Central California	Requires a variety of habitat elements with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Breeding sites of the species are in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons. Additionally, the species frequently breeds in artificial impoundments.	Year-round	No. The project site does not contain suitable habitat.
Reptiles					

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
<i>Emys marmorata</i> Western pond turtle	--/CSC/--	West coast of North America from southern Washington, USA to northern Baja California, Mexico. Many populations have been extirpated and others continue to decline throughout the range, especially in southern California.	Requires aquatic habitats with suitable basking sites. Nest sites most often characterized as having gentle slopes (<15 percent) with little vegetation or sandy banks.	March - October	No. The project site does not contain suitable habitat.
<i>Thamnophis gigas</i> Giant garter snake	FT/CT/--	Endemic to the San Joaquin and Sacramento Valley floors. Counties include Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Sacramento, San Joaquin, Solano, Sutter, Yolo, and Yuba.	Inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Requires adequate water during active season (early spring through mid-fall) to provide food and cover, emergent, herbaceous wetland vegetation for foraging and cover, grassy banks and openings in waterside vegetation for basking, and higher elevation uplands for cover and refuge from flood waters during its dormant season (winter). Inhabits small mammal burrows and soil crevices with sunny exposure along south and west facing slopes, above prevailing flood elevations when dormant.	March-October	No. The project site does not contain suitable habitat.
Invertebrates					
<i>Bombus occidentalis</i> Western bumble bee	--/CCE/--	Known to occur along the West Coast and Mountain West of North America, including Arizona, New Mexico, Mediterranean California, the Pacific Northwest, and Alaska.	Found in open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Found at elevations from 0-2000+ meters. Nesting occurs underground in abandoned rodent burrows or other cavities.	February- November	Yes. This species may forage on the project site.
<i>Branchinecta conservatio</i>	FE/--/--	Known from several populations: the Vina Plains in Tehama County, south of Chico in Butte County, the	Endemic to vernal pools in the northern two-thirds of the Central Valley.	December- May	No. The project site does not contain

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
Conservancy fairy shrimp		Jepson Prairie Preserve and surrounding area in Solano County, Sacramento National Wildlife Refuge in Glenn County, Mapes Ranch west of Modesto, San Luis National Wildlife Refuge, Haystack Mountain/Yosemite Lake area in Merced County, and Los Padres National Forest in Ventura County.			suitable habitat.
<i>Elaphrus viridis</i> Delta green ground beetle	FT/--/--	Restricted to the area between Jepson Prairie and Travis AFB.	Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25-100% cover in margins of vernal pools in the grassland.	Consult Agency	No. The project site does not contain suitable habitat.
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FT/--/--	Vernal pool fairy shrimp are known from a total of 32 populations located in an area extending from Shasta County through most of the length of the Central Valley to Tulare County, and along the central coast range from northern Solano County to Pinnacles in San Benito County. Five additional, disjunctive populations exist near Soda Lake in San Luis Obispo County, in the mountain grasslands of northern Santa Barbara County, on the Santa Rosa Plateau in Riverside County, near Rancho California in Riverside County.	Vernal pools in the Central Valley, coast ranges, and a limited number of sites in the Transverse Ranges and Riverside County, California.	December-May	No. The project site does not contain suitable habitat.
<i>Desmocerus californicus dimorphus</i> Valley elderberry longhorn beetle	FT/--/--	Restricted to the Central Valley from Redding to Bakersfield. Counties include Amador, Butte, Calaveras, Colusa, El Dorado, Fresno, Glenn, Kern, Madera, Mariposa, Merced, Napa, Placer, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties; 0-762 meters elevation.	Riparian forest communities. Exclusive host plant is elderberry (<i>Sambucus</i> species), which must have stems \geq 1-inch diameter for the beetle.	Year-round	No. The project site does not contain host plants for this species.
<i>Lepidurus packardii</i> Vernal pool tadpole shrimp	FE/--/--	Known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County, also from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont.	Life cycle within vernal pools and valley foothill grassland swales.	December-May	No. The project site does not contain suitable habitat.
<i>Syncaris pacifica</i> California freshwater	FE/--/--	Limited to Marin, Sonoma, and Napa Counties in California	Found in low elevation, low gradient perennial freshwater streams or	Year-round	No. The project site does not contain

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE /CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ON PROJECT SITE
shrimp			intermittent streams with perennial pools. Requires banks that are structurally diverse with undercut banks, exposed roots, overhanging wood debris, or overhanging vegetation.		suitable habitat.
Fishes					
<i>Hypomesus transpacificus</i> Delta smelt	FT/CE/--	Occurs almost exclusively in the Sacramento-San Joaquin estuary, from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. May also occur in the San Francisco Bay.	Found in estuarine waters. Majority of life span is spent within the freshwater outskirts of the mixing zone (saltwater-freshwater interface) within the Delta.	Consult Agency	No. The project site does not contain suitable habitat.

SOURCE: CNPS, 2020; USFWS 2020a; CDFW, 2020

STATUS CODES

FEDERAL: United States Fish and Wildlife Service

- FE Federally endangered
- FT Federally threatened
- FC Federal candidate for listing
- FP Federally protected

STATE: California Department of Fish and Game

- CE California listed endangered
- CR California rare
- CT California listed threatened
- CSC California species of special concern
- CCE California Candidate Endangered

CNPS: California Native Plant Society

- List 1A Plants presumed extinct in California
- List 1B Plants rare, threatened, or endangered in California and elsewhere
- List 2 Plants rare, threatened, or endangered in California, but more common elsewhere
- List 3 Plants for which more information is needed
- List 4 Plants of limited distribution

Threat Ranks

- 0.1- Seriously threatened in California (high degree/immediacy of threat)
- 0.2- Fairly threatened in California (moderate degree/immediacy of threat)
- 0.3- Not very threatened in California (low degree/immediacy of threats or no current threats known)

The area surrounding the project site is similarly built up and surrounded by roadways, commercial development, and residences. Fencing occurs around portions of the northern parcel. Habitats known to facilitate wildlife movement, such as riparian corridors, were not observed. Wildlife access to the project site is extremely limited, and characteristics that would facilitate wildlife movement were not present on the project site. The project site contains and is surrounded by development that would pose a barrier to wildlife movement.

4.0 RESULTS AND RECOMMENDED MITIGATION

4.1 SENSITIVE HABITATS

Ruderal/disturbed and developed habitats on the project site are not considered sensitive. Oak trees within the City of Vacaville are protected under the City's Tree Preservation Supplemental Standards (Chapter 14.09.131.010 of the City's municipal code). A Tree Protection and Removal Plan has been developed by Urban Forestry Associates, Inc. (**Attachment B**). A total of 33 trees are proposed for removal, of which 2 trees are in poor health. Of the 31 trees in fair or better health, 14 valley oaks would be removed, and 17 ornamental trees would be removed. Remaining oaks, including 1 interior live oak and 18 valley oaks, would be preserved. The Proposed Project would largely protect oak woodlands and incorporate oak trees into open space as part of the project design. Of the 0.6 acres of oak woodland on the project site, the Proposed Project would result in preservation of 0.3 acres of oak woodlands throughout construction via protective fencing (**Attachment B**). Oaks to be removed are within the 0.3 acres of oak woodland outside of the protective fencing. However, the Proposed Project has been designed to avoid removal of oaks within this 0.3 acres as feasible.

In general, oaks are afforded protection under California Public Resources Code § 21083.4. However, affordable housing projects within an urbanized area are exempt from these protections as stated in § 21083.4(d)(2). However, oaks and other native trees on the Project Site are protected under Chapter 14.09.131 of the City's Municipal Code. **Mitigation Measure 1** is therefore recommended to mitigate for impacts related to removal of oak trees, as well as other trees protected by the City under the City's Tree Preservation Supplemental Standards. The Proposed Project would have a **less-than-significant** impact on sensitive habitats with implementation of **Mitigation Measure 1**.

Mitigation Measure 1

Prior to removal of protected trees within the Project Site, the project applicant shall obtain a tree removal permit from the City of Vacaville. The project applicant shall consult with the City to determine the appropriate mitigation for impacts to trees under Chapter 14.09.131 of the City's Municipal Code. Terms contained within the permit, including requirements for compensatory plantings of trees, shall be adhered to. In conjunction with submittal of a tree removal permit application, the applicant shall submit a site plan showing all protected trees proposed for removal for review and approval by the City of Vacaville Community Development Department. The project applicant shall consult with the City to determine the appropriate mitigation for impacts to trees under the City's Tree Preservation Supplemental Standards. If required by the City, the appropriate tree removal permits shall be obtained from the City of Vacaville prior to tree removal. Terms contained within the permit, including requirements for compensatory plantings of trees, shall be adhered to.

4.2 SPECIAL-STATUS SPECIES

Based on survey results and the review of regionally occurring special-status species and associated

habitat requirements, the project site does not provide suitable habitat for special-status plant species. However, the trees on the project site provide suitable habitat for nesting birds, including the special-status Swainson's hawk. Nesting birds are protected by the federal Migratory Bird Treaty Act, a federal law that covers nesting migratory birds, as well as California Fish and Game Code. Should land clearing or construction occur during the nesting season (February 15 to September 15), **Mitigation Measure 2** is recommended to reduce potential impacts to nesting migratory birds on or in the vicinity of the project site. The Proposed Project would have a **less-than-significant** impact on nesting migratory birds with implementation of **Mitigation Measure 2**.

Mitigation Measure 2

If groundbreaking is scheduled to begin during the general nesting season (February 1 through August 31), a qualified biologist shall conduct a preconstruction nesting bird survey of the Project Site and publicly-accessible areas within 500 feet of the Project Site within 5 days prior to site disturbance. Results of the preconstruction survey shall be submitted to the City of Vacaville. If nesting birds are not observed, then further mitigation is not required. If an active nest is identified, the following shall occur:

- The biologist shall establish a minimum 100-foot Environmentally Sensitive Area (ESA) around the nest. The ESA may be reduced if the biologist determines that a smaller ESA would still adequately protect the nest. Similarly, the ESA may be enlarged if the biologist determines a larger buffer is necessary to protect the nest.
- The City of Vacaville Development Department shall be notified.

Work may not occur within the ESA until the biologist determines that the nest is no longer active.

4.3 CRITICAL HABITAT

No designated critical habitat occurs within the project site. The Proposed Project would have **no impact** on critical habitat.

4.4 WILDLIFE MOVEMENT

The majority of the project site is developed or disturbed. The area surrounding the project site consists of urban development, including roadways, commercial land use, and residences. Wildlife access to the project site is extremely limited. No wildlife corridors were identified within project site bounds. The Proposed Project would have **no impact** on wildlife movement.

5.0 REFERENCES

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- Mayer, Kenneth and W. Laudenslayer, 1988. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection. Sacramento, California.
- NRCS, 2020. Web Soil Survey, National Cooperative Soil Survey. Available online at: <http://websoilsurvey.sc.egov.usda.gov/App/Home-Page.htm>. Accessed September 2020.
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ATTACHMENT A

PRELIMINARY RESEARCH DATA



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To:

September 28, 2020

Consultation Code: 08ESMF00-2020-SLI-2996

Event Code: 08ESMF00-2020-E-09253

Project Name: Oak Grove Apartments

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-2996

Event Code: 08ESMF00-2020-E-09253

Project Name: Oak Grove Apartments

Project Type: DEVELOPMENT

Project Description: Apartment development

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.358582887693125N122.0039133485584W>



Counties: Solano, CA

Endangered Species Act Species

There is a total of 13 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Delta Green Ground Beetle <i>Elaphrus viridis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2319	Threatened
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
California Freshwater Shrimp <i>Syncaris pacifica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7903	Endangered
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Contra Costa Goldfields <i>Lasthenia conjugens</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Showy Indian Clover <i>Trifolium amoenum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Elmira (3812138))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
<i>Ambystoma californiense</i> California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
<i>Ammodramus savannarum</i> grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Atriplex cordulata</i> var. <i>cordulata</i> heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
<i>Atriplex depressa</i> brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Branchinecta conservatio</i> Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
<i>Branchinecta mesoallensis</i> midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Centromadia parryi</i> ssp. <i>parryi</i> pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
<i>Chloropyron molle</i> ssp. <i>hispidum</i> hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
<i>Delphinium recurvatum</i> recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
<i>Downingia pusilla</i> dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
<i>Elaphrus viridis</i> Delta green ground beetle	IICOL36010	Threatened	None	G1	S1	
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Extriplex joaquinana</i> San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
<i>Fritillaria pluriflora</i> adobe-lily	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Hydrochara rickseckeri</i> Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
<i>Isocoma arguta</i> Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
<i>Lasthenia conjugens</i> Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
<i>Lasthenia glabrata ssp. coulteri</i> Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
<i>Legenere limosa</i> legenere	PDCAM0C010	None	None	G2	S2	1B.1
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
<i>Linderiella occidentalis</i> California linderiella	ICBRA06010	None	None	G2G3	S2S3	
<i>Navarretia leucocephala ssp. bakeri</i> Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
<i>Northern Claypan Vernal Pool</i> Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
<i>Plagiobothrys hystriculus</i> bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
<i>Puccinellia simplex</i> California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Symphyotrichum lentum</i> Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Trifolium amoenum</i> two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
<i>Trifolium hydrophilum</i> saline clover	PDFAB400R5	None	None	G2	S2	1B.2
<i>Valley Needlegrass Grassland</i> Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	

Record Count: 38

*The database used to provide updates to the Online Inventory is under construction. [View updates and changes made since May 2019 here.](#)

Plant List

24 matches found. [Click on scientific name for details](#)

Search Criteria

Found in Quad 3812138

[Modify Search Criteria](#) [Export to Excel](#) [Modify Columns](#) [Modify Sort](#) [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S1	G2T1
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G3T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	1B.2	S2	G3T2
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Chloropyron molle ssp. hispidum	hispid bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	1B.1	S1	G2T1
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Fritillaria pluriflora	adobe-lily	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2S3	G2G3
Isocoma arguta	Carquinez goldenbush	Asteraceae	perennial shrub	Aug-Dec	1B.1	S1	G1
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G1
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	4.2	S3	G3
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	1B.1	S2	G4T2
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	1B.2	S2	G5T2
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	S2	G2
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	Mar-Jun	3.1	S2	G5T2Q
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G4T2
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	Apiaceae	perennial herb	Jun-Oct	4.2	S3S4	G5T3T4
Plagiobothrys hystriculus	bearded popcornflower	Boraginaceae	annual herb	Apr-May	1B.1	S2	G2
	Suisun Marsh aster	Asteraceae	perennial	(Apr)May-	1B.2	S2	G2

Symphyotrichum lentum			rhizomatous herb	Nov			
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	Apr-Jun	1B.1	S1	G1
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2

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Questions and Comments

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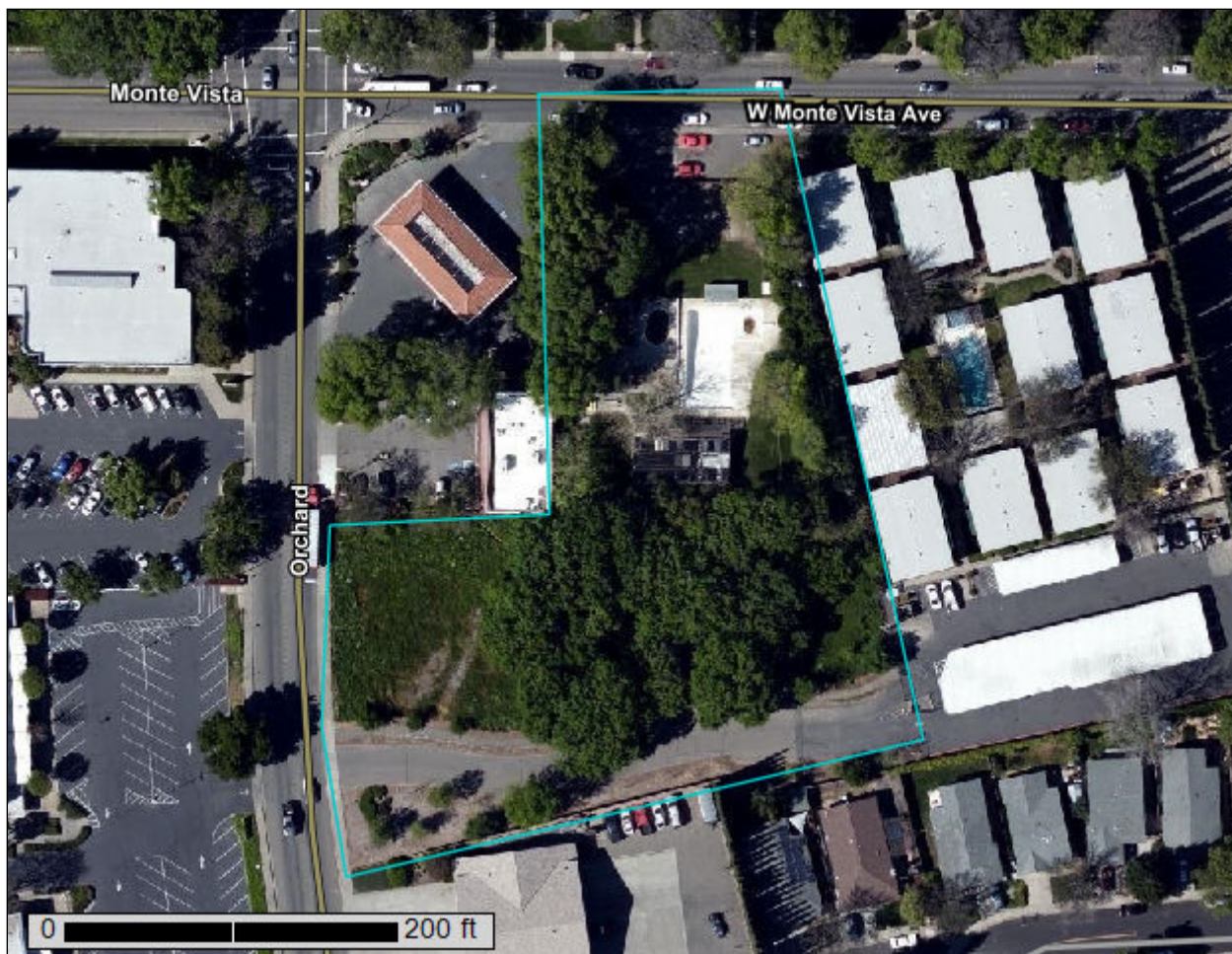
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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Cooperative Soil Survey,
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States Department of
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agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Solano County, California**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

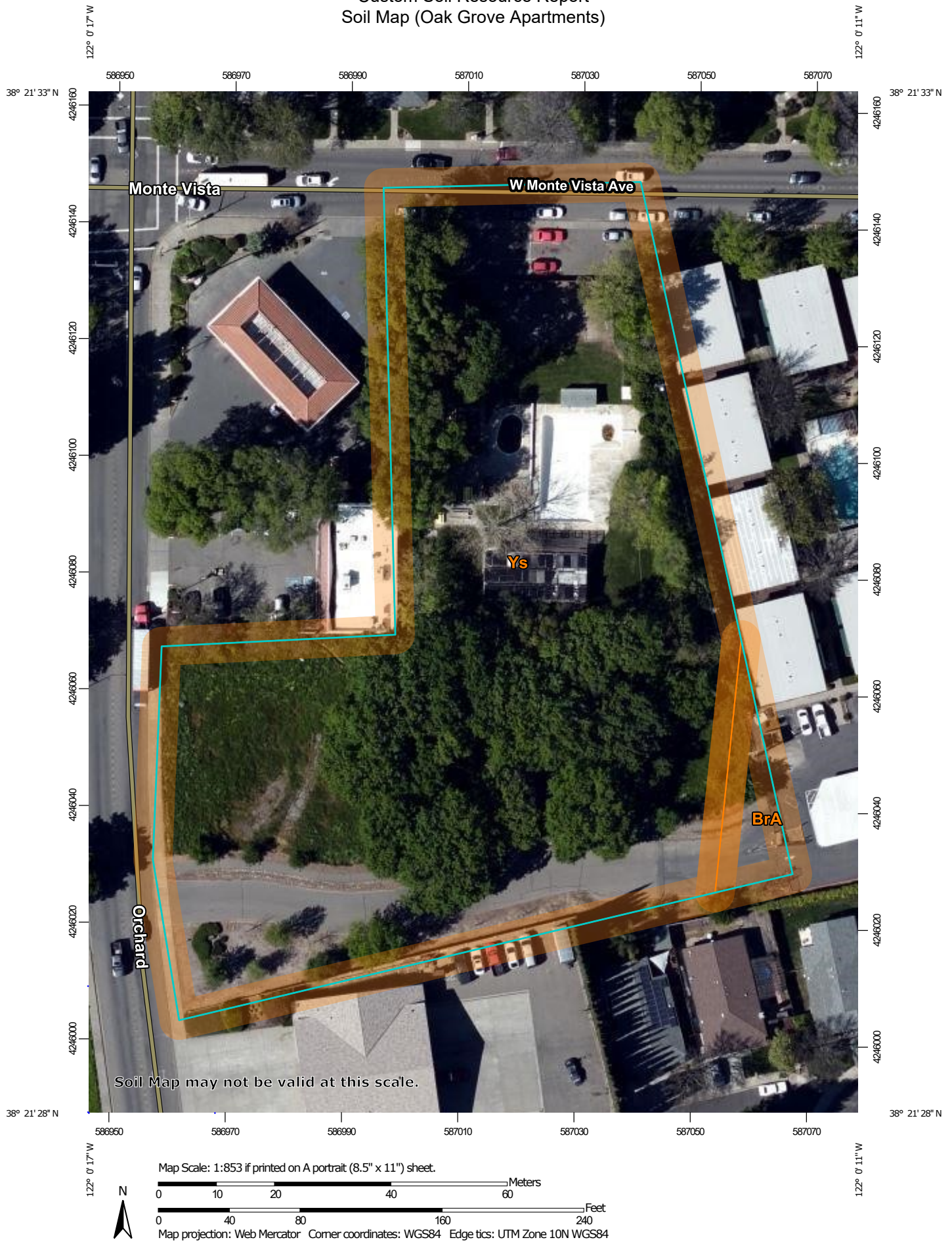
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map (Oak Grove Apartments)




Custom Soil Resource Report


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot


 Closed Depression

 Gravel Pit


 Gravelly Spot


 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other


 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 14, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2019—Apr 17, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Oak Grove Apartments)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BrA	Brentwood clay loam, 0 to 2 percent slopes	0.1	2.9%
Ys	Yolo silty clay loam, 0 to 2 percent slopes, MLRA 17	2.3	97.1%
Totals for Area of Interest		2.4	100.0%

Map Unit Descriptions (Oak Grove Apartments)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Solano County, California

BrA—Brentwood clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: h9kp

Elevation: 80 to 250 feet

Mean annual precipitation: 18 to 25 inches

Mean annual air temperature: 61 to 63 degrees F

Frost-free period: 260 to 280 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Brentwood and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brentwood

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 6 inches: clay loam

H2 - 6 to 34 inches: clay loam

H3 - 34 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Yolo

Percent of map unit: 10 percent

Hydric soil rating: No

Rincon

Percent of map unit: 5 percent

Hydric soil rating: No

Ys—Yolo silty clay loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2w8b1

Elevation: 10 to 420 feet

Mean annual precipitation: 16 to 28 inches

Mean annual air temperature: 61 to 63 degrees F

Frost-free period: 240 to 270 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Yolo and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yolo

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 9 inches: silty clay loam

A1 - 9 to 18 inches: silty clay loam

A2 - 18 to 28 inches: silty clay loam

Bw1 - 28 to 36 inches: clay loam

Bw2 - 36 to 44 inches: loam

Bw3 - 44 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare

Frequency of ponding: None

Calcium carbonate, maximum content: 1 percent

Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)

Custom Soil Resource Report

Available water capacity: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Brentwood

Percent of map unit: 5 percent

Hydric soil rating: No

Sycamore

Percent of map unit: 5 percent

Hydric soil rating: No

Reiff

Percent of map unit: 5 percent

Hydric soil rating: No

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ATTACHMENT B

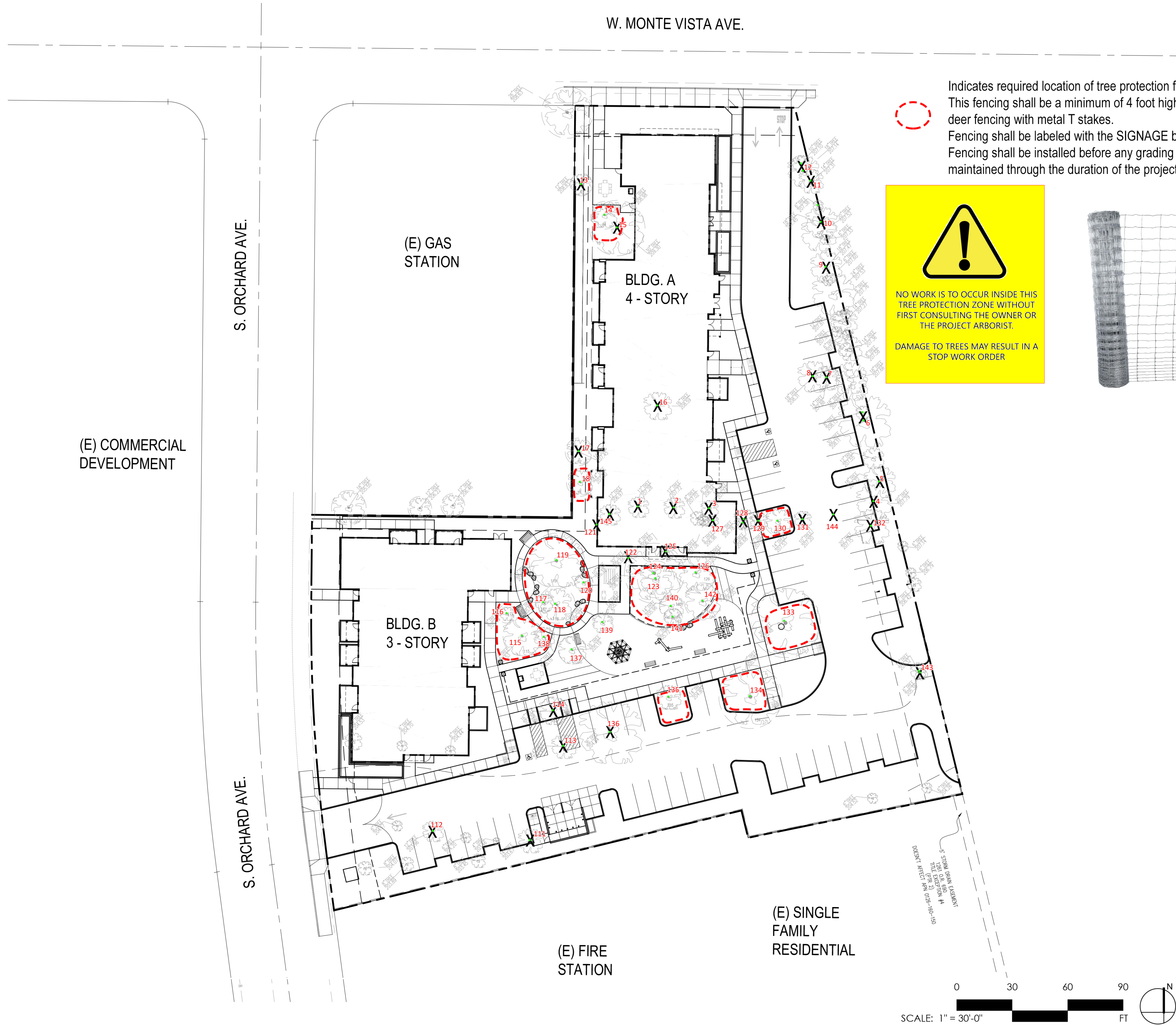
TREE PROTECTION AND REMOVAL PLAN

TREE PROTECTION AND REMOVAL PLAN

OAK GROVE APARTMENTS | VACAVILLE, CA

PROJECT NO. 1216-0007

08/10/2020



Tree #	Species	Scientific Name	Circumference at 4.5'			Cumulative Circumference	Protected Status	Health	Structure	Comments	Removal	Protection Measures
			Stem 1	Stem 2	Stem 3							
1	Privet	Ligustrum sp.	39	25		55	Protected	Poor to Fair	Poor to Fair		X	
2	American sycamore	Platanus occidentalis	47			47	Protected	Fair	Poor			X
3	American sycamore	Platanus occidentalis	35			35	Protected	Poor	Poor			X
4	American sycamore	Platanus occidentalis	50	42	41	133	Protected	Fair	Poor to Fair	Pruned for line clearance. Extreme carpenter ant activity in tree.		X
5	Privet	Ligustrum sp.	28	28		57	Protected	Poor	Poor to Fair	Aggressively pruned for line clearance. Very little live canopy.		X
6	Siberian elm	Ulmus pumila	119			119	Protected	Fair	Poor to Fair	Pruned for line clearance. Chocked with ivy.		X
7	Liquidambar	Liquidambar styraciflua	48			48	Protected	Good	Fair	Appears to have been topped twice.		X
8	Silver maple	Acer saccharinum	68			68	Protected	Good	Good			X
9	c.f. Hackberry	Celtis sp.	-63			63	Protected	Poor to Fair	Poor	Limited visibility. Chocked with ivy. Topped for line clearance.		X
10	Unknown		-63			63	Protected	Fair	Poor	Extremely limited assessment due to ivy totally covering stem and canopy. Species could not be determined but it is not oak.		X
11	Liquidambar	Liquidambar styraciflua	58			58	Protected	Good	Fair to Good	Very limited physical and visual access due to ivy.		X
12	Silver maple	Acer saccharinum	94	63	63	220	Protected	Good	Fair	Very limited physical and visual access due to vines. Diameters estimated.		X
13	Brazilian pepper	Schinus terebinthifolia	36	20		56	Protected	Good	Good			X
14	Interior Live Oak	Quercus wislizeni	51			51	Protected	Good	Good	Leggy form.		Fencing as shown
15	Valley oak	Quercus lobata	96			96	Protected	Good	Fair to Good			X
16	American sycamore	Platanus occidentalis	57			57	Protected	Fair to Good	Good			X
17	American sycamore	Platanus occidentalis	47			47	Protected	Fair	Fair			X
18	American sycamore	Platanus occidentalis	49			49	Protected	Fair	Fair			Fencing as shown
111	Liquidambar	Liquidambar styraciflua	42.4			42.4	Protected	Good	Good			X
112	Liquidambar	Liquidambar styraciflua	18.5	14.5	11.6	44.6	Protected	Fair	Poor	Many small stems. Extensive decay in base and largest stem.		X
113	Valley Oak	Quercus lobata	40.5			40.5	Protected	Good	Good	Canopy distributed to the west.		
114	Valley Oak	Quercus lobata	55.0			55.0	Protected	Good	Good	Canopy slightly to the west.		X
115	Valley Oak	Quercus lobata	56.2	49.3		105.6	Protected	Good	Good			Fencing as shown
116	Valley Oak	Quercus lobata	25.1			25.1	Exempt	Good	Fair	Suppressed by adjacent trees. Canopy to the west.		Fencing as shown
117	Valley Oak	Quercus lobata	29.2			29.2	Exempt	Good	Fair	Suppressed by adjacent trees. Canopy to the west.		Fencing as shown
118	Valley Oak	Quercus lobata	28.9	27.6		56.5	Protected	Good	Good	Leggy form. Prolific deadwood in lower canopy.		Fencing as shown
119	Valley Oak	Quercus lobata	54.4	45.9		100.3	Protected	Good	Good	Significant scattered deadwood in canopy.		Fencing as shown
120	Valley Oak	Quercus lobata	34.9			34.9	Protected	Good	Good			Fencing as shown
121	Valley Oak	Quercus lobata	55.0			55.0	Protected	Good	Good	Significant lean and mean stem to the south. Base is within 3 feet of chain-link fence.		X
122	Valley Oak	Quercus lobata	42.2	27.3		69.5	Protected	Good	Good			X
123	Valley Oak	Quercus lobata	37.4	19.5		56.9	Protected	Good	Good	Asymmetric canopy balanced to the south due to close proximity to tree 124.		X
124	Valley Oak	Quercus lobata	27.0	22.3	17.0	66.3	Protected	Good	Good	6 stems growing within one foot of tree 123		Fencing as shown
125	Valley Oak	Quercus lobata	19.5	11.3		30.8	Exempt	Good	Fair			X
126	Valley Oak	Quercus lobata	34.9	32.0	24.8	91.7	Protected	Good	Good	6 stems		Fencing as shown
127	Valley Oak	Quercus lobata	21.7			21.7	Exempt	Good	Good	Slight lean in main stem to the south away from property fence. Leggy form growing through privets.		X
128	Valley Oak	Quercus lobata	43.7			43.7	Protected	Good	Good	Growing less than 1 foot from property fence. Canopy extends over adjacent property.		X
129	Valley Oak	Quercus lobata	32.4			32.4	Protected	Good	Fair	Strong bow in main stem to the south away from property line.		X
130	Valley Oak	Quercus lobata	48.1			48.1	Protected	Good	Good	Slight canopy distribution to the east.		Fencing as shown
131	Valley Oak	Quercus lobata	40.2			40.2	Protected	Good	Good			X
132	Valley Oak	Quercus lobata	72.6			72.6	Protected	Good	Good	Main stem turns abruptly to the southwest just above grade and is within 6 feet of the ground for approximately 20 feet.		X
133	Valley Oak	Quercus lobata	51.5	51.5	43.7	146.7	Protected	Good	Good	Large, spreading, low canopy. Four stems Small Coast Live Oak growing adjacent to base.		Fencing as shown
134	Valley Oak	Quercus lobata	58.7	55.9	49.0	163.7	Protected	Good	Good	Large, spreading canopy. For stems.		Fencing as shown
135	Valley Oak	Quercus lobata	47.1			47.1	Protected	Fair	Good	Sparse canopy.		Fencing as shown
136	Valley Oak	Quercus lobata	80.4	76.0		156.5	Protected	Good	Good	Large old wound from prior failure on larger of two stems. Some internal decay but appears to be closing nicely. Large, spreading canopy.		X
137	Valley Oak	Quercus lobata	28.0	27.6	16.0	71.6	Protected	Good	Good			Fencing as shown
138	Valley Oak	Quercus lobata	32.0	29.5		61.6	Protected	Good	Good	Suppressed by adjacent trees.		Fencing as shown
139	Valley Oak	Quercus lobata	35.8			35.8	Protected	Good	Good			Fencing as shown
140	Valley Oak	Quercus lobata	37.1	16.3		53.4	Protected	Good	Good	Somewhat sparse canopy		Fencing as shown
141	Valley Oak	Quercus lobata	23.6	20.1	6.9	50.6	Protected	Good	Good	Somewhat suppressed by adjacent trees. Canopy balance slightly to the south.		Fencing as shown
142	Valley Oak	Quercus lobata	50.3			50.3	Protected	Good	Good	Slight lean in main stem and canopy balance to the east.		
143	Valley Oak	Quercus lobata	18.8	17.3	14.8	50.9	Protected	Good	Good	Slight lean in main stem and canopy balance to the east. Located between two fences. Circumferences estimated.		X
144	Privet	Ligustrum sp.	25.0	15.0	12.0	52.0	Protected	Good	Good	Protected due to cumulative total of stem circumferences. Not tagged.		X
145	Privet	Ligustrum sp.					Protected	Good	Good	Cluster of many stems between two property fences. Circumferences estimated. Not tagged. Protected due to cumulative total of stem circumferences.		X
Sub-Total											33	
Total Protected Removals											31	

ARBORIST'S CHECKLIST

- Tree protection fencing shall be installed in accordance with the tree protection map prior to starting the demolition work. This area will be known as the Tree Protection Zone (TPZ).
- The Arborist shall have a pre-demolition meeting with contractor or responsible party and all other foremen or crew managers on site prior to any work to review all work procedures, access and haul routes, and tree protection. The contractor must notify the Arborist if roots are exposed in the established TPZ or if trunk or branches are wounded.
- Any trunk and root crown that is not protected by a TPZ where heavy equipment operation is likely to wound the trunk. Install a barrel stake-like trunk wrap out of 2 X 4 studs connected together with metal straps, attached to the 2 X 4's with driver screws or 1" nails.
- Storage of equipment shall be as far away from protected trees as possible and optimally on asphalt or ground protected by mulch / plywood.
- Heavy equipment use should be limited around trees and the roots. No equipment may be transported or used on bare ground within the TPZ.
- Any damage to trees due to demolition or construction activities shall be reported to the arborist within 6 hours, so that remedial action can be taken.
- All trenching within the TPZ shall be done pneumatically or by hand, being careful not to damage any of the bark of any root encountered.
- An arborist shall inspect all grading, trenching, tunneling or other excavation within the TPZ prior to backfill.
- No chemicals or other waste materials shall be dumped within 20' of the base of any tree. There shall be no material storage in the TPZ.
- Any tree pruning will be done in accordance with ISA standards. All pruning will be inspected by the arborist.
- The arborist must perform a final inspection to ensure that no unmitigated damage has occurred and to specify any pest, disease or other health care. The arborist shall specify and oversee any necessary restorative actions.
- Any suspected omissions or conflict between various elements of the plan shall be brought to the attention of the arborist and resolved before proceeding with the work.

APPENDIX E

CULTURAL RESOURCES ASSESSMENT

Confidential Appendix

APPENDIX F

MITIGATION MONITORING AND REPORTING PROGRAM

OAK GROVE APARTMENTS PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

Section 15097 of the California Environmental Quality Act (CEQA) requires that all state and local agencies establish monitoring or reporting programs for projects approved by a public agency whenever approval involves the adoption of an Initial Study/Mitigated Negative Declaration (IS/MND). The mitigation monitoring and reporting program (MMRP) contained herein is intended to satisfy the requirements of CEQA as it relates to the Oak Grove Apartments Project (Proposed Project).

This MMRP is intended to be used by the City of Vacaville (City) Staff and mitigation monitoring personnel to ensure compliance with mitigation measures during project implementation. The IS/MND for the Proposed Project presents a detailed set of mitigation measures applicable to implementation of the Proposed Project. The mitigation measures were initially developed during preparation of the IS/MND (November 2020) and, in some cases, were refined in response to comments on the IS/MND.

The intent of the MMRP is to ensure the effective implementation and enforcement of all adopted mitigation measures. The MMRP will provide for monitoring of construction activities, as necessary, and in the field identification and resolution of environmental concerns.

MITIGATION MONITORING PROGRAM

The table presented on the following pages provides the MMRP for the Proposed Project. The MMRP identifies:

1. The full text of the mitigation measure(s) applicable to each impact statement;
2. The timing of implementation of each mitigation measure; and
3. The party responsible for ensuring implementation of each mitigation measure.

Following completion of the monitoring and reporting process, the final monitoring results will then be entered into the City's Mitigation Monitoring and Reporting database.

Mitigation Measure	Timing of Action	Reviewing Party	Initial/Date Complete
Air Quality			
AQ-1: The following control measures will be implemented during construction. a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. b. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. c. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). d. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR).	During Construction	City of Vacaville	
Biological Resources			
BIO-1: If groundbreaking is scheduled to begin during the general nesting season (February 1 through August 31), a qualified biologist shall conduct a preconstruction nesting bird survey of the Project Site and publicly-accessible areas within 500 feet of the Project Site within 5 days prior to site disturbance. Results of the preconstruction survey shall be submitted to the City of Vacaville. If nesting birds are not observed, then further mitigation is not required. If an active nest is identified, the following shall occur: <ul style="list-style-type: none"> The biologist shall establish a minimum 100-foot Environmentally Sensitive Area (ESA) around the nest. The ESA may be reduced if the biologist determines that a smaller ESA would still adequately protect the nest. Similarly, the ESA may be enlarged if the biologist determines a larger buffer is necessary to protect the nest. The City of Vacaville Development Department shall be notified. Work may not occur within the ESA until the biologist determines that the nest is no longer active.	Prior to construction	City of Vacaville	
Cultural Resources			
CR-1: In the event of any inadvertent discovery of archaeological or paleontological resources, all such finds shall be subject to 36 CFR 60.4, PRC 21083.2, and CEQA Guidelines § 15064.5. Procedures for inadvertent discovery include the following: <ul style="list-style-type: none"> All work within a 100-foot radius of the find shall be halted, and the City shall be notified. Workers should avoid altering the materials until a professional archaeologist or paleontologist if the find is of a paleontological nature, can evaluate the significance of the find in accordance with NRHP and CRHR criteria. The Applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. The qualified archeologist shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but 	During construction	City of Vacaville	

Mitigation Measure	Timing of Action	Reviewing Party	Initial/Date Complete
<p>not limited to, culturally appropriate temporary and permanent treatment, which may include avoidance of cultural resources, in-place preservation, and/or re-burial on project property so the resource(s) are not subject to further disturbance in perpetuity. If avoidance is determined to be infeasible, pursuant to CEQA Guidelines Section 15126.4(b)(3)(C), a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. If necessary, excavation and evaluation of the finds shall comply with Section 15064.5 of the CEQA Guidelines.</p> <ul style="list-style-type: none"> If the find represents a prehistoric resource, representatives of the Native American community shall be consulted as well under the provisions of AB 52 or Section 106 of the NHPA. Construction shall not resume in the vicinity of the find until consultation is concluded or until a reasonable good-faith effort has failed to provide a resolution to further impacts that is acceptable to the consulting parties. 			
<p>CR-2: In the event that human remains are encountered during construction activities, the City shall comply with Section 15064.5 (e) (1) of the CEQA Guidelines and Health and Safety Code Section 7050.5. All project related ground disturbance within 100 feet of the find shall be halted until the county coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the NAHC to identify the most likely descendants of the deceased Native Americans. Project-Related ground disturbance in the vicinity of the find shall not resume until the process detailed in Section 15064.5 (e) has been completed.</p>	During construction	City of Vacaville	
<p>CR-2: Prior to the beginning of Proposed Project construction, the City shall contact the Yocha Dehe Wintun Nation to schedule and complete cultural sensitivity training for construction project machinery operators and supervisory personnel.</p>	Prior to construction	City of Vacaville	
Hazards and Hazardous Materials			
<p>HAZ-1: An accidental spill prevention and response plan shall be developed which will include a list of all hazardous materials used and/or stored on the Project Site during construction activities, appropriate information about initial spill response, containment, and cleanup strategies, and a list of appropriate City contact information. The spill prevention and response plan shall be included as a component of the SWPPP described in Mitigation Measure HYD-1. The plan shall require containment equipment and sufficient supplies to combat spills of oil or hazardous substances and shall be on site at all times during construction.</p>	Prior to construction	City of Vacaville	
Hydrology/Water Quality			
<p>HYD-1: The Project Applicant shall obtain coverage under the NPDES Construction General Permit prior to initiation of construction activities. The SWRCB requires that construction sites have adequate control measures to reduce the discharge of sediment</p>	Prior to construction	City of Vacaville	

Mitigation Measure	Timing of Action	Reviewing Party	Initial/Date Complete
<p>and other pollutants to streams to ensure compliance with Section 303 of the CWA. To comply with the NPDES permit, a Notice of Intent shall be filed with the SWRCB.</p> <p>A SWPPP shall be approved prior to construction. The SWPPP shall include a detailed, site-specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills) including a description of the type and location of erosion and sediment control BMPs to be implemented at the Project Site; and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the Project Site. A copy of the SWPPP shall be kept on the Project Site. Water quality BMPs identified in the SWPPP may include, but are not limited to, the following:</p> <ul style="list-style-type: none"> ▪ Areas where ground disturbance occurs shall be identified in advance of construction and limited to approved areas. ▪ Vehicular construction traffic shall be confined to the designated access routes and staging areas. ▪ Equipment maintenance and cleaning shall be confined to staging areas. No vehicle maintenance shall occur on-site during construction. ▪ Supervisory construction personnel shall be informed of environmental concerns, permit conditions, and final project specifications. Said personnel shall be responsible for instructing on-site work to meet the requirements of the SWPPP including making sure work is conducted outside of protected trees' drip lines to the extent possible. ▪ Disturbed areas shall be restored to pre-construction contours to the extent possible. ▪ Hay/straw bales and silt fences shall be used to control erosion during stormwater runoff events. ▪ The highest quality soil shall be salvaged, stored, and used for native re-vegetation/seeding. ▪ Drainage gaps shall be implemented in topsoil and spoil piles to accommodate/reduce surface water runoff. ▪ Sediment control measures shall be in place prior to the onset of the rainy season and will be maintained until disturbed areas have been re-vegetated. Erosion control structures shall be in place and operational at the end of each day if work activities occur during the rainy season. ▪ Fiber rolls shall be placed along the perimeter of disturbed areas to ensure sediment and other potential contaminants of concern are not transported off-site or to open trenches. Locations of fiber rolls will be field adjusted as needed and according to the advice of the certified SWPPP inspector. ▪ Vehicles and equipment stored in the construction staging area shall be inspected regularly for signs of leakage. Leak-prone equipment will be staged over an impervious surface or other suitable means will be provided to ensure containment of 			

Mitigation Measure	Timing of Action	Reviewing Party	Initial/Date Complete
<p>any leaks. Vehicle/equipment wash waters or solvents will not be discharged to surface waters or drainage areas.</p> <ul style="list-style-type: none"> During the rainy season (dates to be specified in the SWPPP), soil stockpiles and material stockpiles will be covered and protected from the wind and precipitation. Plastic sheeting will be used to cover the stockpiles and straw wattles will be placed at the base for perimeter control. Contractors shall immediately control the source of any leak and immediately contain any spill utilizing appropriate spill containment and countermeasures. Leaks and spills shall be reported to the designated representative of the lead contractor and shall be evaluated to determine if the spill or leak meets mandatory SWPPP reporting requirements. Contaminated media shall be collected and disposed of at an off-site facility approved to accept such media. 			
Noise			
<p>N-1:</p> <ul style="list-style-type: none"> 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. 	Prior to and during construction	City of Vacaville	