

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

COPELAND CREEK TRAIL TO CRANE CREEK REGIONAL PARK PROJECT



City of Rohnert Park
Development Services
130 Avram Avenue
Rohnert Park, California 94928-2486

JANUARY 2020

Trail to Crane Creek Regional Park Project Initial Study

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1 INTRODUCTION

1.1 Project Overview and Location

The Copeland Creek Trail to Crane Creek Regional Park project (proposed project) comprises segments of a multi-use trail facility that connects the eastern end of the Copeland Creek Trail on the Sonoma State University campus located on the west side of Petaluma Hill Road to Crane Creek Regional Park, which is owned and operated by the Sonoma County Regional Park's Department (see **Figure 1, Regional and Project Location**). Located in Sonoma County, the proposed trail would be constructed primarily on land owned by the City of Rohnert Park (City - APN 047-132-038) located on the east side of Petaluma Hill Road, with a crossing of Petaluma Hill Road, located in right-of-way owned by Sonoma County.

The proposed project includes a new traffic signal and crosswalk at Petaluma Hill Road and Laurel Drive, intended to accommodate pedestrians and bicyclists crossing Petaluma Hill Road and a new paved, Class 1, multi-use trail, which incorporates portions of an existing 12-foot wide asphalt paved roadway used to access the City's Water Tank 8 ("water tank access road") (see **Figure 2, Project Location**). The new trail would consist of two segments: the "Copeland Creek Crossing" segment that connects the Petaluma Hill Road crossing to the western end of the water tank access road and includes a bridge crossing of Copeland Creek; and the "Tank to Park" segment that picks up near the eastern end of the water tank access road and extends into Crane Creek Regional Park. There are two alignment options under consideration for each segment. **Figure 3, Copeland Creek Crossing** illustrates the two alignment options for this segment (Option A and Option B), including the options for the bridge crossing of Copeland Creek. **Figure 4, Tank to Park High Trail** and **Figure 5, Tank to Park Low Trail** illustrate the two options for connecting the eastern end of the water tank access road into Crane Creek Regional Park. Additionally, a new single-track hikers-only trail would provide access as part of a future phase of the project to the top of a knoll on the project site. This is illustrated on Figures 4 and 5.

The proposed trail would create the only trail access to a regional park in the Rohnert Park/Cotati region and Sonoma County Regional Parks Department estimates approximately 25,000 people annually would use the Copeland Creek Trail to Crane Creek Regional Park. This equates to approximately 68 people per day. The trail would be owned and maintained by the City of Rohnert Park until a portion of the property is transferred to Sonoma County Regional Parks Department, who would then take over a portion of it.

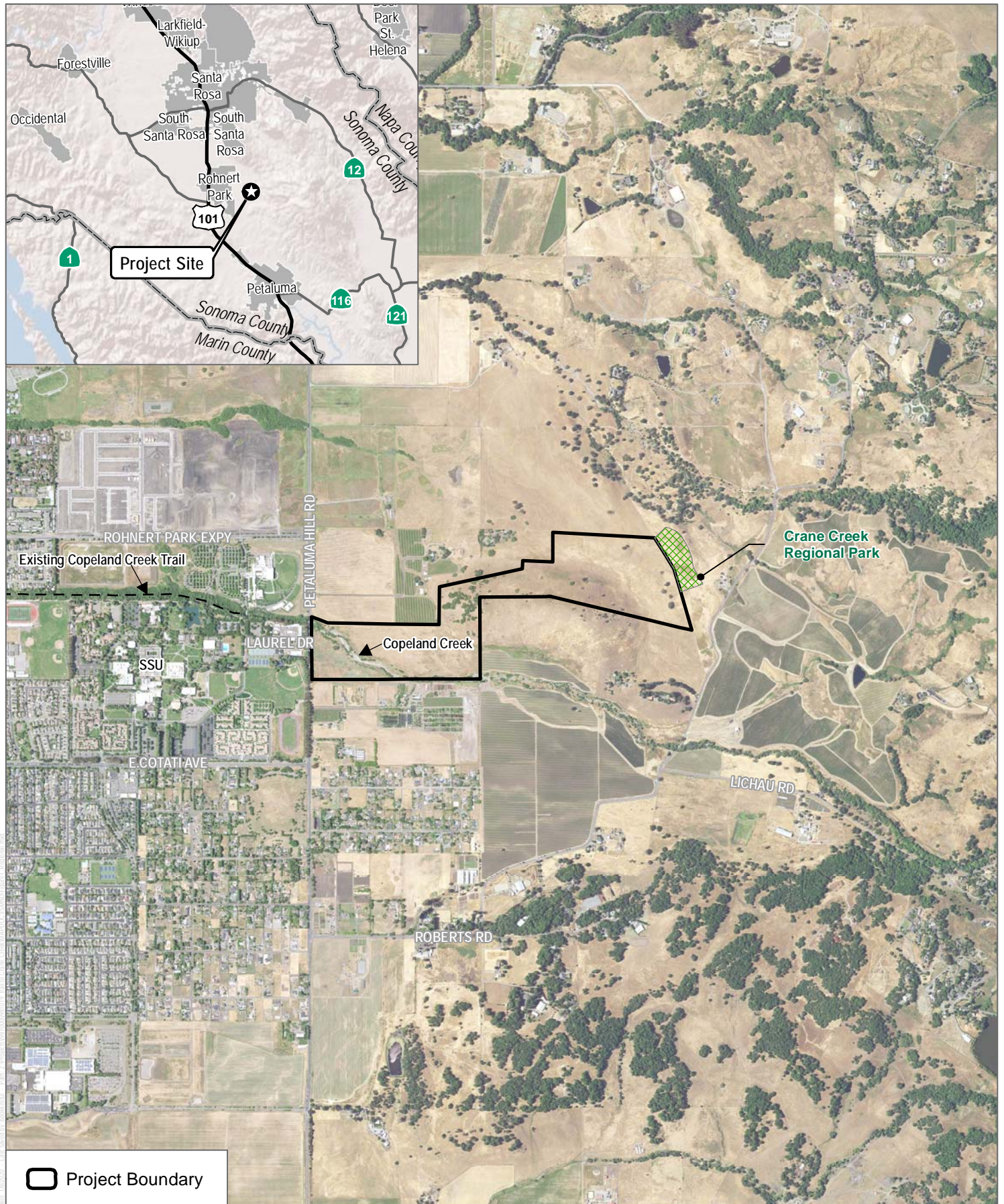
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1.2 California Environmental Quality Act Compliance

This Initial Study has been prepared per the requirements of the California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Section 21000, et seq.) and per the CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 et seq.). The City is acting as the Lead Agency for the purposes of CEQA and Sonoma County would be a Responsible Agency.

1.3 Public Review Process

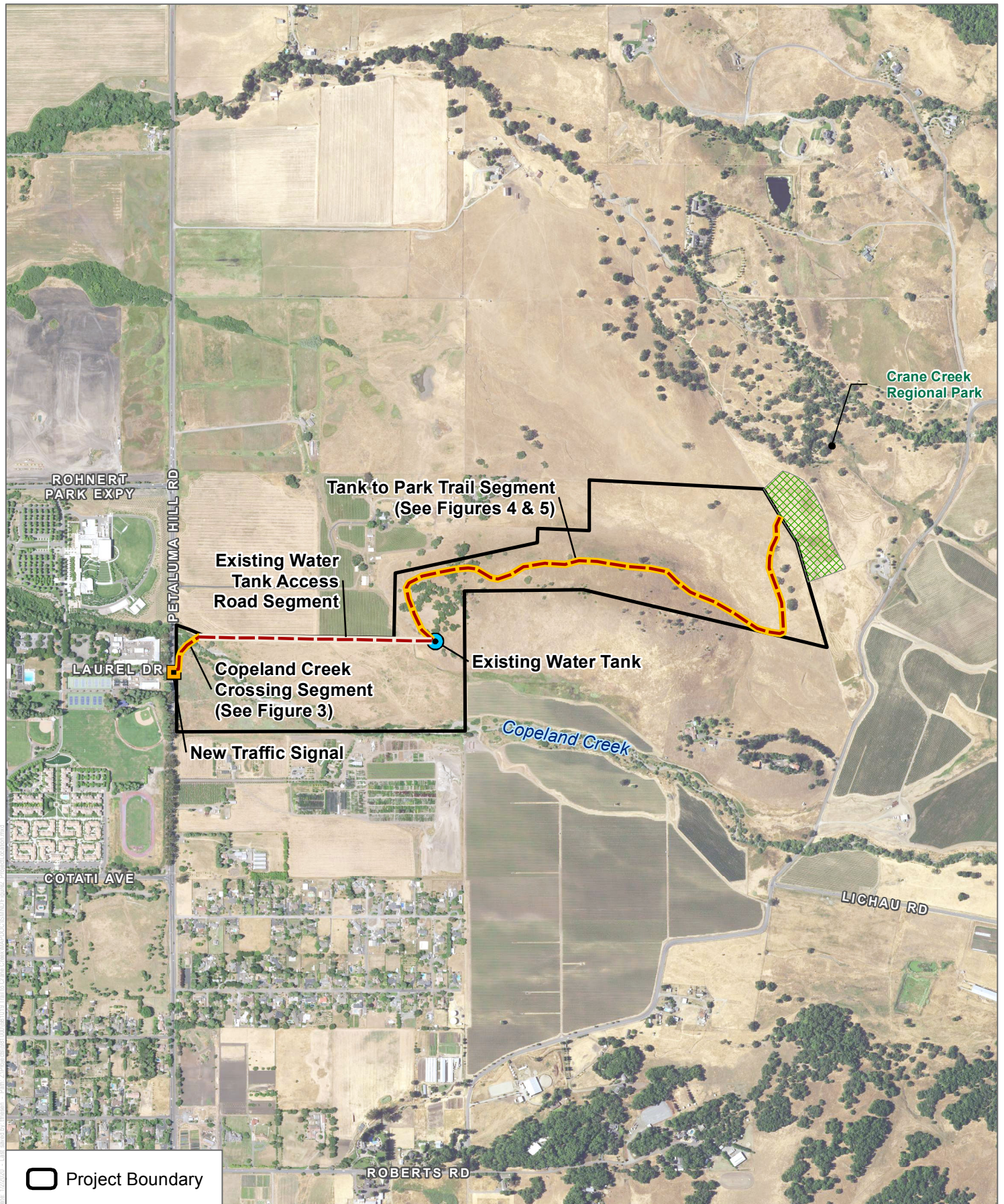
The Initial Study and proposed Mitigated Negative Declaration (IS/MND) will be circulated for public review for a period of 30 days, pursuant to CEQA Guidelines Section 15073(a). The City will provide public notice at the beginning of the public review period.



SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS (2016)

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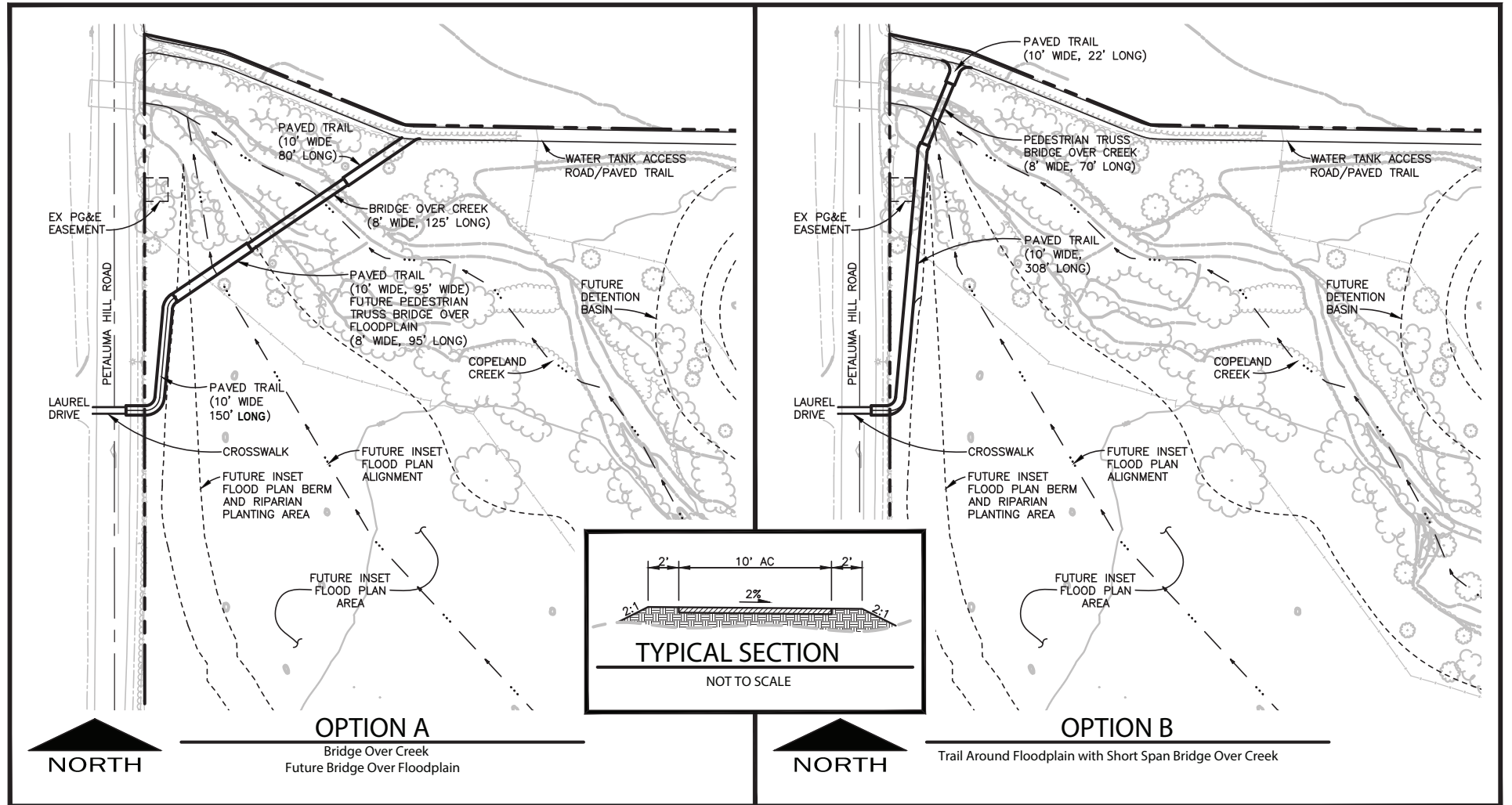
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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS (2016)

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SOURCE: Brelje & Race (2018)

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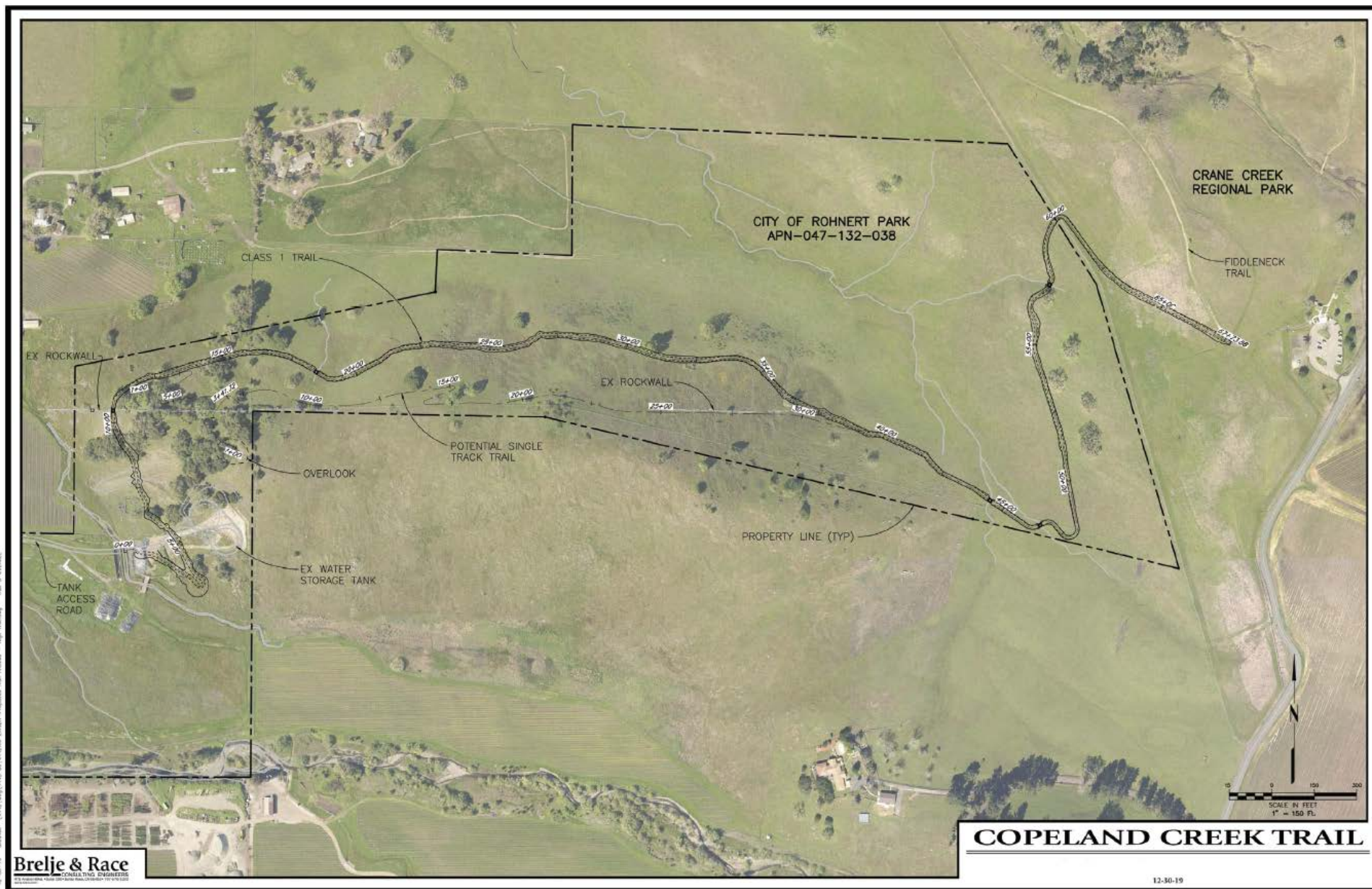
FIGURE 3
Copeland Creek Crossing Segment - Options A & B

Copeland Creek Trail Project

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

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12-28-19 12:28:19 User: jared\jared\1440 95444000 D:\B130344\Project\Trail\Trail.mxd - High Trail.mxd 100 5-000000



SOURCE: Brelje & Race (2019)

DUDEK

FIGURE 4
Tank to Park Segment - High Trail
Copeland Creek Trail Project

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

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Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

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2 INITIAL STUDY CHECKLIST

Project title:

Copeland Creek Trail to Crane Creek Regional Park Project

Lead agency and Project Sponsor's name and address:

City of Rohnert Park
Development Services
130 Avram Avenue
Rohnert Park, CA 94928-2486

Contact person and phone number:

Vanessa Marin Garrett, PE
Deputy City Engineer
City of Rohnert Park
130 Avram Avenue
Rohnert Park, CA 94928
707-588-2251

Project location:

The project site is generally east of Petaluma Hill Road in Sonoma County across from Sonoma State University and includes a signalized crossing of the Petaluma Hill Road/Laurel Drive intersection.

Sonoma County 2020 General Plan Land Use Designations and Zoning:

Project Parcel	General Plan Designation	Zoning Designation
APN 047-132-038	Diverse Agriculture	Diverse Agriculture (DA) District*

Note:

* The underlying zoning is Diverse Agriculture, but within this district are a number of combining districts that are used in *combination* with the base zone to address special needs or characteristics of the area.

Sources: Sonoma County 2020 General Plan Land Use Element, last amended November 2013.

Description of project and environmental setting:

The project proposes to construct an approximately 8- to 12-foot-wide Class 1, multi-use recreational trail designed to meet Americans with Disabilities Act (ADA) requirements and Architectural Barriers Act (ABA) Accessibility Standards for Outdoor Developed Areas that connects the existing Copeland Creek Trail on the Sonoma State University

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campus to Crane Creek Regional Park, as shown on Figure 2.¹ A traffic signal and crosswalk across Petaluma Hill Road is also included as part of the project. The Copeland Creek Trail to Crane Creek Regional Park project (proposed project) would be constructed on a parcel of land owned by the City (APN 047-132-038), located east of Petaluma Hill Road across from Sonoma State University. The proposed trail consists of two components: the first component (Copeland Creek Crossing Segment) is located in the western portion of the site and would consist of an approximately 300 to 450-foot long Class 1 paved trail from Petaluma Hill Road across Copeland Creek connecting to the water tank access road; the second component (Tank to Park Segment) is located in the eastern and northern portion of the site which includes an approximately one-mile long, Class 1 paved trail that would connect the tank access road to Crane Creek Regional Park. A smaller, hikers-only single-track trail may also be included in the northern portion of the site mostly parallel to but upland from the Class 1 trail. A portion of the multi-use trail would use a portion of the City's water tank access road to provide the link between the Copeland Creek Crossing Segment and the Tank to Park Trail Segment. No vehicle parking would be provided as part of this project. There is an existing public parking lot (28 stalls, 2 ADA stalls, 2 horse trailer stalls, and unpaved overflow parking area) at Crane Creek Regional Park that the public can use to access the trail.

The project also includes constructing a five-foot-high "horse fence" along a portion of the northern boundary of the project site connecting to an existing fence located along the north side of the water tank access road. The fence is designed to be transparent with a wood rail along the top with an open wire design below. The fence is designed to allow passage of small animals under the bottom of the fence (via a small gap) and would also not prohibit larger animals (i.e., deer) to jump over the fence.

Trail signage directing people to the trail and noting any requirements for trail etiquette would be located at the beginning of the trail (Copeland Creek Crossing Segment) adjacent to Petaluma Hill Road and at the trail connection at the end of the water tank access road (Tank to Park Trail Segment). In addition, interpretive signage highlighting the cultural and historical aspects of the area would be provided along the Tank to Park Trail Segment of the trail.

The trail is designed so that no trees would be removed and to minimize impacting a potentially eligible historic rock wall. In addition, the proposed project does not include any buildings or other elements that could create glare from sunlight reflecting off of glass or other smooth surfaces or lights that could affect nighttime views. The City's construction

¹ The minimum trail width is 8 feet but due to slope constraints there may be a few trail sections that would be 6 feet wide.

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contracts will include requirements to comply with the Bay Area Air Quality Management District construction-related Best Management Practices and will establish working hours of 8 am to 6 pm on weekdays in order to minimize the impacts of construction noise. Trail components to be constructed as part of this project are described below.

Western Trail Connection (Copeland Creek Crossing Segment)

The trail connection in the western portion of the site (from Petaluma Hill Road to the connection near the beginning of the water tank access road) consists of an ADA-compliant resin-based trail material or similar product from Petaluma Hill Road crossing Copeland Creek with a pedestrian and bicycle bridge, connecting to the existing water tank access road (see Figure 3). Stormwater runoff would be subject to the MS4 permit requirements. This component of the proposed project also includes designing a new traffic signal and crosswalk at the intersection of Petaluma Hill Road and Laurel Drive to enable safe pedestrian and bicycle access across Petaluma Hill Road.

For this portion of the trail, the City is evaluating two different trail connections, Option A and Option B to connect to the new water tank access road, as shown on Figure 3.

Option A includes an approximately 308-foot long, 10-foot wide paved trail that would connect to an approximately 70-foot long, 8-foot wide arched steel truss (clear span) bridge over Copeland Creek. Under this option, the bridge would be constructed of Corten² weathering steel and have a wood deck and wooden railings (or wood-like composite materials). The bridge would be supported by concrete piers at the top of the banks on either side of the channel and would not require a pier in the creek. Once across the bridge there would then be a short 20 to 40 foot long, 10-foot wide paved trail ending at the water tank access road.

Option B is a slightly longer trail that runs parallel to Petaluma Hill Road and includes an approximately 450-foot long trail connection from Petaluma Hill Road to the water tank access road. This option includes a 10-foot-wide, approximately 250-foot long paved trail that would connect to an 8-foot wide, approximately 125-foot long arched steel truss, clear-span bridge over the Copeland Creek floodplain. This bridge would be constructed of Corten weathering steel with a wood deck and wooden handrails (or wood-like composite materials). Once across the bridge the trail would connect to an approximately 80-foot long, 10-foot wide trail that would end at the water tank access road.

² Corten is a group of steel alloys which were developed to eliminate the need for painting, and form a stable rust-like appearance after several years' exposure to weather.

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Actual placement of the bridge and concrete footings for the selected option would be field-verified and adjusted by the project biologist, as required to minimize impacts to the creek and avoid disturbance of riparian habitat.

Eastern Trail Connection (Tank to Park Segment)

Once pedestrians, hikers and bicyclists complete the western portion of the trail they would travel approximately one-half mile along the existing paved water tank access road to a sign indicating where the accessible trail would leave the water tank access road segment. At this juncture, the trail would initially head south a short distance to a switch-back, re-cross the water tank access road and then continue northward and then easterly to ultimately connect to Crane Creek Regional Park. The proposed Tank to Park trail segment is designed to go around the north face of the existing hillside. This portion of the site includes mature, native oak trees and a potentially eligible historic rock wall. The wall travels straight up the hillside on the northwest side of the hill. The two trail segments (Low and High) have been aligned to avoid removing any trees and have been sited to minimize impacts to the rock wall and other sensitive features associated with the property. A certified arborist would review the site plans to ensure there would be no impacts to tree roots and would provide recommendations for tree pruning to ensure construction activities would not adversely impact any trees. The majority of this section of the Class 1, multi-use recreational trail would have an approximately 12-foot wide corridor which would comply with accepted ADA trail standards, consisting of an 8-foot wide paved section of a resin-based material or similar product with a 1-foot wide shoulder on the inward side and a 3-foot wide shoulder on the outward side. In order to promote positive drainage, the cross-slope trail would be sloped outwards to maintain natural drainage patterns; the design would incorporate well established trail construction techniques and features such as Coweeta Dips³ which take advantage of the natural, rolling terrain to enhance drainage and provide a more interesting trail profile.

This trail segment would include approximately 150 feet of total elevation rise. Up to seven puncheon⁴ style bridges or culverts would be constructed to cross seasonal drainage areas along the trail alignment. Two trail alignment options for this segment are under consideration, High Trail and Low Trail, as shown on Figures 4 and 5. Because of the potential for variability during trail construction, a 50-foot wide corridor was evaluated for

³ Coweeta Dips, also called terrain dips, or rolling grade dips, can be built on most sidehill trails as a means to use a reversal in grade to force water off the trail without the need for any other structure.

⁴ A walkway over wet ground made by laying planks over sills set directly on the ground.

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each alignment, in order to ensure that any potentially impacted resources were identified and could be mitigated and avoided.

- **Low Trail:** Consists of a 1.3 mile long trail, connecting the water tank access road to Crane Creek Regional Park, as shown in Figure 5. The running trail slope varies from 0% to 7.69%. This option utilizes a short switch back to gain elevation before crossing the water tank access road allowing the trail to pass through an existing opening within the historical rock wall. Special trail treatment, as detailed in **Figure 6, Proposed Rock Wall Crossing** would be required where the trail passes through a group of native oak trees and an existing rock wall. This includes narrowing the trail to an 8-foot wide paved portion for approximately 25 feet. A second switch back is required to avoid the neighboring property and gain sufficient elevation to pass in between two dense clusters of trees. This trail option would be constructed primarily in full bench cut and would generate approximately 3,700 cubic yards of earthwork that would remain on site. The excess soil would be distributed on site and seeded for erosion control.
- **High Trail:** The second option consists of a 1.2 mile long trail, as shown in Figure 4. The running trail slope varies from 0% to 7.93%. This option utilizes a longer switchback than the Low Trail and re-crosses the water tank access road higher in elevation allowing use of a different and higher existing opening in the historical rock wall. Special trail treatment, as detailed in Figure 6, would be required where the trail passes through a group of trees and the rock wall. The same as the Low Trail, the trail would narrow down to 8-feet-wide as it passes through the rock wall portion. This trail option would be constructed primarily in full bench cut and would generate approximately 3,200 cubic yards of earthwork, that would remain on-site. The excess soil would also be distributed on site and seeded for erosion control.

A future phased project element could include a second, smaller 3-to 4-foot wide single-track, hikers-only, 0.66 mile, earthen trail that would provide access to the top of the knoll and would connect back to the main trail in one or two locations (refer to Figures 4 and 5).

Project Background

The proposed project is a multi-year project to connect the City's existing Copeland Creek Path where it terminates on the Sonoma State University campus with a multi-use trail facility all the way to Crane Creek Regional Park in Sonoma County. The project is partially funded by a matching grant from the Sonoma County Agricultural Preservation and Open Space District. The City is partnering with Sonoma County Regional Parks to complete the work.

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As noted above, the project will connect to an existing approximately half mile long 12-foot wide water tank access road.

Project Location and Site Characteristics

As shown on Figure 1, the project is proposed to be constructed on a 128-acre parcel owned by the City of Rohnert Park in unincorporated Sonoma County, California. Because of the potential for variability in trail construction, the analysis evaluates a 50-foot-wide corridor for each proposed trail alignment. The project also includes a traffic signal and crosswalk at the Petaluma Hill Road-Laurel Drive intersection, also in unincorporated Sonoma County.

Surrounding Land Uses and Setting

Land uses surrounding the proposed project include Petaluma Hill Road and the Sonoma State University campus to the west, a residence with barns, other outbuildings, and a small vineyard located to the north, 128.84 acre Crane Creek Regional Park to the northeast, and undeveloped lands and a commercial nursery to the south and southeast, as shown on **Figure 7, Surrounding Land Uses**.

The project site is characterized by relatively flat terrain in the western portion of the site closer to Petaluma Hill Road segueing into rolling hills in the eastern portion of the site. The main channel of Copeland Creek flows from east to west along the south side of the project site and a tributary to Hinebaugh Creek runs north-south at the base of the hill where the City's water tank project is located, approximately 2,500 feet east of Petaluma Hill Road. The site is undeveloped and contains annual grasslands with mature oak trees dotting the hillside in the eastern portion of the site. Elevation varies from approximately 175 feet above mean sea level (AMSL) in the western portion to a high of 400 feet AMSL at the top of the knoll in the eastern portion of the site. The site is also crossed by a potentially eligible historic rock wall.

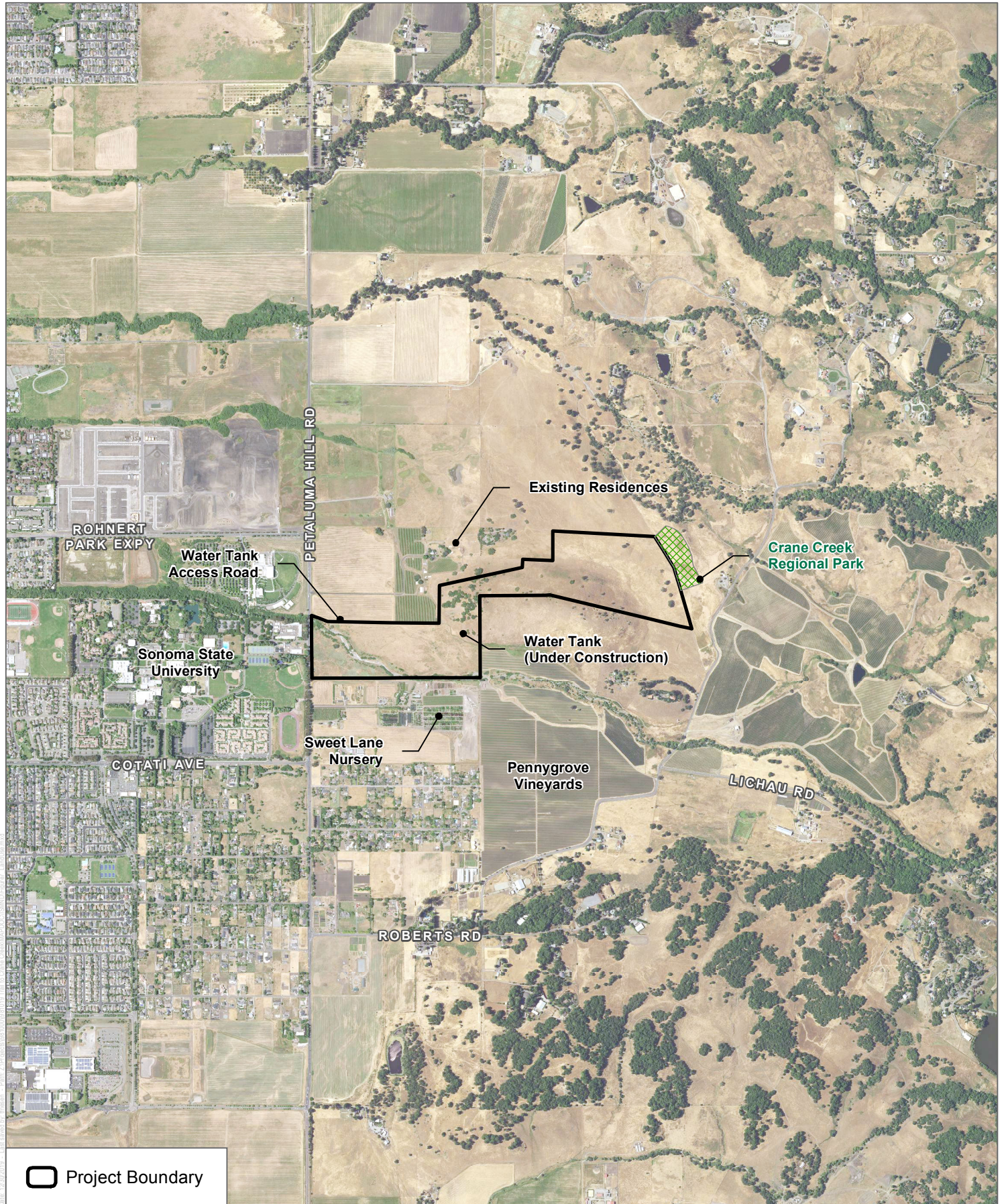


RETAINING WALL & GUARD RAIL ELEVATION

SECTION B

NOTE: RETAINING WALL MATERIAL SHOWN AS WOOD, HOWEVER MAY BE CONSTRUCTED OF OTHER MATERIALS

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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS (2016)

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Construction

Construction is anticipated to occur starting in Summer 2020 through Fall 2021, but could take up to 2 years to complete. Construction of the western component of the trail (Copeland Creek Crossing Segment) is anticipated to take two to three months to complete and would use small-size construction equipment as well as methods similar to those used in standard roadway construction (e.g., standard backhoe, small bulldozer, ten-wheel dump truck, etc.). Both Option A and Option B for this portion of the trail require approximately 250 cubic yards of fill, which would be imported. No off-haul or export off-site of soils is anticipated.

Construction of the Class 1 trail in the eastern portion of the site (Tank to Park Trail Segment) is anticipated to take six months to complete. Both Option A and Option B would require a total earthwork volume of cut and fill estimated to be 3,700 cubic yards or less, and would be mostly balanced across the entire alignment. It is anticipated that cut volume would exceed fill volume, with any excess materials hauled along the trail to where needed; where feasible (slopes less than 2:1), up to one-half yard of excess material would be side-cast to the downhill side of the trail. The on site excess materials could consist of soil, rock, and large boulders which could be reused as rock slope protection and rock retaining walls for the trail. No material is anticipated to be hauled off-site. Cut and fill slopes would be protected with straw waddles and hydro-seeded with a native grass mix for erosion control. No import of additional material or off-haul of the excavated material is anticipated to be necessary. Material that remains on site is likely to be on the order of one-half yard or less per linear foot of trail construction. Construction of both the western and eastern components of the trail would use the same type of construction equipment. Thus, it is anticipated that both components of the trail are able to be constructed concurrently.

The single-track, hikers-only trail would be constructed using hand-tool methods or very small, walk-behind, trail-specific construction equipment. Construction of this portion of the project is estimated to take up to three months to complete, and it is assumed that work on this section may not begin until the Class 1 trail is completed or possibly under another phase of the project to be constructed at a later date in the future.

Construction of the traffic signal at Petaluma Hill Road is anticipated to occur sometime in 2020/2021, and is anticipated to take five months to complete. The signal installation would involve placing traffic poles at three corners of the intersections for each potential turning movement. The pole installation would consist of foundations five to seven feet deep with pedestrian push buttons, signage, and striping at the intersection. **Figure 8,**

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Conceptual Traffic Signal Crossing at Petaluma Hill Road shows a conceptual layout of the traffic signal crossing.

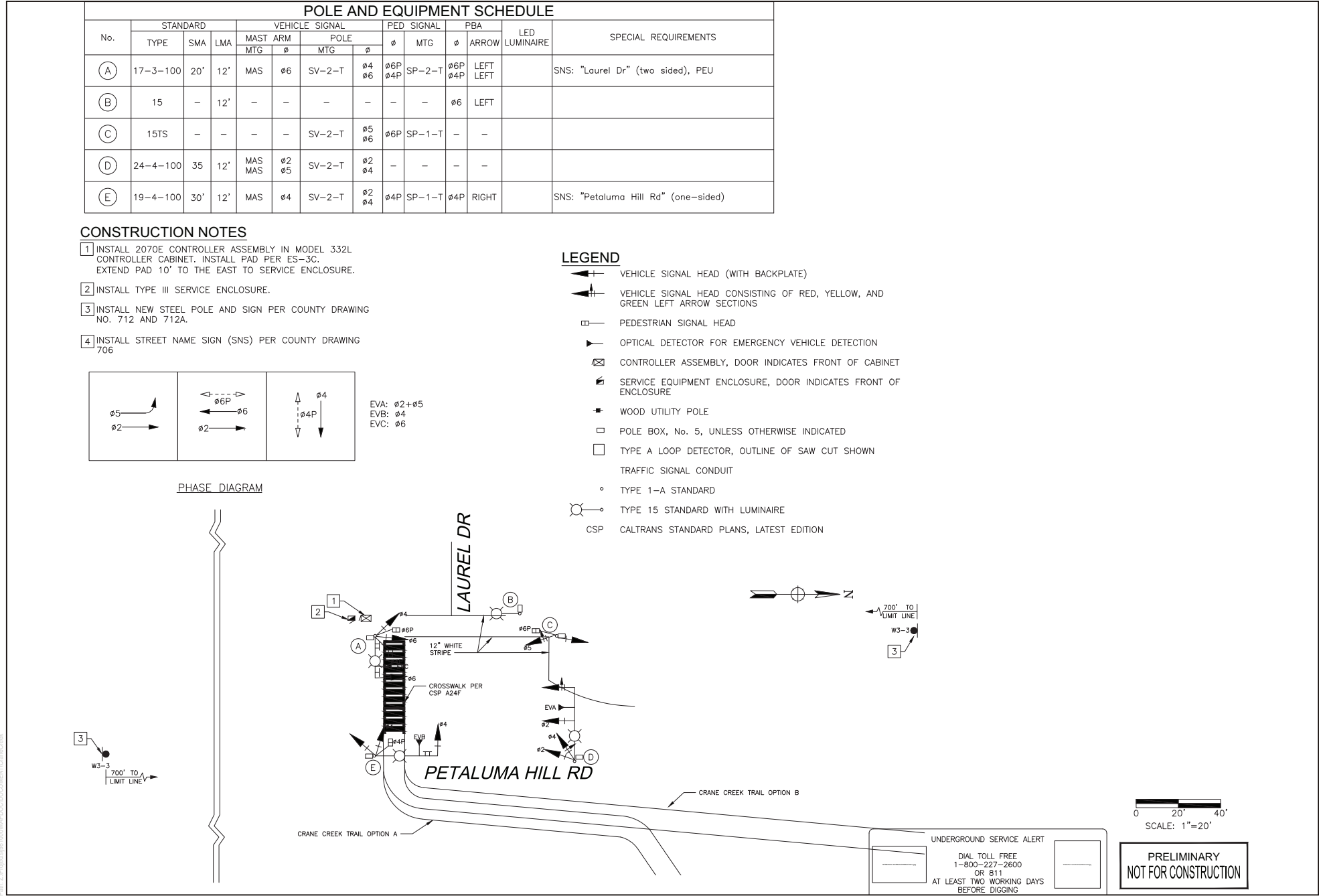
For both trail segments, a resin-based material or similar product that complies with ADA requirements is the planned surface material (except for the single-track portion). Standard, small-scale paving equipment and trucks would be used to deliver and complete paving operations. The pedestrian and bicycle bridge over Copeland Creek would require a crane to lift it into place. The crane would have sufficient reach to be staged on or adjacent to the existing roads while making the lift. Concrete for the bridge footings and piers would be pumped using pumper equipment and a boom truck, which would be staged at the water tank access road or on the shoulder of Petaluma Hill Road. Construction of two to four small, pedestrian bridges (between 10 to 20 feet in length) and one to two culvert crossings of seasonal drainage areas would be necessary for the eastern portion of the trail (Tank to Park Segment). Construction materials for the bridges would be transported by hand or small truck and constructed on site using standard wood framing members.

A Storm Water Pollution Prevention Plan (SWPPP) prepared by a Qualified SWPPP Developer would be provided and implemented by the Contractor and/or Qualified SWPPP Practitioner prior to and during construction as required by the Construction General Permit Order 2009-0009-DWQ. The SWPPP would provide the selection and implementation of specific Best Management Practices (BMPs) necessary to eliminate or reduce the discharge of pollutants due to construction, but would likely include straw wattles, silt fencing, sediment traps, sediment bags, seeding, mulching, soil stabilization, and other erosion, sediment, tracking, wind erosion, and non-storm water control measures.

Entitlements and required approvals:

The project would require the following approvals and permits:

- City approval of the project.
- Encroachment Permit from Sonoma County for installation of the traffic signal in Petaluma Hill Road.
- Streambed Alteration Agreement from the California Department of Fish and Wildlife.
- Section 404 permits from the U.S. Army Corps of Engineers.
- Section 401, Water Quality Certification from the State Resources Water Quality Control Board.



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ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. All of the impacts can be reduced to a less-than-significant level with mitigation measures identified in the following checklist.

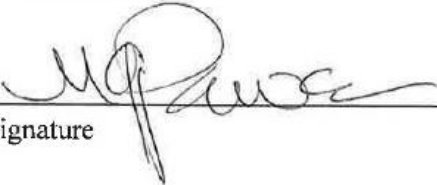
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|--|---|---|
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| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology and Soils |
| <input type="checkbox"/>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

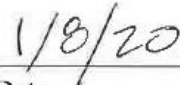
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DETERMINATION: (To be completed by the Lead Agency)

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.


Signature


Date

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EVALUATION OF ENVIRONMENTAL IMPACTS:

- A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an Environmental Impact Report (EIR) is required.
- “Negative Declaration: Less-than-Significant with Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less-than-Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less-than-significant level.

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

2.1 Aesthetics

Environmental Setting

Regional Setting

The Sonoma County region includes a diversity of landforms and environments. The broad Santa Rosa Plain lies between the Sonoma Mountains on the east and coastal hills on the west, and contains the cities of Santa Rosa, Rohnert Park, and Cotati. A mix of natural, agricultural, and rural landscapes characterizes the project region. Agricultural fields separate the urban centers of Santa Rosa, Rohnert Park, and Petaluma and offer expansive views which extend to the Sonoma Mountains to the east and the coastal hills to the west. Relatively dense clusters of oak woodlands are present amongst riverways and the North Coast Mountain Range.

Local Setting

The scenic resources component of the Sonoma County General Plan includes three categories: Community Separators, Scenic Landscape Units, and Scenic Highway Corridors. The project site is located in a “Community Separator” area. Community Separators are rural open space and agricultural and resource lands that separate cities and other communities, prevent sprawl, protect natural resources, and provide city and community identity by providing visual relief. Properties in the surrounding area contain a mixture of agricultural uses, annual grassland and oak woodland

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vegetation. Petaluma Hill Road is not designated as either a state or local scenic highway. The proposed project consists of a Class 1 multi-use trail and traffic signal that would provide a connection from the existing Copeland Creek Trail (in Rohnert Park and Sonoma State University campus) to Crane Creek Regional Park (Sonoma County 2018a). The park consists of rolling grasslands and oak woodlands, with ridges offering scenic views (Sonoma County 2013). The proposed project would provide a unique and important connection between the urbanized communities of Rohnert Park, Cotati, and Sonoma State University, and Crane Creek Regional Park for pedestrian and other nonmotorized forms of transportation.

a) Would the project have a substantial adverse effect on a scenic vista?

For purposes of this analysis, a scenic vista is defined as an expansive view of highly valued landscape feature (e.g., a mountain range, lake or coastline) observable from a publicly accessible vantage point. The proposed project includes constructing a trail with various options that would allow access to observe scenic vistas and views of the rolling hillsides that characterize this area of the County. The project includes constructing two trail segments, one segment is located near Petaluma Hill Road (Copeland Creek Crossing Segment) and portions of the trail would be visible from the road. The other trail segment (Tank to Park Trail Segment) is located further east and would only be visible to a few private residences located to the north. The project also includes a traffic signal and crosswalk at the intersection of Petaluma Hill Road and Laurel Drive. Petaluma Hill Road is not designated as either a state or local scenic highway and a traffic signal in this location would not adversely affect any existing scenic vistas. The project does not include any elements that would adversely affect views of a scenic vista or be visible from any scenic overlook areas with views of the project site; therefore, there would be **no impact**.

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

The project site does not contain any buildings, but does include a National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligible historic stone wall that bisects the north side of the hillside located in the eastern portion of the site, where a segment of the trail (Tank to Park Segment) is proposed. There are no state scenic highways near the project site, but Sonoma County has designated Petaluma Hill Road as a Scenic Corridor (Sonoma County 2008). The proposed project, including the various options, does not include removing any mature oak trees, rock outcroppings, or the stone wall to construct the trail. Given the nature of the project it would not damage or remove any existing scenic resources that could be visible from Petaluma Hill Road. There would be **no impact** to scenic resources.

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- c) *Would the project 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).*

For the purposes of this analysis, a substantial degradation of the existing visual character or quality would occur if the project would introduce a new visible element that would be inconsistent with the overall quality, scale, and character of the surrounding development. The proposed project includes construction of a Class 1 paved trail and a pedestrian/bicycle bridge across Copeland Creek (Copeland Creek Crossing Segment) that would be visible to vehicles traveling on Petaluma Hill Road. Surrounding development is limited and primarily includes a residence to the north and the Sonoma State campus to the west. Limited public views of the trail are only available from Petaluma Hill Road. Views of the trail located in the eastern portion would be minimal due to the tall grass, trees and slope of the hillside that would essentially block views of the trail itself. People, bicyclists and equestrians using the trail would be short-term visible elements, but would not degrade the existing visual character or quality of public views of the area.

Because the proposed project does not include any visible elements that would be inconsistent with the overall quality, scale, and character of the surrounding development, there would be **no impact**.

- d) *Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

The proposed project does not include any buildings or other elements that could create glare from sunlight reflecting off of glass or other smooth surfaces or lights that could affect nighttime views. The project also does not include any lights so it would not create a new source of light or glare; therefore, there would be **no impact**.

Mitigation Measures

No mitigation measures are necessary.

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>

2.2 Agriculture and Forestry Resources

Environmental Setting

The western portion of the project site includes land designated by the California Department of Conservation as Farmland of Local Importance. The eastern portion of the site includes land designated as grazing land. Crane Creek Regional Park is also designated as grazing land (CDOC 2017). The project site is zoned by the County as Diverse Agriculture District. This designation intends to protect areas where small acreage intensive farming and part-time farming activities are widespread, but where farming is not the main occupation of the farmer (Sonoma County, California, Municipal Code art. VIII, § 26-08-005 (2018)). The site's zoning also includes various combining districts, including residential, floodplain, a riparian corridor combining zone, a scenic

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resources combining district, and a valley oak habitat combining district, with specific constraints regarding the permitted density of residential uses, uses within the floodplain, adherence to local area guidelines and standards, riparian corridor protection and valley oak habitat protection. However, the project site's zoning is currently under review to ensure consistency between the proposed project's land uses and zoning. There are no Williamson Act contracts connected to the project site.

- 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?*

The project would construct a Class 1 multi-use trail that would traverse areas considered farmland, but are not areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Furthermore, the Class 1 multi-use trail would be approximately 10-feet wide and would traverse less than 1.5 miles and would convert only a small portion of the 128-acre parcel. There are no Williamson Act contracts connected to the project site. Due to the type of project and the amount of land that would be developed as a trail, the impact to designated farmland would be considered **less than significant**.

- b) *Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?*

The project site is zoned by the County as Diverse Agriculture District. Although the site is zoned Diverse Agriculture, placement of a trail is consistent with the underlying zoning and would not remove the ability to use the site for future agricultural purposes. Projects that do not interfere with underlying agricultural uses are consistent with these designations. There are no Williamson Act contracts on any portion of the land. The project would not conflict with the existing zoning or a Williamson Act contract and the impact is **less than significant**.

- 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))?*

As discussed above, the project site is zoned Diverse Agriculture District. The site is not zoned forest land, timberland or timberland production and not trees would be removed to accommodate the trail. Therefore, there would be **no impact** to forest land or timberland.

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- d) *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

The eastern portion of the project site contains mature oak tree woodlands. The proposed project would not remove any oak trees to accommodate either trail option. In addition, due to the nature of the project it would not convert forest land to non-forest uses because the area is not zoned forest land. Therefore, there would be **no impact**.

- 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?*

Refer to answers provided in 'a' and 'd' above.

Mitigation Measures

No mitigation measures are necessary.

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

2.3 Air Quality

Environmental Setting

The Bay Area Air Quality Management District (BAAQMD) adopted updated CEQA Air Quality Guidelines, including new thresholds of significance, in June 2010 (BAAQMD 2010), and updated the thresholds in May 2011. The BAAQMD CEQA Air Quality Guidelines advise lead agencies

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on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance. The BAAQMD resolutions adopting and revising the significance thresholds in 2011 were legally challenged and set aside by a judicial writ of mandate on March 5, 2012. In May 2012, the BAAQMD updated its CEQA Air Quality Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds (BAAQMD 2012). On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds. The BAAQMD CEQA Air Quality Guidelines were recently re-released in May 2017 and include the same thresholds as in the 2010 and 2011 Guidelines for criteria air pollutants, toxic air contaminants (TACs), and greenhouse gases (BAAQMD 2017a). The Guidelines also address the December 2015 Supreme Court's opinion (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369). The current BAAQMD significance thresholds are summarized in Table 2.3-1.

In general, the BAAQMD significance thresholds for reactive organic gases (ROG), oxides of nitrogen (NO_x), particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM₁₀), particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less (PM_{2.5}), and carbon monoxide (CO) address the first three air quality significance criteria. The BAAQMD maintains that these thresholds are intended to maintain ambient air quality concentrations of these criteria air pollutants below state and federal standards and to prevent a cumulatively considerable contribution to regional nonattainment with ambient air quality standards.

**Table 2.3-1
Thresholds of Significance**

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (exhaust)	82	15
PM _{2.5}	54 (exhaust)	54	10
PM ₁₀ /PM _{2.5} (fugitive dust)	Best Management Practices	None	

Source: BAAQMD 2017a

lbs/day = pounds per day; tons/year = tons per year; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; PM_{2.5} = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; CO = carbon monoxide

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a) *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

An area is designated as “in attainment” when it is in compliance with the federal and/or state air quality standards. These standards are set by the U.S. Environmental Protection Agency (EPA) or California Air Resources Board (CARB) for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or public welfare with a margin of safety. The project site is located within the San Francisco Bay Area Air Basin, which is designated non-attainment for the federal 8-hour ozone (O₃) and 24-hour PM_{2.5} standards. The area is in attainment or unclassified for all other federal standards. The area is designated non-attainment for state standards for 1-hour and 8-hour O₃, 24-hour PM₁₀, annual PM₁₀, and annual PM_{2.5}.

On April 19, 2017, the BAAQMD adopted the *Spare the Air: Cool The Climate - Final 2017 Clean Air Plan* (BAAQMD 2017b). The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the 2017 Clean Air Plan includes all feasible measures to reduce emissions of O₃ precursors (ROG and NO_x) and reduce O₃ transport to neighboring air basins. In addition, the 2017 Clean Air Plan builds upon the BAAQMD efforts to reduce fine particulate matter and TACs. To protect the climate, the plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas (GHG) reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets.

The BAAQMD Guidelines identify a three-step methodology for determining a project’s consistency with the current Clean Air Plan. If the responses to these three questions can be concluded in the affirmative and those conclusions are supported by substantial evidence, then the BAAQMD considers the project to be consistent with air quality plans prepared for the Bay Area.

The first question to be assessed in this methodology is “does the project support the goals of the Air Quality Plan”? The BAAQMD-recommended measure for determining project support for these goals is consistency with BAAQMD thresholds of significance. If a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation measures, the project would be consistent with the goals of the 2017 Clean Air Plan. As indicated in the following discussion with regard to air quality impact criteria “b” and “c”, the proposed project would result in less-than-significant construction emissions and would not result in long-term adverse air quality

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impacts. Therefore, the proposed project would be considered to support the primary goals and be consistent with the current Clean Air Plan.

The second question to be assessed is “does the project include applicable control measures from the Clean Air Plan”? The 2017 Clean Air Plan contains 85 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the Clean Air Plan. The control strategies of the 2017 Clean Air Plan include measures in the categories of stationary sources, the transportation sector, the buildings sector, the energy sector, the agriculture sector, natural and working lands, the waste sector, the water sector, and super-GHG pollutant measures. Because the proposed project involves the construction of a Class 1 multi-use and a single-track hikers-only trail (that may be constructed at a later date) and traffic signal, many of the control measures would not be applicable to the project. In addition, the proposed project would comply with all applicable BAAQMD rules during construction including reducing fugitive dust exposure generated by construction activities. Therefore, the proposed project would not conflict with any of the control measures from the Clean Air Plan.

The third question to be assessed is “does the project disrupt or hinder implementation of any control measures from the Clean Air Plan”? Examples of how a project may cause the disruption or delay of control measures include a project that precludes an extension of a transit line or bike path, or proposes excessive parking beyond parking requirements. The proposed project would not create any barriers or impediments to planned or future improvements to transit or bicycle facilities in the area, nor would it include excessive parking. Therefore, the proposed project would not hinder implementation of the Clean Air Plan control measures.

In summary, the responses to all three of the questions with regard to Clean Air Plan consistency are affirmative and the proposed project would not conflict with or obstruct implementation of the Clean Air Plan. Therefore, this is a **less-than-significant impact**.

- 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?*

Past, present, and future development projects may contribute to the region’s adverse air quality impacts on a cumulative basis. Per BAAQMD’s CEQA Guidelines, by its nature air pollution is largely a cumulative impact; no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a

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project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, if the proposed project's emissions are below the BAAQMD thresholds or screening criteria, then the proposed project's cumulative impact would be considered to be less than significant.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the proposed project (all trail options described and traffic signal). CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with the construction and operational activities from a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the proposed project land use type and size, construction schedule, and anticipated construction equipment utilization, were based on information provided by the project applicant, or default model assumptions if project specifics were unavailable. A copy of the model outputs is included in Appendix A.

Construction. The proposed project would involve construction of a Class 1 multi-use trail, traffic signal and may also include construction of a single-track hikers-only trail as a future phase of the project. Construction is anticipated to occur starting in Summer 2020 and continue through 2021. The analysis and modeling contained herein assumed the project-related construction activities would commence in January 2017 and be completed in 2018, as shown in Table 2.3-2. Because state and local regulations, restrictions, and increased market penetration of cleaner construction equipment are anticipated to continue to reduce emissions in the future, utilizing an earlier start date of 2017 within the model results in a conservative presentation of actual emission levels. Sources of emissions would include: off-road construction equipment exhaust, on-road vehicles exhaust and entrained road dust (i.e., material delivery trucks and worker vehicles), fugitive dust associated with site preparation and grading activities, and paving. The majority of assumptions for the proposed project were based on CalEEMod defaults and are included in Appendix A.

Average daily emissions were computed by dividing the total construction emissions by the number of active construction days, which were then compared to the BAAQMD construction thresholds of significance. Table 2.3-2 shows average daily construction

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emissions of O₃ precursors (ROG and NO_x), PM₁₀ exhaust, and PM_{2.5} exhaust during project construction.⁵

**Table 2.3-2
Average Daily Unmitigated Construction Emissions**

Year	ROG	NO _x	PM ₁₀ Exhaust	PM _{2.5} Exhaust
	<i>pounds per day</i>			
2017-2018 Construction	0.4	2.8	0.2	0.2
<i>BAAQMD Construction Thresholds</i>	54	54	82	54
Exceed Threshold?	No	No	No	No

Source: Appendix A

Note: The values shown are average daily emissions based on total overall tons of construction emissions, converted to pounds, and divided by 233 active work days.

ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = coarse particulate matter; PM_{2.5} = fine particulate matter

As shown in Table 2.3-2, construction of the proposed project would not exceed BAAQMD significance thresholds. Criteria air pollutant emissions, including particulate matter or dust, during construction would be less than significant. Although the BAAQMD does not have a quantitative significance threshold for fugitive dust, the BAAQMD's CEQA Guidelines recommend that projects determine the significance for fugitive dust through application of best management practices (BMPs). BAAQMD's BMPs related to controlling fugitive dust include the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

⁵ Fuel combustion during construction and operations would also result in the generation of sulfur dioxide (SO₂) and CO. These values are included in Appendix A. However, since the SFBAAB is in attainment of these pollutants, the BAAQMD has not established a quantitative mass-significance threshold for comparison and are not included in the project-generated emissions tables in this document. Notably, the BAAQMD does have screening criteria for operational localized CO, which are discussed in more detail below.

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5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. 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 California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

The City's construction contracts will include the BAAQMD BMPs and will require compliance to help ensure fugitive dust-related impacts associated with construction would remain **less than significant**.

Operation. Once operational, the proposed project would consist of a Class 1 multi-use trail, traffic signal and may also include a hikers-only single track trail, to be constructed as a future phase of the project. No vehicle parking would be provided as part of the project, but there is parking available at Crane Creek Regional Park. Long-term operation of the proposed project would require minimal upkeep and maintenance. The main source of emissions from operation of the proposed project would include motor vehicle emissions generated by maintenance of trail facilities. Maintenance activities would require less intensive activity (i.e., less vehicles and equipment operation) than assumed for the project's construction scenario, which was estimated to generate average daily emissions of less than 5 pounds per day for all criteria air pollutants modeled. Accordingly, operational emissions are anticipated to be minimal would be **less than significant**.

As shown in Table 2.3-2, project-generated average daily criteria air pollutant emissions would be below the BAAQMD thresholds. Therefore, the proposed project would not result in a cumulatively considerable contribution to the nonattainment pollutants in the SFBAAB, and this impact would be **less than significant**.

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c) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

The BAAQMD has adopted project and cumulative thresholds for three risk-related air quality indicators for sensitive receptors: cancer risks, noncancer health effects, and increases in ambient air concentrations of PM_{2.5}. These impacts are addressed on a localized rather than regional basis and are specific to the sensitive receptors identified for the project. Sensitive receptors are groups of individuals, including children, the elderly, the acutely ill, and the chronically ill, that may be more susceptible to health risks due to chemical exposure, and sensitive-receptor population groups are likely to be located at hospitals, medical clinics, schools, playgrounds, childcare centers, residences, and retirement homes (BAAQMD 2017a). The closest sensitive receptor is an existing single-family residence north of the eastern trail alignment, approximately 280 feet from the closest area in which construction activities would occur.

“Incremental cancer risk” is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period would contract cancer based on the use of standard Office of Environmental Health Hazard Assessment (OEHHA) risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. TACs that would potentially be emitted during construction activities would be diesel particulate matter, emitted from heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to CARB air toxic control measures to reduce diesel particulate matter emissions. According to the OEHHA, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015). Thus, the duration of proposed construction activities (conservatively estimated at approximately 11-months, or 2 construction seasons over 2 years) would only constitute a small percentage of the total 30-year exposure period. Furthermore, the proposed project would not require the extensive use of heavy-duty construction equipment and construction activities would not occur in one area for an extended period of time. Regarding long-term operations, the proposed project would not result in non-permitted stationary sources that would emit air pollutants or TACs.

In summary, the proposed project would not expose sensitive receptors to substantial, long-term pollutant concentrations or health risk during construction or operations, and this impact would be **less than significant** on a project-level and cumulative basis.

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- d) *Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

The BAAQMD has identified typical sources of odor which include manufacturing plants, rendering plants, coffee roasters, wastewater treatment plants, sanitary landfills, and solid waste transfer stations. The proposed project does not include any elements or uses that could create odors. Therefore, there would be **no impact**.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES – 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 Game 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 Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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2.4 Biological Resources

Environmental Setting

A Biological Resources Assessment and a Preliminary Jurisdictional Delineation of Wetlands and Waters of the U.S. were prepared for the proposed project by Dudek in 2017 (Dudek 2018a and Dudek 2018b). Although the reports were completed in 2017, conditions at the site have not changed relative to the biological resources. Thus, the reports are still relevant and were used to complete this section and are included as Appendix B.

Project Site

The project site is characterized by relatively flat terrain in the western portion of the site and rolling hills that surround a valley which is oriented from southeast to northwest through the eastern portion of the site. Surrounding land use includes rural residential lots to the north, Crane Creek Regional Park to the east, Sonoma State University and residential development to the west, and a nursery and vineyards to the south. No structures exist on the project site with the exception of the recently completed water tank.

Annual grassland is the dominant vegetation community within the site; however, a small patch of coast live oak (*Quercus agrifolia*) woodland occurs on a hillside in the center of the site, and oak trees also occur sporadically throughout the middle and eastern portions of the site. A band of riparian vegetation occurs along Copeland Creek in the southwestern portion of the site. A detailed description of the site can be found in Appendix B, Biological Resources Assessment.

Aquatic features within the site include two seasonal wetlands, two ephemeral drainages, one intermittent drainage, one creek, four seasonal wetland swales and three vegetated swales. Based on the results of the wetland delineation performed in November 2017, all of these have the potential to be under the jurisdiction of the Army Corps of Engineers (ACOE), California Department of Fish and Wildlife (CDFW) and/or the Regional Water Quality Control Board (RWQCB). These are described in more detail in Appendix B, Preliminary Jurisdictional Delineation of Wetlands.

Special-Status Species

Special-status plant and wildlife species determined to have potential to occur on the site were based on a preliminary desktop review and the results of a field assessment performed on November 9, 2017.

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Eight special-status plant species have potential to be present within the project site, and include Franciscan onion (*Allium peninsulare* var. *franciscanum*), Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*), bent flowered-fiddleneck (*Amsinckia lunaris*), pappose tarplant (*Centromadia parryi* ssp. *parryi*), fragrant fritillary (*Fritillaria liliacea*), congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*), Jepson's leptosiphon (*Leptosiphon jepsonii*), and two-fork clover (*Trifolium amoenum*). These are described in more detail in Appendix B, Biological Resources Assessment.

Five special-status wildlife species have some potential to occur on the site, or were observed during the November 2017 field assessment. Of the 31 special-status wildlife species identified in the California Natural Diversity Database (CNDDDB; CDFW 2017) and IPaC database searches (USFWS 2017), 26 are not expected to occur on the site due to a lack of suitable habitat, or the site is outside of the species known range and was removed from further consideration. The five remaining special-status wildlife species that have potential to occur on the site or were observed during surveys include western burrowing owl (*Athene cunicularia*), which were observed in active burrows located in the center of the site during the November 2017 surveys, golden eagle (*Aquila chrysaetos*), pallid bat (*Antrozous pallidus*), Central California Coast coho salmon DPS (*Oncorhynchus kisutch*), and Central California Coast steelhead ESU (*O. mykiss irideus*).

Amphibians known to occur in the general region such as California tiger salamander (*Ambystoma californiense*), foothill yellow-legged frog (FYLF; *Rana boylei*), and California red-legged frog (CRF; *R. draytonii*) were determined to not have potential to be at the project site based on lack of suitable breeding habitat (Dudek 2017a; Appendix B). There are no suitable breeding ponds for California tiger salamander within 1.2 miles of the project site. Potentially suitable habitat for CRF and FYLF is not present within Copeland Creek within the project area due primarily to the high winter/early spring flows and relatively high water velocities that occur during most rainfall years at the same time that CRF and FYLF breeding occurs which would scour egg masses and larvae from deposition sites. Additionally, suitable pools with sufficient depth, cover and emergent vegetation are not present within the project reach to support this species during the summer and fall when the creek is dry.

A discussion of special-status wildlife species habitat requirements and methods of determination of occurrence within the site are described in Appendix B, Biological Resources Assessment.

Wildlife Corridors

The Sonoma Valley Wildlife Corridor stretches from Sonoma Mountain across Sonoma Creek and the valley floor, and east to the top of the Mayacama mountain range. Although this corridor is recognized as an important corridor for wildlife within Sonoma County, it is located approximately

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five miles east of the project site. The site is not recognized as an important wildlife corridor by any regional or state agency or jurisdiction and is not considered critical to the ecological functioning of adjoining open space areas; however, it has value as a potential habitat linkage between areas of adjacent grassland and woodland habitats.

- 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 Game or U.S. Fish and Wildlife Service?*

Trail Alignments

Special-status Plants

Several special-status plant species have potential to occur within oak woodland and grassland in both the upper (Tank to Park Segment Low and High Trail options) and lower (Copeland Creek Crossing Segment Options A and B) trail alignments. These include Franciscan onion, bent-flowered fiddleneck, pappose tarplant, fragrant fritillary, congested-headed hayfield tarplant, Jepson's leptosiphon, and two-fork clover. Implementation of the project could have an adverse effect on these special-status plant species due to construction of the trail, including destruction of individual plants or populations of plants along the trail alignment from grading, dust, or trampling. With implementation of Mitigation Measures BIO-1 and BIO-2, which require awareness training and rare plant surveys, measures for avoidance of and special-status plant population identified in the alignment, and worker environmental awareness training, potential impacts to special-status plant species will be **less-than-significant level with mitigation incorporated**.

Special-status Wildlife

Direct and indirect impacts to special-status wildlife species including nesting birds, burrowing owl, golden eagle, and pallid bat could occur in the form of direct destruction of habitat and interruption of foraging patterns during construction of the trail due to noise, increased human activity, grading and vibration, as discussed below.

Nesting Birds: All native birds in California are protected by the Migratory Bird Treaty Act and Sections 3503 and 3503.5 of the California Fish and Game Code, which specifically protect active nests of native birds and raptors. Implementation of Mitigation Measures BIO-1 and BIO-4, which specify preconstruction surveys and nest avoidance, would ensure potential impacts to nesting birds would be avoided or minimized.

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Burrowing Owl: Burrowing owl is known to occur adjacent to the trail alignments in the northern portion of the project site. Direct impacts could include mortality or injury to owls or destruction of burrows/nests if nesting in or adjacent to a construction site during ground-disturbing activities. In addition, increased noise and ground vibration associated with construction activities could cause an adult owl to abandon an active nest that is in close proximity to construction, which could lead to nest failure. With implementation of Mitigation Measure BIO-5, which requires preconstruction surveys and nest avoidance if present, would ensure potential impacts to burrowing owl would be avoided or minimized.

Golden Eagle: There is very limited nesting habitat on the project site for Golden eagles, but suitable foraging habitat is present within the project site. However, the Tank to Park trail segment would remove only a small portion of grassland habitat. Due to the small amount of foraging habitat to be impacted relative to the remaining habitat that would be preserved, impacts to golden eagle foraging habitat are less than significant.

Pallid Bat: Pallid bat may utilize exfoliating bark of the oak trees in the central portion of the project for roosting, and suitable foraging habitat is present throughout the site. Direct impacts could include mortality or injury to bats if they are present in trees at the time of tree trimming. With implementation of Mitigation Measures BIO-1 and BIO-6, which require worker environmental awareness training and preconstruction bat habitat assessment, would ensure potential impacts to pallid bat would be avoided or minimized.

In summary, potential impacts on special-status species as a result of trail construction would be **less-than-significant with mitigation incorporated**.

Bridge Crossings

Special-status Plant Species

Two options for bridge construction have been proposed as part of the Copeland Creek Crossing Segment: Option A consists of a 125-foot clear-span over the stream channel that would require less vegetation removal than Option B, which consists of a 70-foot clear-span bridge over a narrower, but more heavily vegetated section of the stream channel. None of the potentially-occurring special-status plant species occur in riparian areas. Thus, they are not anticipated to be present in the either bridge crossing footprint. Regardless, implementation of Mitigation Measures BIO-1 and BIO-2 would ensure impacts result from bridge construction would be less-than-significant with mitigation.

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Special-status Wildlife Species

Nesting and Migratory Bird Species: Construction of either bridge option would entail vegetation removal and grading adjacent to the creek, which could result in direct harm to nesting birds if they are present at the time of construction. Additionally, increased noise and vibration could result in nest failure if nesting birds are present in adjacent vegetation during construction activities. With implementation of Mitigation Measures BIO-1 and BIO-4, impacts would be reduced to less-than-significant with mitigation.

Fisheries: Construction of either bridge crossing option would result in removal of approximately 0.04 acre of arroyo willow thicket, which provides shading for Copeland Creek and associated steelhead and coho salmon habitat. Removal of shading vegetation may alter the instream habitat for fisheries resources; however, the bridge itself would provide additional shading over the stream channel. The shading footprint of the bridge is anticipated to be roughly equivalent to the shade provided by the removed riparian vegetation. There is potential for direct impacts to special-status fisheries resources if bridge construction occurs when there is suitable water flows within the Creek to support these species. Temporary adverse effects to special-status fisheries resources could occur in the form of siltation of and runoff into Copeland Creek.

Based on this analysis, impacts to special-status wildlife species from the proposed project would be potentially significant, but would be reduced to **less-than-significant with mitigation incorporated** with implementation of Mitigation Measures BIO-1, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, and BIO-8.

- 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 Game or U.S. Fish and Wildlife Service?*

Riparian habitat occurs along Copeland Creek within the project site in the form of arroyo willow thickets. Riparian habitat is considered sensitive by CDFW (California Fish and Game code Section 1602), which require a Lake and Streambed Alteration Agreement (LSAA) for any activity that will substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or deposit debris, waste or other materials that could pass into any river, stream or lake. Activities such as trimming or removal of riparian vegetation, as well as shading of the stream channel from bridge structures, are considered substantial change and would require authorization under an LSAA.

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Copeland Creek Crossing Segment Option A would result in the removal of approximately 0.03 acre of riparian vegetation associated with Copeland Creek, while Option B would result in approximately 0.04 acre of impacts to riparian vegetation. Construction of the bridge crossing over Copeland Creek and the associated vegetation removal required to complete the crossing would be potentially significant, but would be reduced to **less-than-significant with mitigation incorporated** with implementation of Mitigation Measure BIO-7, which requires authorization from CDFW in the form of a Section 1602 LSAA, prior to implementation of the project to address impacts to the bridge crossing over Copeland Creek.

Native oak trees are an important aspect of the natural environment in the Sonoma County, and are afforded protection under the Sonoma County Tree Ordinance (Chapter 12.08 of the County's Municipal Code) and CDFW. The trail is designed to pass through the oak woodland in the western portion of the site and no removal of oak trees is necessary under the proposed project design, therefore, there would be **no impact**.

- 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?*

A Jurisdictional Delineation Report was prepared in January 2018 to determine if Waters of the U.S. or Waters of the State, including wetlands, were present within the project site (Appendix B). The report, based on fieldwork conducted in November 2017, determined that the project site supports 0.734 acres of wetlands and 6,962.856 linear feet of other waters that are anticipated to meet the criteria for jurisdictional waters of the United States, based on an analysis of the three parameters for wetlands (soils, hydrology, and vegetation) and connectivity/proximity to known waters of the United States.

The seasonal wetlands and ephemeral drainages would be avoided within the project site; however, the proposed Copeland Creek Crossing Segment of the trail alignment crosses Copeland Creek, including vegetated swales, seasonal wetland swales and the intermittent drainage within the site. The project has been designed to include a bridge that spans these aquatic resources and would not result in the placement of structures or other fill within them. Potential for introduction of fill or sedimentation as a result of runoff during construction could result in impacts to wetland features on site. To reduce potential adverse impacts to these aquatic resources, Mitigation Measure BIO-8 would be implemented. Additionally, implementation of Mitigation Measure BIO-1, which requires Worker Environmental Awareness Training to identify sensitive habitats such as wetlands and waters on site, would reduce adverse impacts to aquatic features. Therefore, impacts to

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aquatic features within the site due to project activities would be **less-than-significant with mitigation incorporated** after implementation of Mitigation Measures BIO-1 and BIO-8.

- 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?*

Copeland Creek provides a movement corridor for coho salmon and steelhead, and these species are known to occur within this creek. Construction of the bridge over Copeland Creek could have an adverse effect on coho salmon and steelhead in the form of siltation of the creek and potential runoff from construction equipment into the creek. Because the bridge crossing over Copeland Creek would be constructed from the top of each bank of the creek and would span the creek, no dewatering of the creek would be necessary.

Although the Sonoma Valley Wildlife Corridor is recognized as an important corridor for wildlife within Sonoma County, it is located approximately five miles east of the project site, and therefore would not be impacted by the proposed project. The project site has value as a potential habitat linkage between areas of adjacent grassland and woodland habitats, but is not recognized as an important wildlife corridor by any regional or state agency or jurisdiction and is not considered critical to the ecological functioning of adjoining open space areas. The project includes constructing a five-foot-high “horse fence” along a portion of the northern boundary of the project site connecting to an existing fence located along the north side of the water tank access road. The fence is designed to be transparent with a wood rail along the top with an open wire design below and would allow passage of small animals under the bottom of the fence (via a small gap) and would also not prohibit larger animals (i.e., deer) to jump over the fence. The addition of a fence would not interfere with any wildlife movement on the site.

Common wildlife species adapted to life in proximity to human disturbance such as raccoon (*Procyon lotor*) and coyote (*Canis latrans*) are likely to move through the site on a regular basis in search of food and cover. Temporary effects to common wildlife species during construction in the form of interrupted foraging patterns and avoidance of the site due to noise and human activity would not interfere with survival or reproduction of these species, due to the presence of large expanses of similar habitat surrounding the site that can be utilized during construction of the trail.

Impacts to coho salmon and steelhead migration habitat due to construction of the bridge crossing over Copeland Creek would be potentially significant, but would be reduced with implementation of Mitigation Measures BIO-7 and BIO-8, which require complete

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avoidance or authorization from ACOE, CDFW, and RWQCB in the form of regulatory permits (e.g., Clean Water Act Section 404 Nationwide Permit, Section 401 Water Quality Certification, and CDFG Code Section 1602 Streambed Alteration Agreement) prior to implementation of the project, which includes measures to prevent siltation and runoff into the creek during construction activities, in the form of installation of proper BMP's such as straw wattles and silt fencing. Impacts to other native resident or migratory wildlife species movement patterns would be **less-than-significant with mitigation incorporated**.

e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

The Sonoma County Tree Ordinance, Chapter 12.08 of the County's Municipal Code, restricts the removal and damage or alteration of protected trees within the County. The County requires all projects to be reviewed by the tree committee. The ordinance requires that a certified arborist prepare a report that assesses project impacts on trees. This requirement may be waived if no significant trees are found on the project site or on adjoining properties that could be affected by the proposed project. The City's Zoning Code Chapter 17.15—Tree Preservation & Protection, provides guidelines associated with tree removal. The ordinance exempts the removal of any tree that is (in the opinion of the City's Arborist) inappropriately located and should be removed in order to protect real property, or the removal of any tree that is (in the opinion of the City's Arborist) a threat to public safety.

The proposed project is designed to not remove or damage any trees and therefore would not conflict with County policies and ordinances protecting biological resources. If any trees require pruning, or any dead or diseased trees require removal based on input from a qualified arborist, the City would consult with the County before removing any trees. Therefore, impacts would be **less than significant**.

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?*

The project site is located within the Santa Rosa Plain Conservation Strategy's (Strategy) Study Area. The goal of the strategy is to preserve a large enough area of suitable habitat to ensure the conservation of CTS and listed plants and contribute to their recovery. In order to do this, areas are identified within the Strategy planning area that currently or potentially support these species, as areas that currently or may in the future support development. This information is used to designate "conservation areas" within the planning area.

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Although the project site is within the potential range for CTS, it is not within a designated conservation area and is considered an area where presence of CTS is not likely (USFWS 2005). Previous studies have been conducted as part of the Strategy, and no CTS have been found within the Project site. There is no suitable habitat for covered plants at the project site (refer to the discussion in Appendix B). Additionally, construction of the bridge and trail would not significantly remove potential future habitat for any of these species.

The activities associated with the project would not conflict with the provisions of the Strategy; therefore, there would be **no impact**.

Mitigation Measures

Mitigation Measures BIO-1 through BIO-8 include all preconstruction survey requirements and protocol to follow in the event any permits are required. Compliance with these mitigation measures would ensure potential impacts to protected species or habitat would be reduced to less than significant.

Mitigation Measure BIO-1: *Workers Environmental Awareness Program*. All workers shall receive worker environmental awareness program (WEAP) training conducted by a qualified biologist or their designated representative prior to any project construction activities. WEAP may also be conducted through a video created by a qualified biologist specifically for this project. WEAP shall instruct workers to recognize all special-status species potentially present in the project area, identify suitable habitat for these species, identify sensitive or protected habitats within the project area, and understand the nature and purpose of protective measures including best management practices (BMPs) and buffers to protect these biological resources. Additional items included in the training shall cover requirements for spill kits and the prevention of spills, and the contact information for the qualified biologist.

Mitigation Measure BIO-2: *Focused Rare Plant Surveys*. Focused rare plant surveys shall be performed during the blooming season for Franciscan onion, bent-flowered fiddleneck, pappose tarplant, fragrant fritillary, congested-headed hayfield tarplant, Jepson's leptosiphon, and two-fork clover within suitable habitat prior to the start of construction. If any of these plants or populations of plants are detected during focused surveys, and avoidance is not possible, consultation with California Department of Fish and Wildlife shall be necessary to determine if potential propagation, relocation or other mitigation options would be required for the project.

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If none of the species are detected during surveys, no further surveys or mitigation would be necessary; however, if more than one year lapses between protocol surveys and the initiation of construction, preconstruction surveys shall be repeated to identify any annual special-status plant species present within the project footprint.

Mitigation Measure BIO-3: *Work Period Restrictions.* Construction work within the riparian corridor of Copeland Creek shall be restricted to no stream flow and dry weather as allowed during the dry season (generally April through October).

The work period for construction of the trail and any associated features shall be restricted to daylight hours to avoid impacts to foraging bat species and nocturnal bird species. Should nighttime work be necessary and unavoidable, light fixtures shall be placed as low to the ground as possible, and light shall be directed at the project area only to minimize light pollution in adjacent habitat.

Mitigation Measure BIO-4: *Preconstruction Nesting Bird Surveys.* If construction is proposed during the breeding season (February 1-August 30), a preconstruction nesting bird survey shall be conducted along the project alignment (including a 250-foot buffer for raptors) by a qualified biologist 14 days prior to the beginning of construction activities, in order to identify active nests in the vicinity of the project area. If no active nests are found during the preconstruction survey, no further mitigation is required.

If any active nests are found within 250-feet of the project alignment, a temporary buffer shall be determined and flagged by the qualified biologist based on the location of the nest and planned construction activity in the vicinity of the nest. These nests shall be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist.

Mitigation Measure BIO-5: *Preconstruction Survey for Burrowing Owl.* A qualified biologist shall conduct surveys for burrowing owl within 30 days prior to ground-disturbing activities at the project site. The survey shall cover the limits of ground disturbance and potentially suitable nesting habitat within 300 feet, to the extent feasible. If ground-disturbing activities are delayed, then additional surveys shall be conducted such that no more than 7 days elapse between the survey and ground-disturbing activities. If no potential burrowing owl nests are detected during the survey, no additional actions are needed, and ground-disturbing activities may proceed.

If non-nesting burrowing owls are observed in or adjacent to the construction footprint during the survey, construction shall be postponed until the qualified

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biologist can fully implement a California Department of Fish and Wildlife-approved burrow exclusion plan (to be prepared by the qualified biologist). The exclusion plan shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). Once owls have been successfully excluded and unoccupied burrows evacuated, construction in the area may proceed.

If nesting burrowing owls are observed during the survey, construction activities within 300 feet of occupied burrows shall be delayed until young owls have fledged and are independent of the burrow, as determined by a qualified biologist. The qualified biologist may reduce the 300-foot buffer based on the type, timing, extent, and intensity of the construction activity and other factors such as site topography and vegetation cover between the construction activity and the burrow. Once all young have fledged and are no longer dependent upon the nest burrow, the same burrow exclusion procedure described above shall be implemented prior to resuming construction activities in the area.

Mitigation Measure BIO-6: *Preconstruction Roosting Bat Habitat Assessment.* At least 14 days prior to the commencement of any construction activities, a qualified biologist shall conduct a habitat assessment for bats within the project area. The habitat assessment shall include a visual inspection of potentially roosting features and presence of guano. Potential roosting features found during the survey shall be flagged or marked. If bats are detected and cannot be completely avoided with an avoidance buffer of 50 feet or greater, a bat mitigation and monitoring plan shall be developed in coordination with the California Department of Fish and Wildlife.

If no roosting habitat is identified during the survey, no further measures shall be necessary.

Mitigation Measure BIO-7: *Streambed Alteration Agreement.* Prior to grading permit issuance, the City or its contractor shall acquire a Streambed Alteration Agreement from the California Department of Fish and Wildlife. Upon completion of the proposed project, all temporarily disturbed natural areas, including stream banks, shall be returned to original contours to the extent feasible. Affected stream banks shall be stabilized prior to the rainy season and/or prior to reestablishing flow. Riparian vegetation shall be reestablished on site as appropriate and at a ratio of no less than 2:1, restored to impacted trees.

Mitigation Measure BIO-8: *Permitting and Mitigation for Wetlands and Waters of the U.S. and State.* The proposed trail alignment shall span or avoid all wetland and water

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resources. If complete avoidance is not feasible and fill material shall be placed within these features, the following measures shall be implemented.

- a) Prior to grading permit issuance, the City or its contractor shall acquire the appropriate CWA Section 404 permit for construction of the proposed project and the filling of wetlands and other Waters of the U.S. in the project area. A copy of the approved Section 404 permit shall be provided to the City's Planning Department prior to issuance of a grading permit.
- b) In addition to the CWA Section 404 Wetland Fill permit, a CWA Section 401 water quality certification shall also be required in conjunction with the Section 404 permit.
- c) Wetlands and Waters of the U.S. lost as a result of project development shall be replaced on a "no-net-loss" basis in accordance with U.S. Army Corps of Engineers (ACOE) regulations. The following process shall be used in planning for replacement:
 - i. For wetlands that shall be created on site in open space areas, a conceptual on-site wetlands mitigation plan shall be arranged for by the City, including an agreed-upon replacement ratio of wetlands with the ACOE. The mitigation plan shall quantify the total jurisdictional acreage lost, describe creation/replacement ratio for acres filled, annual success criteria, potential mitigation-sites, and monitoring and maintenance requirements.
 - ii. The plan shall be prepared by a qualified biologist pursuant to, and through consultation with, the ACOE.
 - iii. The plan may include funding mechanisms for future maintenance of the wetland and riparian habitat, which may include an endowment or other funding.
 - iv. For those acres of wetlands or waters lost to development of the proposed project that cannot be replaced on site, the City shall compensate for the loss of wetland habitat through the purchase of mitigation credits at a ACOE-approved mitigation bank or otherwise ACOE-approved location. The ratio of compensation shall be determined in consultation with the ACOE as part of the 404-permit process, but shall not be less than 1:1 depending on the quality of the wetlands per the Strategy (USFWS 2005). Alternatively, in-lieu fees to the ACOE, California Department of Fish and Wildlife, and Regional Water Quality Control Board according to their

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established fee structures to compensate for the removal of jurisdictional wetland features within the project area.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES – 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 checked="" type="checkbox"/>	<input 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"/>

2.5 Cultural Resources

Environmental Setting

A Cultural Resources Inventory Report for the Copeland Creek Detention Basin and Trail Project was prepared for the proposed project by Dudek (Dudek 2017b), as well as a Historical Resources Evaluation Report for the Trail to Crane Creek Regional Project (Dudek 2018). These reports were used to complete this section and are included in Appendix C.

Records Search (2016)

A records search was completed for the project site including a one-half mile radius around the site by staff at the Northwest Information Center (NWIC) at Sonoma State University on August 12, 2016. The records search identified 22 previous studies which have been performed with the records search area; of these, 10 have covered a least a portion of the project area (Table 1; Confidential Appendix A). In total, 100% of the project area has been previously surveyed.

Previous technical studies have identified three prehistoric isolates, one prehistoric site, and one historic-age rock wall within the 128-acre parcel. The archaeological site (P-49-005717) has been evaluated and recommended eligible for CRHR/NRHP listing. This resource would be avoided by the proposed project. Additionally, the Himebauch Ranch /Anderson Stone Wall (P-49-004917) is a possible contributor to the CRHR/NRHP-eligible Himebauch Ranch Complex. .

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Records Search (2018)

Dudek requested an updated records search and received the results on February 15, 2018. The search included any previously recorded cultural resources and investigations within a 0.5-mile radius of the project site. The search also included a review of the National Register of Historic Places (NRHP), California Register of Historic Resources (CRHR), California Points of Historical Interest list, California Historical Landmarks list, Archaeological Determinations of Eligibility list, and California State Historic Resources Inventory list.

Two cultural resources were identified within the project site as a result of the records search:

- **49-003055:** This site record represents the historical Himebauch ranch site at 6560 Petaluma Road, which encompasses most of the project site. This property consists of the ranch house and 19 outbuildings. The main ranch house was built circa 1912, and the property has been in the Himebauch-Anderson family since 1864. The property, buildings and landscape features were determined eligible under NRHP Criterion A.
- **49-004917:** This record represents two segments of rock wall which are within the project site. This site consists of a dry-laid, un-coursed, rock wall segments of variable height and width that begins at the west end of a small hill north of Copeland Creek and south of the 6560 Petaluma Road property. The site records only one east-west segment and one north-south segment of rock wall. This site has not been evaluated for eligibility for listing in the NRHP.

Pedestrian Survey (2017)

An intensive-level pedestrian survey was completed November 13-15, 2017 and December 14, 2017. David Carrio, Native American monitor with Graton Rancheria, was present during the November survey, however was not available for the December survey. No additional cultural resources were identified as a result of these efforts, and no specific concerns expressed by Mr. Carrio while on site. The condition and description of previously recorded cultural resources within the property appeared to be consistent with documentation in existing reports and Department of Parks and Recreation (DPR) forms.

Pedestrian Survey (2018)

Dudek conducted an additional pedestrian survey on March 2, 2018. The survey entailed walking all accessible portions of the subject property and documenting aspects of the existing rock wall, specifically noting character-defining features, spatial relationships, observable wall breaches, and examining any historic landscape features on the property.

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From this pedestrian survey, it was determined that the rock wall, identified as the “Himebauch Ranch/Anderson Stone Wall” reflects broad trends of land ownership, settlement patterns, and agricultural development in the West during the late 19th to early 20th centuries. The Himebauch Ranch/Anderson Stone Wall was recommended as eligible for listing under NRHP and CRHR and County of Sonoma Designation Criteria. Therefore, the property is considered an historical resource for the purposes of CEQA.

Additional intensive-level survey was completed September 26, 2018 for areas within Crane Creek Regional Park. No previously recorded or newly recorded resources were identified within this portion of the project area.

Native American Consultation

As part of the City’s Water Tank project, located within the project site, the Native American Heritage Commission (NAHC) was contacted by Dudek on August 4, 2016, to request a search of the Sacred Lands File for the entire 128-acre property. The NAHC responded on August 12, 2016, indicating that the search failed to identify any Native American resources in the vicinity of the project and provided a list of individuals and organizations to contact that may have additional information. Letters were sent, and follow up calls made, by the City to various contacts within the Federated Indians of Graton Rancheria in October, 2016. In January 2018, the City sent a letter, pursuant to AB 52 to the only tribe that has requested to be notified of upcoming projects, the Federated Indians of Graton Rancheria. A meeting with the tribe occurred on November 6, 2019. Initial discussions did occur at this time regarding the project, however this project was not discussed in detail nor was it the primary topic of consultation during that meeting. The AB 52 process is currently ongoing and will continue until the Federated Indians of Graton Rancheria provides direct input.

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Historical resource is a term with a defined statutory meaning (See Public Resources Code § 21084.1 and CEQA Guidelines §§ 15064.5(a), (b)). The term embraces any resource listed or determined to be eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest. In addition, historical resources are evaluated against the CRHR criteria prior to making a finding as to the project’s impacts on historical resources.

The Himebauch Wall (P-49-004917) appears eligible for the NRHP, CRHR, and County of Sonoma Historical Resources Inventory under Criteria A and C and would be directly

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impacted by the proposed project. Additionally, while not re-evaluated as part of this study due to safety concerns with accessing the site, the Himebauch Ranch (P-49-003055) appears eligible for the NRHP, CRHR, and County of Sonoma Historical Resources Inventory under Criterion A and its setting could be directly impacted by the proposed project. However, there is a low possibility the ranch itself would be directly impacted, given that the trail will not be located on the ranch site.

Given the potential impacts to the Himebauch Wall, the proposed project requires review for conformance with the Secretary of the Interior's Standards for Rehabilitation (Standards) in order to ensure that impacts to historical resources are less than significant.

Where a project has been determined to conform with the Standards, the project's impact on historical resources would be considered mitigated to below a level of significance and, thus, not significant (14 CCR 15126.4(b)(1)). In most cases, a project that demonstrates conformance with the Secretary of the Interior's Standards is categorically exempt from CEQA (14 CCR 15331), as described in the CEQA Guidelines:

Where maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of the historical resource will be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Weeks and Grimmer 1995), the project's impact on the historical resource shall generally be considered mitigated below a level of significance and thus is not significant (14 CCR 15126.4(b)(1)).

The Standards for Rehabilitation, taken together with the Guidelines, provide the framework in which proposed modifications to the Himebauch Wall should be reviewed.

Dudek was provided with site plans for the Tank to Park Low Trail and High Trail Segments, dated October 16, 2019, as well as detail for the special treatment of the Himebauch Wall, dated November 6, 2019. Based on these plans provided by Brelje & Race Consulting Engineers, the following project components were analyzed for conformance with the Standards for Rehabilitation (Table 2.5-1), and in consideration of potential impacts to historical resources under CEQA:

Potential Impact 1: The proposed project would provide a multi-use, Class 1 trail from the eastern end of the water tank access road east heading east and northward connecting to Crane Creek Regional Park (Tank to Park Segment –High and Low Trail options). Both

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trail options have the potential to directly impact the Himebauch Wall by introducing new construction to a historically rural, agricultural setting.

Less than Significant Impact. Both of the proposed Tank to Park trail options would have a less-than-significant impact to the existing rural, agricultural setting of the adjacent historical resources. In both options, the trail would be located at ground-level, with simple wooden hand railings where required. The trail surface would utilize an appropriate natural color and texture, conforming to the existing rural setting of open space and undulating hills. Contrasting colors and inharmonious materials would be avoided. Both trail options would intersect the Himebauch Wall at one location, utilizing an existing break in the wall to avoid disrupting the resource and its alignment. This single break would apply a special treatment that utilizes natural materials like wood and stone to blend with the surrounding natural setting.

Potential Impact 2: The proposed Class 1 trail to Crane Creek Regional Park includes a special treatment at the single point in which the trail intersects the Himebauch Wall. This treatment would facilitate passage of a 6-foot-wide section of trail through an existing break in the rock wall. In the High Trail option, the trail uses the easternmost wall break, and in the Low Trail option, the trail uses the westernmost wall break. This treatment includes adjacent construction of a retaining wall with a handrail on the west side of the trail, and a rock embankment on the east side of the trail (see Figure 6). The rock embankment would utilize locally-sourced stone obtained from excavation work completed at the water tank site to the south. This component of the proposed project has the potential to directly impact the Himebauch Wall by introducing adjacent new construction to facilitate a new surrounding use that includes public access.

Less-than-Significant Impact. The proposed special treatment for the point at which the trail crosses the Himebauch Wall would utilize an existing break in the rock wall and would not disturb any intact sections of the wall. Rocks associated with the wall that have been naturally dislodged from their original placement may be moved no more than several feet (as needed) to accommodate passage of the trail. All components of the special treatment crossing would utilize natural materials like wood and stone, so as not to detract from the simplicity of the resource and its rural setting. The rock embankment would utilize locally-sourced stone that offers a slightly larger, less naturally weathered appearance than those that comprise the Himebauch wall. This allows the new rocks to be clearly differentiated from the historical resource, while still complimenting the natural, rural setting and not detracting from the wall.

Table 2.5-1 presents the findings of a review of proposed project components for conformance with each of the ten Standards for Rehabilitation.

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Table 2.5-1
Project Design Review for Conformance with the Standards for Rehabilitation

Standard	Project in Conformance?	Analysis
1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.	Yes	The Himebauch Wall is a linear resource comprised of a dry stacked, random rubble stone wall composed of cobbles and boulders, likely sourced from the immediate surroundings. No changes would be made to its distinctive alignment or its rubble stone components. The single special treatment crossing would utilize a natural break in the wall that would require minimal changes to the resource.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.	Yes	The historic character of the Himebauch Wall would be retained and preserved. Distinctive materials and spatial relationships would not be damaged, interrupted, or obscured.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.	Yes	No changes would be made that create a false sense of historical development. The rocks chosen for the special treatment rock embankment were selected because they are clearly different from those that comprise the Himebauch Wall. No conjectural features or elements would be added to the property.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.	Yes	N/A
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.	Yes	Only a very small portion of the wall would be disturbed to accommodate passage of both trail options. All other aspects of the wall would remain intact and undisturbed.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.	Yes	The project does not propose to replace or repair any elements of the Himebauch Wall. Rocks associated with the wall that have been naturally dislodged from their original placement may be moved no more than several feet (as needed) to accommodate passage of the trail.
7. Chemical or physical treatments, if appropriate, will be undertaken using	Yes	No chemical or physical treatments are proposed.

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Table 2.5-1
Project Design Review for Conformance with the Standards for Rehabilitation

Standard	Project in Conformance?	Analysis
the gentlest means possible. Treatments that cause damage to historic materials will not be used.		
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.	Yes	See associated project archaeology report (Giacinto and Burns 2018).
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.	Yes	<p>The Himebauch Wall is within and adjacent to the proposed trail. However, new construction associated with the trail would not destroy historic materials, features, or spatial relationships that characterize the wall:</p> <p><u>Materials:</u> The proposed special treatment for the point at which the trail crosses the Himebauch Wall would utilize an existing cattle break in the rock wall and will not disturb any intact sections of the wall. Rocks associated with the wall that have been naturally dislodged from their original placement may be moved in order to facilitate passage of the trail.</p> <p><u>Features:</u> No features of the wall would be significantly impacted. The trail would intersect the Himebauch Wall at one location, utilizing an existing break in the wall to avoid disrupting the resource and its alignment.</p> <p><u>Spatial Relationships:</u> The proposed trail would not disrupt the existing rural, agricultural setting of the adjacent historical resources. The trail would be located at ground-level, with simple wooden hand railings where required. The trail surface would utilize an appropriate natural color and texture, conforming to the existing rural setting of open space and undulating hills. Contrasting colors and inharmonious materials would be avoided. The spatial relationship between the ranch and the wall would remain intact.</p> <p>The new work would be differentiated from the old and would be compatible with the historic materials, features, size, scale and proportion, and massing to protect the</p>

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Table 2.5-1
Project Design Review for Conformance with the Standards for Rehabilitation

Standard	Project in Conformance?	Analysis
		integrity of the property and its environment. All components of the special treatment crossing will utilize natural materials like wood and stone, so as not to detract from the simplicity of the resource and its rural setting. The rock embankment would utilize locally-sourced stone that offers a slightly larger, less naturally weathered appearance than those that comprise the Himebauch wall. This allows the new rocks to be clearly differentiated from the historical resource, while still complimenting the natural, rural setting and not detracting from the wall.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.	Yes	If the proposed trail and its components were removed in the future, the essential form and integrity of the rock wall and adjacent ranch property, and their rural setting, would be unimpaired. The subtle profile of the trail and simple crossing treatment require minimal impact to the resources and their setting.

As a result of the project-specific impacts analysis and review for conformance with the Secretary of the Interior's Standards, all elements of the proposed project were found to be in conformance with the Rehabilitation Standards and Guidelines, and all potential project-related impacts to historical resources were found to be **less than significant** and no mitigation is required.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

There are no known archeological resources onsite. One archaeological site (P-49-005717) that is assumed potentially CRHR/NRHP eligible is recorded within the project parcel. Buried human remains of Native American origin have been identified in association with this resource. The existing water tank road would be used by pedestrians and bicyclists in the vicinity of this resource as well as during project construction. However, given the location of this resource both project construction and operation would not result in the potential to adversely impact this resource. Given the nature of the project, which requires relatively limited earth disturbing activities in areas with suitability to support

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archaeological deposits, it is unlikely that previously unknown cultural resources would be encountered during future site trail construction. However, given the presence of known archaeological resources in the vicinity, and to ensure that impacts to cultural resources remain less than significant, implementation of an archaeological and Native American monitoring program is provided for within Mitigation Measure CUL-1 and procedures for appropriate response to identification of unanticipated human remains is provided for within Mitigation Measure CUL-2. With implementation of the aforementioned mitigation measures, impacts to human remains would be **less-than-significant with mitigation**.

- c) *Would the project disturb any human remains, including those interred outside of dedicated cemeteries?*

Refer to the answer provided in 'b' above.

Mitigation Measures

Compliance with the following mitigation measures would ensure the proper procedures are followed in the event any resources are uncovered during any site disturbing activities. Impacts would be reduced to less than significant with the following measures.

Mitigation Measure CUL-1: The City shall require that Native American and archaeological monitors are present during all initial ground-disturbing activities with the potential to impact previously identified cultural resources or to encounter unanticipated cultural deposits. Prior to the initiation of ground-disturbing work, construction crews shall be made aware of the potential to encounter cultural resources and the requirement for cultural monitors to be present during these activities. Areas observed to have potential to contain yet-identified subsurface cultural material or deposits are located throughout the project area to depths of 10 feet or less below the surface. Archaeological and Native American monitoring may be adjusted at the recommendation of the qualified archaeological principal investigator, meeting the Secretary of the Interior Professional Qualifications for Archaeology, and in consultation with the City, based on inspection of exposed subsurface soils and their observed potential to contain intact cultural deposits or material. The Native American monitor or associated tribe may contact the City should they disagree with adjustments to cultural monitoring or evaluation efforts.

The archaeological and tribal monitors shall be provided a copy of technical reports prepared for the project and pertinent appendices to inform their monitoring efforts. The archaeological and tribal monitors shall have the authority to temporarily halt

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work to inspect areas as needed for potential cultural material or deposits. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed project, all construction work occurring within 100 feet of the find shall immediately stop until the qualified archaeological principal investigator, that meets the Secretary of the Interior Professional Qualifications for Archaeology can evaluate the significance of the find and determine whether or not additional study is warranted. Should it be required, temporary flagging may be installed around this resource in order to avoid any disturbances from construction equipment. As approved by the City, this buffer may be adjusted by the archaeological principal investigator to a distance that maintains a protective perimeter around the unanticipated resource, while still allowing for construction to continue in the surrounding area. Depending upon the significance of the find under CEQA (14 CCR 15064.5(f); PRC Section 21082), the archaeological monitor in correspondence with the qualified archaeological principal investigator may simply be required to record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the qualified archaeological principal investigator observes the discovery to be potentially significant under CEQA or Section 106 of the NHPA, additional efforts such as preparation of an archaeological treatment plan, testing, and/or data recovery may be warranted prior to allowing construction to proceed in this area. The feasibility for avoidance shall also be discussed with the City, if appropriate, and prior to any earth disturbing investigations.

Mitigation Measure CUL-2: In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found the county coroner shall be immediately notified of the discovery. The coroner shall provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, shall occur until a determination has been made. If the county coroner determines that the remains are, or are believed to be, Native American, they shall notify the Native American Heritage Commission (NAHC) within 24 hours. In accordance with California Public Resources Code Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendent (MLD) from the deceased Native American. Within 48 hours of their notification, the MLD shall recommend to the lead agency their preferred treatment of the remains and associated grave goods, per Section 15064.5(e) of the CEQA Guidelines.

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

2.6 Energy

Environmental Setting

Pacific Gas and Electric Company (PG&E) provides gas and electricity services in unincorporated Sonoma County (PG&E 2014). PG&E provides electric services to 5.4 million customers, including 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines over a 70,000-square-mile service area that includes in Northern California and central California (PG&E 2019). PG&E receives electric power from a variety of sources. According to California Public Utilities Commission's (CPUC's) 2018 Renewable Portfolio Standard (RPS) Annual Report to the Legislature, 33% of PG&E's power came from eligible renewable energy sources in 2017, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources (CPUC 2018).

- 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 of the project would involve energy for use of small-size construction equipment (e.g., standard backhoe, small bulldozer, etc.) and transportation. The new traffic signal at the Petaluma Hill Road/Laurel Drive intersection is the only component that would require electricity for operation. These uses would involve a standard amount of energy resources, similar to other small-scale construction activities or traffic signal operations. As such, neither construction nor operation of the project would involve any wasteful, inefficient, or unnecessary consumption of energy resources, and this impact would be **less than significant**.

- b) *Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

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Refer to the answer provided in 'a' above. Energy consumption would not involve any wasteful or unnecessary consumption of energy resources that would potentially conflict with or obstruct state or local energy plans. There would be **no impact**.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS – Would the project:				
a) Directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative 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"/>

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2.7 Geology and Soils

Environmental Setting

Regional Geology

The regional geologic framework of the area can be understood through the theory of plate tectonics. Earth's mantle is composed of several large plates that move relative to each other. Sonoma County, including the project area, lies within the San Andreas Fault System, which is at the junction of two such plates (USGS 2017). One of the results of plate movement is the regional rock deformation that is expressed in the general northwest trend of valleys and ridges in Sonoma County. This is visible, for example, in the orientation of the Healdsburg-Rodgers Creek fault about 5 miles east of the project site area (City of Rohnert Park 2015).

Elevation varies from approximately 175 feet AMSL in the western portion to a high of 400 feet AMSL at the top of the knoll in the eastern portion of the site. According to the National Resource Conservation Service (NRCS) Web Soil Survey, the Project Site consists of six soil types, including: Clear Lake clay loam, Clear Lake clay, Goulding cobbly clay loam, Goulding-Toomes complex, Riverwash, and Toomes rocky loam.

- a) *Would the project directly or indirectly cause 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.*

The closest known active fault traces are those of the Healdsburg-Rodgers Creek fault, located approximately 5 miles east of the City and the San Andreas Fault, approximately 15 miles west of the City (City of Rohnert Park 2015). Because the project site is located approximately 3 miles from traces of any potentially active fault and from known traces the nearest zoned active fault (the Rodgers Creek fault) and it not located within an Alquist-Priolo Fault Zone, fault-line surface rupture would not be a hazard within the project site. In addition, the project does not include any buildings that could be impact in the event of an earthquake. Impacts related to fault rupture potential would be less than significant.

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ii) Strong seismic ground shaking?

The intensity of ground shaking depends on the distance from the earthquake epicenter to the site, the magnitude of the earthquake, site soil conditions, and the characteristics of the source. The project site is located within the proximity of two active faults, and could potentially result in the exposure of people to strong seismic ground shaking. However, the proposed project would not construct any structures, and would install a multi-use trail within open space areas; therefore, the risk of loss, injury, or death involving seismic ground shaking would be low. Impacts would be considered **less than significant**.

iii) Seismic-related ground failure, including liquefaction?

Soil liquefaction most commonly occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Factors determining the liquefaction potential are the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Loose sands and peat deposits; uncompacted fill and other Holocene materials deposited by sedimentation in rivers and lakes (fluvial or alluvial deposits); and debris or eroded material (colluvial deposits) are the most susceptible to liquefaction. The project site is classified as having moderate liquefaction hazard (City of Rohnert Park 2015).

The proposed project does not include constructing any buildings that could be impacted if liquefaction were to occur. Construction of trails, a pedestrian bridge, and a traffic signal would not expose people to the hazards associated with liquefaction; therefore, the impact is considered **less than significant**.

iv) Landslides?

According to the National Resource Conservation Service (NRCS) Web Soil Survey, the Project Site consists of six soil types. These include: Clear Lake clay loam (0–2% slopes, 2–5% slopes), Clear Lake clay, 0–2% slopes, Goulding cobbly clay loam, 5–15% slopes, Goulding-Toomes complex, 9–50% slopes, Riverwash, and Toomes rocky loam, 2–30% slopes (USDA 2017). The portion of the project area in the western portion is relatively flat, and due to the soil types within the project area, the risk of landslides remains relatively low (City of Rohnert Park 2017). The eastern portion (Tank to Park Segment) is located in an area with some topography; however, no landslide deposits have been mapped within the

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immediate vicinity of the project site. Both options of the Tank to Park Segment have been designed to skirt the hillside and are located in a flatter area of the site. The hikers-only single track trail would be constructed using hand tools, compact trail building equipment, and is not anticipated to create any landslides. Therefore, impacts related to landslides would remain **less than significant**.

b) Would the project result in substantial soil erosion or the loss of topsoil?

The soils within the area are primarily low permeability, slow runoff soils, with low erosion potential and high shrink-swell potential (City of Rohnert Park 2017). An acceptable degree of soil stability can be achieved by the required incorporation of soil treatment programs (e.g., compaction, drainage control, lime treatment) in the excavation and construction plans to address site-specific soil conditions. Construction of the trail in the western portion of the site near Copeland Creek (Option A or B) would adhere to the City's Low Impact Design (LID) guidelines and Best Management Practices (BMPs) included in the construction contracts to avoid impacting Copeland Creek. Construction of the trails in the eastern portion of the site would also comply with the City's LID and BMPs, as spelled out in the construction contracts, which would help minimize erosion. Because the project does not include the construction of any buildings or would require substantial grading and would not include any project components that would contribute to soil erosion, the impact would be **less than significant**.

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?

Unstable geologic units or soils are characterized by materials lacking in sufficient integrity to support urban development (e.g., poorly consolidated fill). The project does not include the construction of any buildings that could be impacted by unstable soils including lateral spreading, subsidence, liquefaction or collapse. The impact would be **less than significant**.

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

Expansive soils shrink and swell as a result of moisture change. These volume changes can result in damage over time to building foundations, underground utilities, and other subsurface facilities and infrastructure if they are not designed and constructed appropriately to resist the damage associated with changing soil conditions. A review of NRCS soil survey data indicates that the project area is composed of six soil types, one of

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which is considered expansive (Clear Lake clay loam). These include: Clear Lake clay loam (0–2% slopes, 2–5% slopes), Clear Lake clay, 0–2% slopes, Goulding cobbly clay loam, 5–15% slopes, Goulding-Toomes complex, 9–50% slopes, Riverwash, and Toomes rocky loam, 2–30% slopes. Clear Lake clay and loam soils are very deep, poorly drained soils that formed in fine textured alluvium derived from sandstone and shale (USDA 2017). However, as mentioned previously, the project does not include construction of any buildings that could be impacted by expansive soils. In addition, construction of the project would follow the Uniform Building Code as well as the City’s LID guidelines and BMPs, spelled out in the construction contracts. Impacts would be **less than significant**.

- 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 septic tanks or alternative wastewater disposal systems are proposed and the project would have **no impact** related to these types of wastewater disposal.

- f) *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

There are no known paleontological resources onsite. It is unlikely that previously unknown paleontological resources would be encountered during future site grading and construction. However, to ensure that impacts to paleontological resources remain less than significant, should any such resources be encountered during project grading and construction, the project would be required to implement Mitigation Measure GEO-1. This mitigation measure is also included in the City of Rohnert Park General Plan EIR. With implementation of the aforementioned mitigation measure, impacts to paleontologic resources would be **less-than-significant with mitigation**.

Mitigation Measures

Compliance with the following mitigation measure would ensure the proper protocol is followed in the event any paleontological resources are unearthed during construction and impact would be reduced to less than significant.

Mitigation Measure GEO-1: Per state law, in the event that paleontological resources or unique geologic features are encountered during construction, all earthwork within a 50 meter radius of the find shall be stopped, the Sonoma County and the City of Rohnert Park notified, and a paleontologist retained.

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with 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"/>

2.8 Greenhouse Gas Emissions

Environmental Setting

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). Gases that trap heat in the atmosphere are often called GHGs. The greenhouse effect traps heat in the troposphere through a threefold process: (1) short-wave radiation emitted by the Sun is absorbed by the Earth; (2) the Earth emits a portion of this energy in the form of long-wave radiation; and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and back toward the Earth. This trapping of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

Principal GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide, O₃, and water vapor. Some GHGs, such as CO₂, CH₄, and nitrous oxide, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely byproducts of fossil-fuel combustion, whereas CH₄ results mostly from off-gassing associated with agricultural practices and landfills. Manufactured GHGs, which have a much greater heat-absorption potential than CO₂, include fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride, which are associated with certain industrial products and processes (CAT 2006).

Regarding impacts from GHGs, both the BAAQMD and the California Air Pollution Control Officers Association (CAPCOA) consider GHG impacts to be exclusively cumulative impacts (BAAQMD 2017a; CAPCOA 2008); therefore, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere. This analysis uses both a quantitative and a qualitative approach. The quantitative approach is used to address the first significance criterion: “Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact

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on the environment”? This analysis considers that, because the quantifiable thresholds developed by BAAQMD were formulated based on AB 32 and California Climate Change Scoping Plan reduction targets for which its set of strategies were developed to reduce GHG emissions statewide, a project cannot exceed a numeric BAAQMD threshold without also conflicting with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, if a project exceeds a numeric threshold and results in a significant cumulative impact, it would also result in a significant cumulative impact with respect to plan, policy, or regulation consistency, even though the project may incorporate measures and have features that would reduce its contribution to cumulative GHG emissions.

The quantitative threshold of 1,100 metric tons of CO₂ equivalent (MT CO₂e) annually adopted by BAAQMD is applied to this analysis. If the project GHG emissions would exceed this threshold then, consistent with BAAQMD Guidelines, it would be considered to have a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact on climate change.

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Construction. Construction of the proposed project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road vendor (material delivery) trucks, and worker vehicles. Since the BAAQMD has not established construction-phase GHG thresholds, construction GHG emissions were amortized assuming a 30-year development life after completion of construction and were compared to the 1,100 MT CO₂e per year operational GHG threshold.

A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, vendor trucks, and worker vehicles—is included in Appendix A. The estimated project-generated GHG emissions from construction activities are shown in Table 2.8-1. As shown in the table project construction would not exceed the BAAQMD thresholds and impacts would be less than significant.

**Table 2.8-1
Estimated Annual Greenhouse Gas Emissions**

Emission Source	CO ₂ e (MT/yr)
2018	31.3
2019	15.0
Total	46.3
Amortized Construction Emissions	1.5
<i>BAAQMD GHG Threshold</i>	<i>1,100</i>
<i>Significant (Yes or No)?</i>	<i>No</i>

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Source: Appendix A

Note: Total emissions may not sum due to rounding.

CO_{2e} = carbon dioxide-equivalent; MT/year = metric tons per year

Operation. Once operational, the proposed project would consist of a Class 1 multi-use trail and a hikers-only single track trail, as part of a future phase of the project. Long-term operation of the proposed project would require minimal upkeep and maintenance. The main source of emissions from operation of the proposed project would include motor vehicle emissions generated by maintenance of the trail facilities and from hikers/bicyclists driving to Crane Creek Regional Park to access the trail. Traffic signal installation would not directly add any new vehicle trips, and minimal emissions would occur due to vehicles sitting in idle during brief moments when the crosswalk is in use. Maintenance activities would require less intensive activity (i.e., less vehicles and equipment operation) than assumed for the project's construction scenario, amortized GHG emissions associated with proposed project construction would result in annualized generation of approximately 2 MT CO_{2e}. The number of vehicle trips traveling to the site to access the trail is estimated to be low and would not be a major contributor to GHGs. Accordingly, operational emissions as well as construction emissions are anticipated to be minimal and would not exceed acceptable thresholds resulting in a **less- than-significant impact**.

b) *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

The City has a GHG reduction plan that focuses on municipal operations, and thus is not applicable to the proposed project. The City worked with other jurisdictions to develop the Sonoma County Community Climate Action Plan to serve all of Sonoma County. This plan was legally challenged and its adoption was vacated. At this point in time, the City evaluates projects and develops mitigations on a case-by-case basis.

The Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the Amendments to the CEQA Guidelines, the CNRA observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most

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of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., low-carbon fuel standard), among others which may not be directly applicable to the project. However, to the extent that these regulations are applicable to the project, the project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law.

Regarding consistency with Senate Bill (SB) 32 (goal of reducing GHG emissions to 40% below 1990 levels by 2030) and Executive Order (EO) S-3-05 (goal of reducing GHG emissions to 80% below 1990 levels by 2050), there are no established protocols or thresholds of significance for that future-year analysis. However, CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown (CARB 2014). In addition, the proposed project would not interfere with implementation of any of the previously described GHG reduction goals for 2030 or 2050 because—as evidenced previously—the proposed project’s amortized GHG emissions of approximately 2 MT CO₂E would be substantially lower than the BAAQMD significance threshold of 1,100 MT CO₂E. Therefore, the proposed project would not conflict with the state’s trajectory toward future GHG reductions and the proposed project’s impacts on GHG emissions in the 2030 and 2050 horizon years would be less than significant.

Based on the preceding considerations, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and no additional mitigation is required. The impact is **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.9 Hazards and Hazardous Materials

Environmental Setting

A substance is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency, or if it has characteristics defined as hazardous by such agency. A number of properties may cause a substance to be considered hazardous, including toxicity, ignitability, corrosivity, or reactivity.

Under Title 22 of the California Code of Regulations (CCR), the term “hazardous material” is defined as a substance or combination of substances that may cause, or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating illness; or

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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). Toxic, ignitable, corrosive, and reactive materials are all subsets of hazardous materials and wastes. For example, if a material is toxic, it is hazardous, but not all hazardous materials are toxic. Specific tests for toxicity, ignitability, corrosivity, and reactivity are set forth in Title 22 of the CCR.

A search of the Department of Toxic Substances Control (DTSC) Envirostor database was completed to show any potentially hazardous sites in or near the project area. Based on the search, the project site is not included in or near any identified hazardous sites.

The closest K-12 schools to the project site are Rancho Cotate High School (0.9 miles west), Monte Vista Elementary School (1.1 miles southwest), and Lawrence E. Jones Middle School (1.2 miles northwest). Sonoma State University is located just to the east across Petaluma Hill Road from the project site. The nearest airport is the Petaluma Municipal Airport, located approximately 6.6 miles from the project site.

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

Construction of the proposed project would involve temporary use of hazardous materials, primarily fuel for construction equipment. Future project operation would not require the transport, use, storage or disposal of any hazardous materials. The County and the City both require that contractors transport, store, and handle hazardous materials required for construction in a manner consistent with relevant federal, state and local regulations and guidelines, including those recommended and enforced by the City of Rohnert Park Public Safety Department (RPPSD) and Sonoma County's Fire Prevention Division. The Fire Prevention Division is responsible for programs, procedures, and projects for preventing the outbreak of fires and to regulate the storage, handling, and processing of Hazardous Materials through the Certified Unified Program Agency (CUPA) program within the unincorporated areas of the county. The RPPSD's guidelines require contractors to transport and store materials in appropriate and approved containers along designated truck routes, maintain required clearances, and handle materials using fire department-approved protocols. Storage, handling, and use of these materials would also occur in accordance with standard construction BMPs to minimize the potential for spill or release and ensure that any such spill or release would be controlled onsite. In addition, the project requires a Storm Water Pollution Prevention Plan (SWPPP) be prepared by a Qualified SWPPP Developer and implemented by the construction contractor and/or Qualified SWPPP Practitioner prior to and during construction as required by the Construction General Permit

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Order 2009-0009-DWQ. The SWPPP would provide the selection and implementation of specific BMPs necessary to eliminate or reduce the discharge of pollutants due to construction, but would likely include straw wattles, silt fencing, sediment traps, sediment bags, seeding, mulching, soil stabilization, and other erosion, sediment, tracking, wind erosion, and non-storm water control measures.

Standard construction BMPs also include storing all hazardous materials inside buildings or under other cover, vehicle specifications for hazardous material transport and disposal, procedures for safe storage, and training requirements for those handling hazardous materials. Project construction contractors are required by law to implement and comply with existing hazardous material regulations. Because each of these regulations is specifically designed to protect the health of the public and the environment through improved procedures for handling hazardous materials, improved technology in the equipment used to transport these materials, and quicker, more coordinated response to emergencies, impacts related to the creation of significant hazards to the public through routine transport, use, disposal, and risk of upset during construction would be **less than significant**.

- 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?*

For construction activities near Copeland Creek there is the potential for an accidental spill to occur and for oil or fuel to be released into creek or the riparian habitat adjacent to the creek. This is considered a potentially significant impact. With Mitigation Measure HAZ-1 the impact would be reduced to **less-than-significant with mitigation**.

- 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?*

The closest K-12 schools to the project site include Rancho Cotate High School (0.9 miles west), Monte Vista Elementary School (1.1 miles southwest), and Lawrence E. Jones Middle School (1.2 miles northwest). There are no K-12 schools within one-quarter mile of the project site. While Sonoma State University is adjacently located east across Petaluma Hill Road from the project site, construction of the proposed project would comply with regulations regarding transport, storage, and handling of hazardous materials, including those recommended and enforced by RPPSD and Sonoma County's Department of Emergency Services. Project construction contractors are required by law to implement and comply with existing hazardous material regulations. Storage, handling, and use of

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these materials would also occur in accordance with standard construction BMPs to minimize the potential for spill or release and ensure that any such spill or release would be controlled onsite. Additionally, there are no operational uses of the project that would emit hazardous emissions or involve use of hazardous materials. As such, impacts to schools would be **less than significant**.

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

A search of federal, state, and local databases regarding hazardous material releases and site cleanup lists was conducted for the project site (DTSC 2017). Based on the research, the project site is not included on a list of hazardous materials sites, and is not included on the Department of Toxic Substance Control's site cleanup list. The proposed project would not create a significant hazard to the public or the environment and there would be **no impact**.

- 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?*

There are no airports or airstrips within 2 miles of the project area. The nearest airport is the Petaluma Municipal Airport, located approximately 6.6 miles from the project site. Therefore, the project would have **no impact** related to airport safety.

- f) *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Due to the nature of the project, it would not interfere with any adopted emergency or evacuation plans. Therefore, the project would have **no impact** related to implementation of emergency plans.

- g) *Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*

According to CAL FIRE, the project site is located in a state responsibility area (SRA) that includes areas of moderate and high fire hazard severity zones (CAL FIRE 2007). The County's Fire Prevention Division provides fire protection and prevention services within the unincorporated areas of the County. The Fire Prevention Division is responsible for programs, procedures, and projects for preventing the outbreak of fires while the within the unincorporated areas of the county. The Fire Prevention Division is composed of 15 volunteer fire companies, and 29 City and Fire Districts that serve over than 600 square

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miles (Sonoma County 2018b). The project site is located within the Rancho Adobe Fire Protection District. Project construction would occur during the dry season and would be in an area that contains annual grasslands and native oak trees, which provide a good source of fuel for wildland fires. Given the danger fire presents in these areas this is considered a potentially significant impact. Compliance with Mitigation Measures HAZ-2 and HAZ-3 impacts would be reduced to **less-than-significant with mitigation**.

Mitigation Measures

Compliance with the following mitigation measures would ensure all impacts would be reduced to less than significant.

Mitigation Measure HAZ-1: The project contractor shall implement Best Management Practices (BMPs) to ensure the protection of water quality during and following construction and also comply with the Stormwater Pollution Prevention Plan (SWPPP). The City shall conduct routine inspections of the construction area to verify that the BMPs are properly implemented and maintained. Related measures shall include, but are not limited to:

- Use only equipment in good working order and free of dripping or leaking engine fluids when working in and around Copeland Creek. Construction vehicles and equipment shall be maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Perform all vehicle maintenance and refueling at least 50-feet from the creek. Conduct any necessary equipment washing where the water cannot flow into the creek.
- Construction equipment shall be stored at designated staging area(s), a minimum of 50-feet from Copeland Creek. All construction material shall be stored and contained in the staging area to prevent transport of materials into the creek. A silt fence shall be installed around the perimeter of the staging area to collect any discharge, and adequate materials for spill cleanup shall be kept on site.
- Apply temporary erosion control measures throughout the duration of construction, such as sandbagged silt fences or similar. Measures shall be removed after the working area is stabilized or as directed by the City.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. All stockpile areas shall be surrounded by a filter fabric fence, interceptor dike, or similar to prevent transport into Copeland Creek or other drainage areas. Avoid

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earth or organic material from being deposited or placed where it may be directly carried into the creek.

In the event of a spill of hazardous materials near Copeland Creek or in other areas of the project site in an amount reportable to the Sonoma County Fire Services District, Rohnert Park Public Safety Department, and Sonoma County Emergency Services Department, the contractor shall immediately control the source of the leak and contain the spill. If required by the County or other regulatory agencies, contaminated soils shall be excavated and disposed of off site at a facility approved to accept such soils.

Mitigation Measure HAZ-2: If dry vegetation or other fire fuels exist on or near staging areas, or areas where equipment would be operated, contractors shall clear the immediate area of sources of fuel and maintain a firebreak. Contractors shall be required to maintain areas subject to construction activities clear of combustible natural materials to the extent feasible. To avoid conflicts with policies to preserve riparian habitat, areas to be cleared shall be identified with the assistance of a qualified biologist.

Mitigation Measure HAZ-3: Contractors shall be required to keep fire extinguishers on site at all times and equip any construction equipment that normally includes a spark arrester with an arrester in good working order. Subject equipment includes, but is not limited to, backhoe, bulldozer, etc.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY – 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:				
i) result in substantial erosion or siltation on or off site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff water in a manner which would result in flooding on or off site;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.10 Hydrology and Water Quality

Environmental Setting

The entire study area is located within the Laguna de Santa Rosa Watershed and is part of the Russian River basin. A number of creeks flow through the City of Rohnert Park, notably Five, Crane, Hinebaugh, and Copeland creeks (City of Rohnert Park 2015). Hinebaugh Creek and Copeland Creek are the main water features either on or near the project area. Water in the channeled creeks flows westward to the Laguna de Santa Rosa, then to the Russian River, and ultimately flows into the Pacific Ocean (SFEI 2017).

Although not required, the City will be obtaining a grading permit for the project. Per City of Rohnert Park Ordinance 798, Section 15.50.060, no grading permit shall be issued until all required data has been submitted for the application, the city engineer has approved the plans, and all required fees have been paid. In the case of public bidding, if it occurs for the project, no public contract shall be issued with the same restrictions in substitution of the grading permit. Required elements of the application are listed in Section 15.50.050 of the City of Rohnert Park Code of Ordinances. These requirements include details of elevations, dimensions, location, extent, and slopes of all proposed grading shown by contours or other means, details of all surface and subsurface drainage devices, and a site-specific erosion control plan (ECP). The ECP shall include the placement of structural and nonstructural stormwater pollution prevention controls that prevent erosion during and after construction. Proper soil stabilization shall be required for all graded areas.

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- a) *Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

Project construction would require some earth-disturbing activities, including grading that could expose disturbed areas to winter rainfall and storm water runoff. The project would comply with the following BMPs that would reduce erosion and the creation of sediment. Construction is anticipated to take approximately 11 months over a two-year timeframe and be completed by the end of 2021, prior to the rainy season. Accidental spills of construction-related contaminants (e.g., fuels and oils) could also occur during construction, resulting in a release to Copeland Creek, and thereby degrading water quality.

Chapters 11 and 11A of the County Municipal Code include ordinances that are intended to protect water quality impacts during construction and operation of projects. Ordinance 5819 § 6 (2008) of the municipal code specifies that BMP's in compliance with the Sonoma County permit authority's BMP's guide must be implemented by the construction contractor to prevent construction-related pollutants from entering the stormwater system. Additionally, the City requires preparation of an Erosion Control Plan to address potential erosion issues due to grading activities if the City opts to obtain a grading permit (City of Rohnert Park Ordinance 798, Section 15.50.090). The project would adhere to applicable local regulations, which require implementation of BMPs and also mitigation measure HAZ-1. Adherence to such regulations would avoid violations of water quality standards and would ensure that construction-related impacts on water quality are **less-than-significant with mitigation**.

- b) *Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

The project is limited to construction of a bridge across Copeland Creek, a trail system that would include a Class 1 multi-use trail constructed of resin-based material or similar product and a traffic signal. The project site is located within a marginal area for groundwater recharge (Sonoma County 2016). The project does not include any uses that would require groundwater and the project site is not considered a significant recharge area. In addition, construction of a resin-based trail approximately 10-feet wide and less than 1.5 miles would not create a significant amount of impervious surface area. The project would not require groundwater nor would it substantially interfere with groundwater recharge; therefore, the project would result in a **less-than-significant impact**.

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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 substantial erosion or siltation on or off site.*

The project includes constructing a clear-span pedestrian bridge across Copeland Creek. Two Options are under consideration for location of the bridge, but both options would be a clear-span and would not require any support be placed within the creek and would be designed to handle high water in the event of flooding. Construction activities would require adherence to applicable local regulations which require implementation of BMPs designed to avoid erosion into Copeland Creek. Under either bridge option the project would not substantially alter Copeland Creek such that it would result in substantial erosion or siltation and impacts would be **less than significant**.

ii) *substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site.*

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.*

The proposed project does not include the construction of any buildings that could increase the amount of storm water runoff. The project site is located in unincorporated Sonoma County where there are no existing or planned storm water facilities. Construction of the trails would create a small amount of impervious surface area for the larger, multi-use trail but it would not be large enough to contribute storm water that could exceed the capacity of a planned storm water drainage system or create a substantial amount of polluted runoff. Thus, there would be **no impact**.

iv) *impede or redirect flood flows.*

Refer to the answer provided in 'd' below.

d) *Would the project in a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

The proposed project does not include any housing or other structures and is not located within a 100 or 500 year flood hazard zone. The Federal Emergency Management Agency (FEMA) specifies that the site is located within an area of minimal flood hazard (Zone X)(FEMA 2017).

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The project would not expose people or structures to significant loss related to flooding. The bridge spanning Copeland Creek, under either option, would be designed to handle flooding associated with a storm event. Because the project does not include any housing or future residents that could be impacted by flooding the project would result in **no impact**.

e) *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plant?*

The North Coast Regional Water Quality Board has established a Basin Plan designed to provide a definitive program of actions to preserve, enhance, and protect all regional waters of the North Coast Region (NCRWQCB 2018). As discussed in the answer provided in ‘b’ above, the project does not include any uses that would require groundwater and the project site is not considered a significant recharge area. As such, there would be **no impact**.

Mitigation Measures

Refer to Section 2.9, Hazards and Hazardous Materials, for Mitigation Measure HAZ-1.

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

2.11 Land Use and Planning

Environmental Setting

The project site is designated Diverse Agriculture in the Sonoma County General Plan and is also zoned Diverse Agriculture. The project site is also located within a designated Community Separator. The function of Community Separator lands are to separate cities and other communities to contain urban development and to provide city and community identity by providing visual relief from continuous urbanization. Community Separator lands do not affect the underlying land use designations or the allowable land uses. Projects that do not interfere with underlying agricultural uses are consistent with these designations. The County’s Diverse Agriculture District zoning is intended to protect areas where small acreage intensive farming and part-time farming activities are widespread,

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but where farming is not the main occupation of the farmer (Sonoma County, California, Municipal Code art. VIII, § 26-08-005 (2018)). The site's zoning also includes combining districts, including a residential combining district, a floodplain combining district, a local guidelines combining district, riparian corridor combining zone, a scenic resources combining district, and a valley oak habitat combining district, with specific constraints regarding the permitted density of residential uses, uses within the floodplain, adherence to local area guidelines and standards, riparian corridor protection and valley oak habitat protection.

The project site is also included in the Sonoma County Transportation Authority (SCTA) Countywide Bicycle and Pedestrian Master Plan (CBPMP). The CBPMP acts as a guideline for countywide planning of bicycle and pedestrian facilities.

a) Would the project physically divide an established community?

The project site is located in a rural area in unincorporated Sonoma County that is not within an established community. The project would not physically divide an established community because there are no buildings present on the site. Therefore, there would be **no impact**.

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?

As discussed in the Environmental Setting, the project site is designated Diverse Agriculture in the Sonoma County General Plan, including a residential combining district, a floodplain combining district, a local guidelines combining district, riparian corridor combining zone, a scenic resources combining district, and a valley oak habitat combining district. The project site is also included in SCTA Countywide Bicycle and Pedestrian Master Plan. The CBPMP acts as a guideline for countywide planning of bicycle and pedestrian facilities. The Plan assesses priorities for bicycle and pedestrian improvement projects, provides strategies for implementation of projects and programs, and assists widespread coordination. The proposed project has been identified as a high priority project within the CBPMP and would ultimately help provide a connection to the San Francisco Bay Area Regional Route (SCTA 2014).

The proposed project is consistent with the underlying land use designation and zoning and would not conflict with the County's General Plan or the proposed CBPMP. Therefore, the project would have have a **less-than-significant impact**.

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Mitigation Measures

No mitigation measures are necessary.

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

2.12 Mineral Resources

Environmental Setting

Minerals are defined as any naturally occurring chemical elements or compounds, formed from inorganic processes and organic substances. Minalable minerals or “ore deposits” are defined as a deposit of ore or mineral having a value materially in excess of the cost of developing, mining, and processing the mineral. The California Department of Conservation, Division of Mines and Geology has not identified significant mineral resources within the project site. The project site is classified as being within Mineral Resource Zone 3 (MRZ-3), which refers to areas that contain mineral occurrences of undetermined significance (CDOC 2005). The Sonoma County General Plan notes that there are mineral resource areas along the Russian River Valley, approximately 16 miles northwest of the project site. The project site is not delineated on the Sonoma County General Plan as a mineral resource recovery site (Sonoma County 2008).

- a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

The project site is classified as within Mineral Resource Zone 3 (MRZ-3), according to the California Department of Conservation (CDOC 2005). The MRZ-3 designation applies to areas that contain known or inferred mineral occurrences of undetermined mineral resource significance. The project site is not delineated on the Sonoma County General Plan as a mineral resource recovery site (Sonoma County 2008). As the proposed project would not interfere with the ability to recover mineral resources in the future, it would have **no impact** related to the loss of availability of mineral resources.

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- 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?***

Refer to answer provided in 'a' above.

Mitigation Measures

No mitigation measures are necessary.

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

2.13 Noise

Environmental Setting

The project site is located in unincorporated Sonoma County, and therefore noise levels are governed by the Sonoma County Noise Element. Chapter 3.1, Table NE-2 [shown as Table 2.13-1], of the Sonoma County General Plan Noise Element offers performance standards for non-transportation noise sources. The County does not include any noise standards specific to allowable construction noise. Policy NE-1c of the Noise Element states:

The total noise level resulting from new sources shall not exceed the standards in Table NE-2 [shown as Table 2.13-1] as measured at the exterior property line of any adjacent noise sensitive land use. Limit exceptions to the following:

- (1) If the ambient noise level exceeds the standard in Table NE-2 [shown as Table 2.13-1], adjust the standard to equal the ambient level, up to a maximum of 5 dBA above

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the standard, provided that no measurable increase (i.e., +/- 1.5 dBA) shall be allowed.

- (2) Reduce the applicable standards in Table NE-2 [shown as Table 2.13-1] by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises, such as pile drivers and dog barking at kennels.
- (3) Reduce the applicable standards in Table NE-2 [shown as Table 2.13-1] by 5 decibels if the proposed use exceeds the ambient level by 10 or more decibels.
- (4) For short term noise sources which are permitted to operate no more than six days per year, such as concerts or race events, the allowable noise exposures shown in Table NE-2 [shown as Table 2.13-1] may be increased by 5 dB. These events shall be subject to a noise management plan including provisions for maximum noise level limits, noise monitoring, complaint response and allowable hours of operation. The plan shall address potential cumulative noise impacts from all events in the area.
- (5) Noise levels may be measured at the location of the outdoor activity area of the noise sensitive land use, instead of the exterior property line of the adjacent noise sensitive land use where:
 - (a) the property on which the noise sensitive use is located has already been substantially developed pursuant to its existing zoning, and
 - (b) there is available open land on those noise sensitive lands for noise attenuation.

This exception may not be used on vacant properties which are zoned to allow noise sensitive uses.*

Table 2.13-1
Maximum Allowable Exterior Noise Exposures for Non-transportation Noise Sources

Hourly Noise Metric ¹ , dBA	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
L50 (30 minutes in any hour)	50	45
L25 (15 minutes in any hour)	55	50
L08 (4 minutes 48 seconds in any hour)	60	55
L02 (72 seconds in any hour)	65	60

¹ The sound level exceed n% of the time in any hour. For example, the L50 is the value exceeded 50% of the time or 30 minutes in any hour; this is the median noise level.

Source: Sonoma County 2008.

- a) *Would the project result the 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?*

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Construction. Project construction activities would require small-size construction equipment and methods similar to those used in standard roadway construction (e.g., standard backhoe, small bulldozer, ten-wheel dump truck, etc.). Construction of the Class 1 multi-use trail portion of the project is anticipated to occur over two construction seasons between Spring 2020 and late 2021. The nearest noise-sensitive receptors are located to the north of the proposed Class 1 trail, approximately 300 feet away.

The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 2.12-2, Construction Equipment Maximum Noise Levels. Note that the equipment noise levels presented in Table 2.12-2 are maximum noise levels; typically, construction equipment operates in alternating cycles of full power and low power, producing average noise levels less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of the construction activities during that time.

**Table 2.12-2
Construction Equipment Maximum Noise Levels**

Equipment Type	"Typical" Equipment dBA at 50 feet	"Quiet" Equipment* dBA at 50 feet
Air compressor	81	71
Backhoe	85	80
Concrete pump	82	80
Concrete vibrator	76	70
Crane	83	75
Truck	88	80
Dozer	87	83
Generator	78	71
Loader	84	80
Paver	88	80
Pneumatic tools	85	75
Water pump	76	71
Power hand saw	78	70
Shovel	82	80
Trucks	88	83

Source: FTA 2006

Note:

* Estimated levels obtainable by selecting quieter procedures or machines and implementing noise-control features requiring no major redesign or extreme cost.

The maximum noise levels at 50 feet for typical equipment would range up to 83 decibels (dB) for the type of equipment normally used for this type of construction project (i.e., a small dozer), although the hourly noise levels would vary. Construction noise in a well-defined area typically attenuates at approximately 6 dB per doubling of distance. Project

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construction would take place at distances ranging from approximately 400 to 3,500 feet from adjacent, existing noise-sensitive uses. At 400 feet, the noise maximum noise level from the small dozer would be approximately 65 dBA, while at 3,500 feet the maximum noise level would be approximately 46 dBA. Average noise levels would be lower; utilizing the anticipated grading scenario in which a small dozer, a backhoe and a dump truck would be operating simultaneously, the average noise level at a distance of 400 feet would be approximately 62 dBA L_{eq} ⁶. At 3,500 feet, the average noise level would be approximately 43 dBA L_{eq} . These are relatively low levels for construction noise because of the distance to the nearest noise-sensitive land uses. Although the noise levels would likely not interfere with speech or other activities, they could result in some annoyance.

The County currently has no performance standards or thresholds of significance specific to construction noise; however, the County provides recommendations for some measures that should be considered in cases where sensitive receptors may be impacted. Measures to be considered include limiting hours of construction to avoid the early morning and evening hours (such as 8 a.m. to 6 p.m. weekdays and limiting construction activities on Sundays and holidays. In addition, since the City would be constructing the project, the City would also require compliance with the City's Noise Ordinance restrictions (in addition to County requirements) in all construction contracts, which are slightly more restrictive than the County's. For example, the City's Noise Ordinance restricts construction activities to the hours of 8 a.m. to 6 p.m. on weekdays with no construction allowed on weekends or Federal holidays unless approved by the city. The City's construction contracts would include days and time frames during which construction activities can occur (consistent with the City's Noise Ordinance) and other standard requirements such as requiring all construction equipment be muffled in accordance with state and federal laws and regulations, per the City's Noise Ordinance restrictions. Construction noise impacts would be **less than significant**.

⁶ The Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land uses. Although the model was funded and promulgated by the FHWA, the RCNM is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are also used for other project types. Input variables for the RCNM consist of the receiver/land use types, the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of hours the equipment typically works per day), and the distance from the noise-sensitive receiver. No topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis.

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Operation. After construction is complete, noise from the proposed project would consist of pedestrians, hikers and bicyclists utilizing the trail. Consequently, noise would be limited to human voices – no motorized vehicles would be permitted to use the trail with the exception of maintenance vehicles. The noise created by unamplified human voices would be minimal at the nearest noise-sensitive receivers (residential land uses located approximately 400 feet away). For example, a group of four raised male voices would each produce a noise level of 65 dBA at 3.28 feet.⁷ At 400 feet, the combined noise level would be approximately 29 dBA, which would be well below the County's noise standard (50 dBA daytime, 45 dBA nighttime) and well below the ambient noise level, given the rural nature of the project area. Therefore, noise levels from operation of the proposed project would be **less than significant**.

b) *Would the project result in the generation of excessive groundborne vibration or groundborne noise levels?*

Project construction activities would require small-size construction equipment and methods similar to those used in standard roadway construction (e.g., standard backhoe, small bulldozer, ten-wheel dump truck, etc.). Construction of the Class 1 multi-use trail portion of the project is anticipated to take up to 6 months to complete. No equipment required for the project would result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Groundborne vibration from construction activities is typically attenuated over short distances. Based on published vibration data, the anticipated construction equipment would generate an RMS vibration level of approximately 87 VdB re 1 micro-inch/second at a distance of 25 feet from the source.⁸ The closest sensitive receptors are located approximately 300 feet to the north of the proposed Class 1 trail. At this distance and with the anticipated construction equipment, the RMS vibration levels would be approximately 50.9 VdB. This would be well below the recommended threshold of 80 VdB for human response within residential structures. Due to the distance and the type of construction activities, groundborne vibration or groundborne noise levels would not be noticeable. Impacts would thus be **less than significant**.

c) *Would the project be 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*

⁷ Harris, Cyril M., ed. 1979. Handbook of Noise Control. Second Edition. McGraw-Hill, Inc. New York, NY.

⁸ U.S. Department of Transportation, Federal Transit Administration, Office of Planning and Environment. 2006. FTA-VA-90-1003-06. Transit Noise and Vibration Impact Assessment. (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, MA. May, 2006.

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or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The closest airport to the project site is the Petaluma Municipal Airport, located approximately 6.6 miles south of the project site. The project site is not located within an airport land use plan and the project does not include residential uses; therefore, there would be **no impact**.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING – 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 type="checkbox"/>	<input checked="" 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"/>

2.14 Population and Housing

Environmental Setting

Sonoma County is the northernmost county in the Bay Area. It is also geographically the largest and has the most undeveloped acreage of the nine Bay Area counties. Urban development and population centers are concentrated in the southern half of the County along the U.S. 101 corridor including the cities of Petaluma, Cotati, Rohnert Park, Santa Rosa, and Windsor. According to the Sonoma County General Plan, unincorporated Sonoma County experienced a 3.6% decrease in its overall population from 2000 - 2010. This growth rate is much lower than that of the State as a whole, which experienced a 10% increase. Countywide population increased 8% during that 10 year period (Sonoma County 2014).

The project site does not include any housing or residents. The closest residences are located approximately 0.4 mile northeast of the proposed crosswalk and traffic signal at the Petaluma Hill Road/Laurel Drive intersection.

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- 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)?*

The project would involve construction of a Class 1 multi-use trail including a bridge crossing of Copeland Creek and a smaller, pedestrian-only hiking trail. Although the proposed project would allow public access of the project site, the proposed project would not directly induce population growth because it proposes no employment generating uses or housing. The proposed project would not extend roads and would not include any uses that would increase the local population. In addition, the project would not displace people or housing because the site is undeveloped and does not include any housing. Therefore, the project would have **no impact** on population and housing in Sonoma County or the City.

- b) *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

The project site does not currently support any residential uses. No housing or residents would be displaced by the proposed project and the project would have **no impact** on housing or require construction of new housing.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES				
a) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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2.15 Public Services

Environmental Setting

Police and Fire

The Sonoma County Fire Prevention District (FPD) provides fire protection services within the unincorporated areas of the County. The FPD is composed of 15 volunteer fire companies, and 29 City and Fire Districts that serve over than 600 square miles. The FPD has five divisions: Administration, Fire Operations and Training, Fire Prevention, Hazardous Materials and Emergency Management (Sonoma County 2018b). The project site is located within the Rancho Adobe Fire Protection District.

The Rancho Adobe Fire Protection District (RAFD) is located 10 miles south of the City of Santa Rosa and provides services to the Town of Penngrove, City of Cotati and unincorporated areas within the County. The District serves approximately 86 square miles, consisting of approximately 25,000 people. In 2015, the RAFD responded to over 2,155 calls for service. The District has 15 full time staff, 15 part time firefighters, 6 volunteer firefighters, and one part time Fire Chief and Administrative Assistant. The nearest fire station to the project site is located approximately 2.3 miles from the site at 1 East Cotati Avenue in the City of Cotati. The RAFD is also supported by neighboring fire departments through automatic and mutual aid agreements (RAFD 2018). The closest fire station in Rohnert Park is Fire Station 2 located at 5200 Country Club Drive, approximately 3 miles from the project site.

The project site is within Zone 5 of the Sonoma County Sheriff's Office (SCSO) service area. This zone is staffed from the main office and includes the unincorporated areas surrounding Petaluma, Rohnert Park, and Cotati. The SCSO operates out of its main office at 2796 Ventura Avenue, approximately 9.1 miles from the project site, in the City of Santa Rosa (SCSO 2015).

Schools

The proposed project would connect to the existing Copeland Creek Trail on the Sonoma State University campus. The closest K-12 schools are Rancho Cotate High School (0.9 miles west), Monte Vista Elementary School (1.1 miles southwest), and Lawrence E. Jones Middle School (1.2 miles northwest).

Parks and Other Public Facilities

The proposed project consists of a Class I trail that would connect to Crane Creek Regional Park. From the proposed crosswalk and traffic signal at the Petaluma Hill Road/Laurel Drive

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intersection, Crane Creek Regional Park is located approximately 1.5 miles east. Other nearby parks include Rainbow Park, located 0.9 mile west of the project site. Other public facilities include Magnolia Pool (1.0 mile southwest) and the Rohnert Park – Cotati Regional Library (2.0 miles west).

- a) *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 and police protection?

The proposed project does not include adding new residents and would not require an expansion of an existing fire or police station or the construction of a new one. For these reasons, the project would result in a **less-than-significant impact** on the County and City's fire and police protection services.

Schools?

The proposed project does not include any residential uses; therefore, the project would not result in a population increase that would require new schools to serve new County or City residents. For this reason, **no impacts** on schools would result with development of the proposed project.

Parks and other public facilities?

The proposed project would not introduce a new population requiring access to parks or other public facilities or services or increasing demand for these services. In fact, the proposed project provides for long-planned, non-motorized access to an existing regional park, consistent with both City and County General Plans. Therefore, **no impact** on other public facilities would occur.

Mitigation Measures

No mitigation measures are necessary.

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. RECREATION – Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) 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 checked="" type="checkbox"/>	<input type="checkbox"/>

2.16 Recreation

Environmental Setting

As previously discussed in Section 2.15, Public Services, the proposed project consists of a Class I trail that would connect to Crane Creek Regional Park and may also include construction of a hikers-only single track trail as part of a future phase of the project. From the proposed crosswalk and traffic signal at the Petaluma Hill Road/Laurel Drive intersection, Crane Creek Regional Park is located approximately 1.5 miles east. Other nearby parks and recreational facilities include Rainbow Park (0.9 mile west) and Magnolia Pool (1.0 mile southwest).

- 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?*

The proposed project includes a Class 1 multi-use trail that would allow a connection between existing trails on Sonoma State University to Crane Creek Regional Park. The project does not include the addition of new residences that could increase the demand on existing neighborhood and regional parks. However, the project would facilitate better access to Crane Creek Regional Park for students on campus and residents living in the eastern portion of Rohnert Park, Cotati and the County, consistent with both City and County General Plans. It is not anticipated that the increase in people accessing Crane Creek Regional Park would result in the physical deterioration of the park and its facilities. Therefore, impacts are considered **less than significant**.

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- 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?**

The project includes construction of a Class 1 multi-use trail and a smaller, hikers-only trail that would provide a connection between Sonoma State University and Crane Creek Regional Park. The physical effects of construction and operation of the project on the environment have been evaluated in this document. Based on the analysis all potential impacts can be addressed with mitigation and reduced to **less than significant**.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION/TRAFFIC – Would the project:				
a) Conflict with an 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 section 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 checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

2.17 Transportation

Environmental Setting

The project site is located in unincorporated Sonoma County adjacent to Petaluma Hill Road. The project includes designs for a traffic signal and crosswalk at the Petaluma Hill Road/Laurel Drive intersection to enable pedestrians and bicyclists to safely cross the street from Sonoma State University to access the trail. The proposed project includes development of a Class 1, multi-use trail and may also include construction of a smaller, single-track hikers-only trail as part of a future phase of the project. The project does not include any parking facilities.

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W-Trans traffic engineers evaluated the existing traffic along Petaluma Hill Road and Rohnert Park Expressway and level of service at the Petaluma Hill Road/Laurel Drive intersection to determine if the project would result in any potential impacts. A memorandum prepared by W-Trans is included in Appendix D.

For the purposes of this analysis, and based on other similar trail crossing studies completed by W-Trans on previous projects, it was assumed the signal could handle up to 50 pedestrians an hour crossing Petaluma Hill Road at Laurel Drive. The projected trail use is 68 persons per day, which could be easily accommodated by the proposed signal.

Transportation Setting – Operational Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The Petaluma Hill Road/Laurel Drive intersection was analyzed using methodologies published in the Highway Capacity Manual (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

Since the study intersection is the proposed location of a traffic signal, it was evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing. Table 2.17-1 describes how delay is used to determine LOS.

Table 2.17-1
Signalized Intersection Level of Service Criteria

Level of Service	Description
LOS A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
LOS B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
LOS C	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.

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Table 2.17-1
Signalized Intersection Level of Service Criteria

Level of Service	Description
LOS D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
LOS E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
LOS F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Existing Conditions

Traffic counts obtained at Rohnert Park Expressway and Petaluma Hill Road on January 25, 2018, indicate that the roadway is carrying about 1,800 vehicles in both the morning and evening peak hours. During these times there was a maximum of four bicyclists crossing Petaluma Hill Road and no pedestrians.

Study Intersections

As shown in Table 2.17-2, the traffic signal at Petaluma Hill Road is expected to operate at LOS A during both morning and evening peak hours.

Table 2.17-2
Intersection Levels of Service

Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Petaluma Hill Rd/Laurel Dr.	6.2	A	7.8	A

Source: W-Trans 2018.

Sonoma County 2020 General Plan

The following are applicable policies from the Sonoma County General Plan.

Policy CT-1j Where practical, locate and design improvements and new circulation and transit facilities to minimize disruption of neighborhoods and communities, disturbance of biotic resource areas, destruction of trees, and noise impacts.

Policy CT-1o Work with the Cities to establish a nexus between major development projects and improvements to the countywide circulation and transit system required to accommodate additional demand for mobility created by the project.

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- Policy CT-1t** Collect and analyze bicycle, pedestrian, and transit trip data by establishing routine collection of alternative trip information on collector and arterial roadways and require such information be provided as part of project traffic studies.
- Policy CT-3a** Use the adopted Sonoma County Bicycle and Pedestrian Plan (Bikeways Plan) as the detailed planning document for existing and proposed bikeways and pedestrian facilities.
- Policy CT-3c** The Sonoma County Bicycle and Pedestrian Advisory Committee (BPAC) shall be responsible for advising the Board of Supervisors, Planning Commission, Board of Zoning Adjustments, Project Review Advisory Committee, and County staff on the ongoing planning and coordination of the County's bicycle and pedestrian transportation network.
- Policy CT-3d** The Regional Parks Department shall be responsible for establishing and maintaining Class I bikeways, and the Department of Transportation and Public Works (TPW) shall be responsible for establishing and maintaining Class II and III bikeways and pedestrian facilities along public rights-of-way in unincorporated areas.
- Policy CT-3v** Where nexus exists, require private or public development to plan, design, and construct bicycle and pedestrian facilities to integrate with the existing and planned bicycle and pedestrian network.
- Policy CT-3vv** Provide high-visibility crosswalk marking at all intersections in Urban Service Areas, and wherever feasible countywide. Wherever possible, avoid mid-block pedestrian crossings, and where mid-block crossings are necessary, install signalization, refuge islands and signage warning vehicles to stop for pedestrians and watch for cyclists.

a) *Would the project conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?*

The project site is included in the Sonoma County Transportation Authority (SCTA) Countywide Bicycle and Pedestrian Master Plan (CBPMP). The proposed project has been identified as a high priority project within the CBPMP and would help provide a connection to the San Francisco Bay Area Regional Route (SCTA 2014). The project includes a traffic signal and crosswalk at the intersection with Petaluma Hill Road and Laurel Drive on the campus of Sonoma State University. The traffic signal would enable pedestrians and

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bicyclists to safely cross Petaluma Hill Road to access the trail. The project does not include any parking facilities and is not anticipated to generate an increase in vehicle trips. The project is consistent with County policies designed to encourage construction of bicycle and pedestrian facilities that tie into the larger network of planned facilities. The project would not conflict with adopted policies, plans, or programs regarding bicycle or pedestrian facilities and would have result in a **less-than-significant impact**.

b) *Would the project conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

As of July 1, 2020, jurisdictions are required to adopt a threshold for analyzing a project's contribution to vehicle miles traveled (VMT), consistent with CEQA Guidelines section 15064.3, subdivision (b). The *Technical Advisory on Evaluating Transportation Impacts in CEQA*, State of California Governor's Office of Planning and Research (December 2018), provides guidance on the types of projects that should be considered in a VMT analyses. The proposed project would not directly result in the production of vehicle trips, as its intent is to support travel and safety for non-auto modes. Certain types of capacity-expanding transportation projects must also consider the VMT effects of induced vehicle travel, though the Technical Advisory indicates that assets that serve bicycle and pedestrian facilities such as the project should not require an induced VMT analysis. Because the project is not anticipated to generate added VMT either through the production of new vehicle trips or through induced demand, it can reasonably be assumed to have a **less-than-significant impact** on VMT and be consistent with Guidelines section 16064.3(b). In addition, as shown in Table 2.17-2, the traffic signal at Petaluma Hill Road is expected to operate at LOS A during both morning and evening peak hours. The addition of any traffic associated with the project would be minimal, with visitors using existing parking, and therefore would not exceed the County's LOS thresholds. Thus, impacts due to traffic are **less-than-significant**.

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)?*

The proposed project does not include parking facilities or any design features that could be considered hazardous or incompatible with existing uses. The project includes a new traffic signal and crosswalk at Petaluma Hill Road and Laurel Drive to enable pedestrians and bicyclists to safely cross Petaluma Hill Road. The project is designed to accommodate pedestrians, hikers, and bicyclists and does not include any features that could be considered potentially hazardous. The impact would be **less than significant**.

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

d) Would the project result in inadequate emergency access?

The project does not include the construction of new residential or commercial uses and would not develop any uses that could result in inadequate emergency access. In the event of an emergency, the approximately 8 to 12-foot wide resin-based trail would enable emergency vehicle access. The project does not include any features that would result in inadequate emergency access and there would be **no impact**.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES – Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) 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"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 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"/>

2.18 Tribal Cultural Resources

Environmental Setting

The project is subject to compliance with AB 52 (California Public Resources Code, Section 21074), which requires consideration of impacts to tribal cultural resources as part of the CEQA process and requires the CEQA lead agency to notify any groups (who have requested notification) who are traditionally or culturally affiliated with the geographic area of the project. AB 52 requires lead agencies to consult with California Native American Tribes that request such consultation

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prior to the agency's release of a Notice of Preparation (NOP) of an EIR, or notice of Negative Declaration (ND) or Mitigated ND (MND) on or after July 1, 2015.

The City of Rohnert Park sent AB 52 letters to Native American tribes in the area to inform them about the project and to offer an opportunity to consult or comment prior to the public circulation of the Notice of Intent to adopt a Mitigated Negative Declaration for the project.

- a) *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:*

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).

The proposed project would construct a Class 1 multi-use trail that includes a bridge over Copeland Creek, a traffic signal and a trail to accommodate pedestrian, bicycle and equestrian activity. The Native American Heritage Commission (NAHC) provided a review of their Sacred Lands files on May 5, 2017, which indicated that there is no specific information on the site in the NAHC's Sacred Lands File (see Appendix C). It is anticipated that no tribal cultural resources are known to be present at the site.

As mentioned in the Environmental Setting, the City sent AB 52 letters to Native American tribes in the area to inform them about the proposed project and to offer an opportunity to consult or comment prior to the public circulation of the Notice of Intent to adopt a MND. In January 2018, the City sent a letter, pursuant to AB 52 to the only tribe that has requested to be notified of upcoming projects, the Federated Indians of Graton Rancheria. The AB 52 process is currently ongoing and will continue until the Federated Indians of Graton Rancheria provide direct input.

Implementation of Mitigation Measures CUL-1 and CUL-2, described above in Section 2.5, Cultural Resources, would ensure that if any tribal cultural resources, artifacts, cultural deposits, or human remains are found, all work shall cease and the findings shall be evaluated by qualified personnel. Therefore, impacts would be **less-than-significant with mitigation**.

- b) *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*

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Refer to the answer provided in 'a' above.

Mitigation Measures

Refer to Section 2.5, Cultural Resources, for Mitigation Measures CUL-1 and CUL-2.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS – 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 type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a determination by the wastewater treatment provider, 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 type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.19 Utilities and Service Systems

Environmental Setting

The proposed project consists of development of a new crosswalk and traffic signal, as well as a Class I multi-use trail on currently undeveloped land to be used for bicycle and pedestrian travel. The proposed traffic signal at the Petaluma Hill Road/Laurel Drive intersection would be

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

connected to existing infrastructure, which is supplied electricity by PG&E. There are no existing utilities or service systems on the project site.

- 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?*

The proposed project consists of a Class 1 multi-use trail that would be used primarily for bicycle and pedestrian travel. The project would not include the construction or installation of restrooms, septic systems or alternative wastewater disposal systems; therefore, the proposed project is not anticipated to generate a need for new or altered sewer system facilities. The proposed project would not adversely affect the wastewater treatment provider's ability to serve existing commitments. Therefore, the project would result in **no impacts** related to sewer system facilities and would not exceed wastewater treatment requirements.

- 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?*

The proposed project does not include adding new commercial or residential uses that would require water service. Construction of the Class 1 trail would require a minimal amount of water for fugitive dust control during earthwork activities associated with construction activities. Furthermore, project construction is not anticipated to adversely affect or disrupt water service. The total amount of water required during construction and operation of the project would not impact the availability of existing City or County water supplies. Impacts would be **less than significant**.

- c) *Would the project result in a determination by the wastewater 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?*

Refer to the answer provided in 'a' above.

- 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?*

The proposed project consists of a Class 1 multi-use trail that would be used by bicyclists, pedestrians, joggers and possibly equestrians. The amount of solid waste generated by users of the trail would be minimal. Construction or operation of the trail would not

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

generate a substantial amount of solid waste that would adversely affect landfill capacity or would breach national, state or local standards. Impacts would be **less than significant**.

- e) *Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

Refer to the answer provided in 'd' above.

Mitigation Measures

No mitigation measures are necessary.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE – 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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"/>

2.20 Wildfire

Environmental Setting

Government Code 51175-89 directs the California Department of Forestry and Fire Protection (CAL FIRE) to identify areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). Mapping of the areas, referred to as Very High Fire Hazard Severity Zones (VHFHSZ), is based on data and models expected fire behavior and expected burn probabilities to

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

vegetation and buildings (CAL FIRE 2008). The project site is within a Local Responsibility Area (LRA) designated as Non-VHFHSZ. The closest area designated as a VHFHSZ is 7.2 miles northeast near the Santa Rosa city limit (CAL FIRE 2008).

- a) Substantially impair an adopted emergency response plan or emergency evacuation plan?*
- 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?*
- 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?*
- 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?*

a-d) Because the project site is designated as a Non-VHFHSZ and the closest VHFHSZ is located 7.2 miles northeast, there would be **no impact** related to wildfire risk. In addition, the project does not include construction of buildings or the addition of new residents to the area that could expose people to risk if wildfire, nor would construction and operation of a trail impair the City or County emergency response plan. As part of its Water Tank #8 project, the City has installed water transmission mains and fire hydrants along the westerly portion of the trail alignment, which provide additional fire fighting resources in this area.

Mitigation Measures

No mitigation measures are necessary.

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2.21 Mandatory Findings of Significance

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

To ensure that the proposed project does not 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, or reduce the number or restrict the range of a rare or endangered plant or animal, this Initial Study has identified Mitigation Measures BIO-1 through BIO-8 to ensure project construction or operation would not degrade the environment or adversely impact protected species as well as their habitat.

To ensure that cultural resources impacts are less than significant, this Initial Study has identified Mitigation Measures CUL-1, and CUL-2 to ensure the proper protocol is

Copeland Creek Trail to Crane Creek Regional Park Project Initial Study

followed in the event any cultural resources are unearthed during construction. Thus, there would be a **less-than-significant impact with mitigation** related to this criterion.

- 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)?*

The analysis provided throughout this IS/MND demonstrates that the project’s contribution to any existing cumulative impacts would be reduced to less-than-significant levels through mitigation and any contribution to an existing cumulative impact would be very small and would not be considered cumulatively considerable. Therefore, the impact would be **less than significant**.

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

The analysis provided throughout this IS/MND identifies project impacts that may be potentially significant and identifies mitigation measures that would reduce each impact to a less-than-significant level. The project does not include any components that would result in any direct or indirect impacts to human beings. As such, the impact is **less than significant**.

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APPENDIX A

Air Quality and Greenhouse Gas Emissions Calculations

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 8:54 AM

Rohnert Park Trail Project (Western Portion)
Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.11	Acre	0.11	4,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Western Portion.

Construction Phase - 2 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Grading -

Trips and VMT - modified

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	100.00	12.00
tblConstructionPhase	NumDays	2.00	25.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	PhaseEndDate	12/19/2018	8/29/2018
tblConstructionPhase	PhaseEndDate	12/5/2018	8/21/2018
tblConstructionPhase	PhaseEndDate	7/18/2018	8/3/2018
tblConstructionPhase	PhaseEndDate	12/12/2018	8/28/2018
tblConstructionPhase	PhaseStartDate	12/13/2018	8/29/2018
tblConstructionPhase	PhaseStartDate	7/19/2018	8/4/2018
tblConstructionPhase	PhaseStartDate	7/17/2018	7/1/2018
tblConstructionPhase	PhaseStartDate	12/6/2018	8/22/2018
tblLandUse	LandUseSquareFeet	4,791.60	4,300.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	HorsePower	402.00	220.00
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

[illegible]

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Rohnert Park Trail Project - Bay Area AQMD Air District, Annual

tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	1.00	2.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0107	0.0919	0.0862	1.4000e-004	0.1702	5.5800e-003	0.1758	0.0171	5.2400e-003	0.0224	0.0000	12.3563	12.3563	2.8900e-003	0.0000	12.4285
Maximum	0.0107	0.0919	0.0862	1.4000e-004	0.1702	5.5800e-003	0.1758	0.0171	5.2400e-003	0.0224	0.0000	12.3563	12.3563	2.8900e-003	0.0000	12.4285

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					
2018	0.0107	0.0919	0.0862	1.4000e-004	0.1046	5.5800e-003	0.1101	0.0106	5.2400e-003	0.0158	0.0000	12.3563	12.3563	2.8900e-003	0.0000	12.4285
Maximum	0.0107	0.0919	0.0862	1.4000e-004	0.1046	5.5800e-003	0.1101	0.0106	5.2400e-003	0.0158	0.0000	12.3563	12.3563	2.8900e-003	0.0000	12.4285

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	7/1/2018	8/3/2018	5	25	
2	Building Construction	Building Construction	8/4/2018	8/21/2018	5	12	Construction of 8-foot wide 125-foot long arched steel truss clear-
3	Building Construction 2	Building Construction	8/8/2018	8/8/2018	5	1	Crane usage
4	Paving	Paving	8/22/2018	8/28/2018	5	5	
5	Architectural Coating	Architectural Coating	8/29/2018	8/29/2018	5	1	Striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 258

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Building Construction 2	Cranes	1	4.00	231	0.29
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction 2	Forklifts	0	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Building Construction 2	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Rubber Tired Dozers	0	1.00	247	0.40

Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Dumpers/Tenders	1	4.00	200	0.38
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Pumps	1	6.00	84	0.74
Building Construction 2	Off-Highway Trucks	1	4.00	220	0.38
Paving	Paving Equipment	1	7.00	132	0.36

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	2	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.4700e-003	0.0480	0.0466	6.0000e-005		3.0700e-003	3.0700e-003		2.8200e-003	2.8200e-003	0.0000	5.9042	5.9042	1.8400e-003	0.0000	5.9501
Total	4.4700e-003	0.0480	0.0466	6.0000e-005	0.0000	3.0700e-003	3.0700e-003	0.0000	2.8200e-003	2.8200e-003	0.0000	5.9042	5.9042	1.8400e-003	0.0000	5.9501

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	2.0000e-004	1.5000e-004	1.5400e-003	0.0000	0.0659	0.0000	0.0659	6.6400e-003	0.0000	6.6400e-003	0.0000	0.3684	0.3684	1.0000e-005	0.0000	0.3687
Total	2.0000e-004	1.5000e-004	1.5400e-003	0.0000	0.0659	0.0000	0.0659	6.6400e-003	0.0000	6.6400e-003	0.0000	0.3684	0.3684	1.0000e-005	0.0000	0.3687

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.4700e-003	0.0480	0.0466	6.0000e-005		3.0700e-003	3.0700e-003		2.8200e-003	2.8200e-003	0.0000	5.9042	5.9042	1.8400e-003	0.0000	5.9501
Total	4.4700e-003	0.0480	0.0466	6.0000e-005	0.0000	3.0700e-003	3.0700e-003	0.0000	2.8200e-003	2.8200e-003	0.0000	5.9042	5.9042	1.8400e-003	0.0000	5.9501

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	2.0000e-004	1.5000e-004	1.5400e-003	0.0000	0.0405	0.0000	0.0405	4.1000e-003	0.0000	4.1000e-003	0.0000	0.3684	0.3684	1.0000e-005	0.0000	0.3687
Total	2.0000e-004	1.5000e-004	1.5400e-003	0.0000	0.0405	0.0000	0.0405	4.1000e-003	0.0000	4.1000e-003	0.0000	0.3684	0.3684	1.0000e-005	0.0000	0.3687

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3900e-003	0.0188	0.0171	3.0000e-005		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	2.5434	2.5434	1.9000e-004	0.0000	2.5482
Total	2.3900e-003	0.0188	0.0171	3.0000e-005		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	2.5434	2.5434	1.9000e-004	0.0000	2.5482

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	6.0000e-005	1.6100e-003	4.3000e-004	0.0000	0.0107	1.0000e-005	0.0107	1.0800e-003	1.0000e-005	1.0900e-003	0.0000	0.3184	0.3184	2.0000e-005	0.0000	0.3188
Worker	1.9000e-004	1.5000e-004	1.4800e-003	0.0000	0.0633	0.0000	0.0633	6.3700e-003	0.0000	6.3700e-003	0.0000	0.3537	0.3537	1.0000e-005	0.0000	0.3540
Total	2.5000e-004	1.7600e-003	1.9100e-003	0.0000	0.0740	1.0000e-005	0.0740	7.4500e-003	1.0000e-005	7.4600e-003	0.0000	0.6721	0.6721	3.0000e-005	0.0000	0.6728

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	2.3900e-003	0.0188	0.0171	3.0000e-005		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	2.5434	2.5434	1.9000e-004	0.0000	2.5482
Total	2.3900e-003	0.0188	0.0171	3.0000e-005		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	2.5434	2.5434	1.9000e-004	0.0000	2.5482

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	6.0000e-005	1.6100e-003	4.3000e-004	0.0000	6.5800e-003	1.0000e-005	6.5900e-003	6.7000e-004	1.0000e-005	6.8000e-004	0.0000	0.3184	0.3184	2.0000e-005	0.0000	0.3188
Worker	1.9000e-004	1.5000e-004	1.4800e-003	0.0000	0.0389	0.0000	0.0389	3.9300e-003	0.0000	3.9300e-003	0.0000	0.3537	0.3537	1.0000e-005	0.0000	0.3540
Total	2.5000e-004	1.7600e-003	1.9100e-003	0.0000	0.0455	1.0000e-005	0.0455	4.6000e-003	1.0000e-005	4.6100e-003	0.0000	0.6721	0.6721	3.0000e-005	0.0000	0.6728

3.4 Building Construction 2 - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.7000e-004	2.9800e-003	1.2000e-003	0.0000		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.2947	0.2947	9.0000e-005	0.0000	0.2970
Total	2.7000e-004	2.9800e-003	1.2000e-003	0.0000		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.2947	0.2947	9.0000e-005	0.0000	0.2970

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	0.0000	0.0000	3.0000e-005	0.0000	1.3200e-003	0.0000	1.3200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	7.3700e-003	7.3700e-003	0.0000	0.0000	7.3700e-003
Total	0.0000	0.0000	3.0000e-005	0.0000	1.3200e-003	0.0000	1.3200e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	7.3700e-003	7.3700e-003	0.0000	0.0000	7.3700e-003

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	2.7000e-004	2.9800e-003	1.2000e-003	0.0000		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.2947	0.2947	9.0000e-005	0.0000	0.2970
Total	2.7000e-004	2.9800e-003	1.2000e-003	0.0000		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.2947	0.2947	9.0000e-005	0.0000	0.2970

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	0.0000	0.0000	3.0000e-005	0.0000	8.1000e-004	0.0000	8.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	7.3700e-003	7.3700e-003	0.0000	0.0000	7.3700e-003
Total	0.0000	0.0000	3.0000e-005	0.0000	8.1000e-004	0.0000	8.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	7.3700e-003	7.3700e-003	0.0000	0.0000	7.3700e-003

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8000e-003	0.0192	0.0162	2.0000e-005		1.0500e-003	1.0500e-003		9.6000e-004	9.6000e-004	0.0000	2.2763	2.2763	7.1000e-004	0.0000	2.2940
Paving	1.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.9400e-003	0.0192	0.0162	2.0000e-005		1.0500e-003	1.0500e-003		9.6000e-004	9.6000e-004	0.0000	2.2763	2.2763	7.1000e-004	0.0000	2.2940

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	8.0000e-005	6.0000e-005	6.2000e-004	0.0000	0.0264	0.0000	0.0264	2.6500e-003	0.0000	2.6600e-003	0.0000	0.1474	0.1474	0.0000	0.0000	0.1475
Total	8.0000e-005	6.0000e-005	6.2000e-004	0.0000	0.0264	0.0000	0.0264	2.6500e-003	0.0000	2.6600e-003	0.0000	0.1474	0.1474	0.0000	0.0000	0.1475

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	1.8000e-003	0.0192	0.0162	2.0000e-005		1.0500e-003	1.0500e-003		9.6000e-004	9.6000e-004	0.0000	2.2763	2.2763	7.1000e-004	0.0000	2.2940
Paving	1.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.9400e-003	0.0192	0.0162	2.0000e-005		1.0500e-003	1.0500e-003		9.6000e-004	9.6000e-004	0.0000	2.2763	2.2763	7.1000e-004	0.0000	2.2940

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	8.0000e-005	6.0000e-005	6.2000e-004	0.0000	0.0162	0.0000	0.0162	1.6400e-003	0.0000	1.6400e-003	0.0000	0.1474	0.1474	0.0000	0.0000	0.1475
Total	8.0000e-005	6.0000e-005	6.2000e-004	0.0000	0.0162	0.0000	0.0162	1.6400e-003	0.0000	1.6400e-003	0.0000	0.1474	0.1474	0.0000	0.0000	0.1475

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	1.0000e-003	9.3000e-004	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1280
Total	1.0500e-003	1.0000e-003	9.3000e-004	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1280

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	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.6400e-003	0.0000	2.6400e-003	2.7000e-004	0.0000	2.7000e-004	0.0000	0.0147	0.0147	0.0000	0.0000	0.0148
Total	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.6400e-003	0.0000	2.6400e-003	2.7000e-004	0.0000	2.7000e-004	0.0000	0.0147	0.0147	0.0000	0.0000	0.0148

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	9.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-004	1.0000e-003	9.3000e-004	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1280
Total	1.0500e-003	1.0000e-003	9.3000e-004	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1280

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	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	1.6200e-003	0.0000	1.6200e-003	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0147	0.0147	0.0000	0.0000	0.0148
Total	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	1.6200e-003	0.0000	1.6200e-003	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0147	0.0147	0.0000	0.0000	0.0148

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 9:06 AM

Rohnert Park Trail Project (Western Portion)
Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.11	Acre	0.11	4,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Western Portion.

Construction Phase - 2 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Grading -

Trips and VMT - modified

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	100.00	12.00
tblConstructionPhase	NumDays	2.00	25.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	PhaseEndDate	12/19/2018	8/29/2018
tblConstructionPhase	PhaseEndDate	12/5/2018	8/21/2018
tblConstructionPhase	PhaseEndDate	7/18/2018	8/3/2018
tblConstructionPhase	PhaseEndDate	12/12/2018	8/28/2018
tblConstructionPhase	PhaseStartDate	12/13/2018	8/29/2018
tblConstructionPhase	PhaseStartDate	7/19/2018	8/4/2018
tblConstructionPhase	PhaseStartDate	7/17/2018	7/1/2018
tblConstructionPhase	PhaseStartDate	12/6/2018	8/22/2018
tblLandUse	LandUseSquareFeet	4,791.60	4,300.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	HorsePower	402.00	220.00
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

[illegible]

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Rohnert Park Trail Project - Bay Area AQMD Air District, Summer

tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	1.00	2.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	2.1092	9.3767	6.7415	0.0128	18.1304	0.4616	18.5919	1.8241	0.4413	2.2654	0.0000	1,263.5281	1,263.5281	0.3145	0.0000	1,269.6143
Maximum	2.1092	9.3767	6.7415	0.0128	18.1304	0.4616	18.5919	1.8241	0.4413	2.2654	0.0000	1,263.5281	1,263.5281	0.3145	0.0000	1,269.6143

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					
2018	2.1092	9.3767	6.7415	0.0128	11.1342	0.4616	11.5958	1.1245	0.4413	1.5658	0.0000	1,263.5281	1,263.5281	0.3145	0.0000	1,269.6143
Maximum	2.1092	9.3767	6.7415	0.0128	11.1342	0.4616	11.5958	1.1245	0.4413	1.5658	0.0000	1,263.5281	1,263.5281	0.3145	0.0000	1,269.6143

	ROG	NOx	CO	SO2	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	38.59	0.00	37.63	38.35	0.00	30.88	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	7/1/2018	8/3/2018	5	25	
2	Building Construction	Building Construction	8/4/2018	8/21/2018	5	12	Construction of 8-foot wide 125-foot long arched steel truss clear-
3	Building Construction 2	Building Construction	8/8/2018	8/8/2018	5	1	Crane usage
4	Paving	Paving	8/22/2018	8/28/2018	5	5	
5	Architectural Coating	Architectural Coating	8/29/2018	8/29/2018	5	1	Striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 258

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Building Construction 2	Cranes	1	4.00	231	0.29
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20

Building Construction 2	Forklifts	0	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Building Construction 2	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Dumpers/Tenders	1	4.00	200	0.38
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Pumps	1	6.00	84	0.74
Building Construction 2	Off-Highway Trucks	1	4.00	220	0.38
Paving	Paving Equipment	1	7.00	132	0.36

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	2	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3577	3.8429	3.7289	5.1700e-003		0.2456	0.2456		0.2259	0.2259		520.6586	520.6586	0.1621		524.7108
Total	0.3577	3.8429	3.7289	5.1700e-003	0.0000	0.2456	0.2456	0.0000	0.2259	0.2259		520.6586	520.6586	0.1621		524.7108

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	0.0169	0.0109	0.1340	3.5000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		34.9426	34.9426	1.0200e-003		34.9681
Total	0.0169	0.0109	0.1340	3.5000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		34.9426	34.9426	1.0200e-003		34.9681

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3577	3.8429	3.7289	5.1700e-003		0.2456	0.2456		0.2259	0.2259	0.0000	520.6586	520.6586	0.1621		524.7108
Total	0.3577	3.8429	3.7289	5.1700e-003	0.0000	0.2456	0.2456	0.0000	0.2259	0.2259	0.0000	520.6586	520.6586	0.1621		524.7108

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	0.0169	0.0109	0.1340	3.5000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		34.9426	34.9426	1.0200e-003		34.9681
Total	0.0169	0.0109	0.1340	3.5000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		34.9426	34.9426	1.0200e-003		34.9681

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072		467.2759	467.2759	0.0354		468.1598
Total	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072		467.2759	467.2759	0.0354		468.1598

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	0.0103	0.2641	0.0669	5.6000e-004	2.1612	2.0400e-003	2.1633	0.2181	1.9500e-003	0.2200		59.0996	59.0996	3.2500e-003		59.1807
Worker	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0440	0.2858	0.3349	1.2600e-003	14.9365	2.4800e-003	14.9390	1.5029	2.3600e-003	1.5053		128.9847	128.9847	5.2900e-003		129.1169

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	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072	0.0000	467.2759	467.2759	0.0354		468.1598
Total	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072	0.0000	467.2759	467.2759	0.0354		468.1598

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	0.0103	0.2641	0.0669	5.6000e-004	1.3281	2.0400e-003	1.3301	0.1348	1.9500e-003	0.1367		59.0996	59.0996	3.2500e-003		59.1807
Worker	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0440	0.2858	0.3349	1.2600e-003	9.1730	2.4800e-003	9.1755	0.9266	2.3600e-003	0.9289		128.9847	128.9847	5.2900e-003		129.1169

3.4 Building Construction 2 - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316		649.7963	649.7963	0.2023		654.8535
Total	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316		649.7963	649.7963	0.2023		654.8535

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	8.4300e-003	5.4400e-003	0.0670	1.8000e-004	3.1938	1.1000e-004	3.1939	0.3212	1.0000e-004	0.3213		17.4713	17.4713	5.1000e-004		17.4840
Total	8.4300e-003	5.4400e-003	0.0670	1.8000e-004	3.1938	1.1000e-004	3.1939	0.3212	1.0000e-004	0.3213		17.4713	17.4713	5.1000e-004		17.4840

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	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316	0.0000	649.7963	649.7963	0.2023		654.8535
Total	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316	0.0000	649.7963	649.7963	0.2023		654.8535

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	8.4300e-003	5.4400e-003	0.0670	1.8000e-004	1.9612	1.1000e-004	1.9613	0.1980	1.0000e-004	0.1981		17.4713	17.4713	5.1000e-004		17.4840
Total	8.4300e-003	5.4400e-003	0.0670	1.8000e-004	1.9612	1.1000e-004	1.9613	0.1980	1.0000e-004	0.1981		17.4713	17.4713	5.1000e-004		17.4840

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7191	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849		1,003.6638	1,003.6638	0.3125		1,011.4752
Paving	0.0576					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.7768	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849		1,003.6638	1,003.6638	0.3125		1,011.4752

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	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361

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	0.7191	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849	0.0000	1,003.6638	1,003.6638	0.3125		1,011.4752
Paving	0.0576					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.7768	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849	0.0000	1,003.6638	1,003.6638	0.3125		1,011.4752

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	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.7938					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	2.0924	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171

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	0.0169	0.0109	0.1340	3.5000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		34.9426	34.9426	1.0200e-003		34.9681
Total	0.0169	0.0109	0.1340	3.5000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		34.9426	34.9426	1.0200e-003		34.9681

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	1.7938					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	2.0924	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171

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	0.0169	0.0109	0.1340	3.5000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		34.9426	34.9426	1.0200e-003		34.9681
Total	0.0169	0.0109	0.1340	3.5000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		34.9426	34.9426	1.0200e-003		34.9681

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 9:11 AM

Rohnert Park Trail Project (Western Portion)
Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.11	Acre	0.11	4,300.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Western Portion.

Construction Phase - 2 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Grading -

Trips and VMT - modified

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	100.00	12.00
tblConstructionPhase	NumDays	2.00	25.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	PhaseEndDate	12/19/2018	8/29/2018
tblConstructionPhase	PhaseEndDate	12/5/2018	8/21/2018
tblConstructionPhase	PhaseEndDate	7/18/2018	8/3/2018
tblConstructionPhase	PhaseEndDate	12/12/2018	8/28/2018
tblConstructionPhase	PhaseStartDate	12/13/2018	8/29/2018
tblConstructionPhase	PhaseStartDate	7/19/2018	8/4/2018
tblConstructionPhase	PhaseStartDate	7/17/2018	7/1/2018
tblConstructionPhase	PhaseStartDate	12/6/2018	8/22/2018
tblLandUse	LandUseSquareFeet	4,791.60	4,300.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	HorsePower	402.00	220.00
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

[illegible]

tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	1.00	2.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	2.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	2.1102	9.3870	6.7282	0.0128	18.1304	0.4616	18.5919	1.8241	0.4413	2.2654	0.0000	1,255.1992	1,255.1992	0.3144	0.0000	1,261.2887
Maximum	2.1102	9.3870	6.7282	0.0128	18.1304	0.4616	18.5919	1.8241	0.4413	2.2654	0.0000	1,255.1992	1,255.1992	0.3144	0.0000	1,261.2887

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					
2018	2.1102	9.3870	6.7282	0.0128	11.1342	0.4616	11.5958	1.1245	0.4413	1.5658	0.0000	1,255.1992	1,255.1992	0.3144	0.0000	1,261.2887
Maximum	2.1102	9.3870	6.7282	0.0128	11.1342	0.4616	11.5958	1.1245	0.4413	1.5658	0.0000	1,255.1992	1,255.1992	0.3144	0.0000	1,261.2887

	ROG	NOx	CO	SO2	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	38.59	0.00	37.63	38.35	0.00	30.88	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	7/1/2018	8/3/2018	5	25	
2	Building Construction	Building Construction	8/4/2018	8/21/2018	5	12	Construction of 8-foot wide 125-foot long arched steel truss clear-
3	Building Construction 2	Building Construction	8/8/2018	8/8/2018	5	1	Crane usage
4	Paving	Paving	8/22/2018	8/28/2018	5	5	
5	Architectural Coating	Architectural Coating	8/29/2018	8/29/2018	5	1	Striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 258

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Building Construction 2	Cranes	1	4.00	231	0.29
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20

Building Construction 2	Forklifts	0	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Building Construction 2	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Dumpers/Tenders	1	4.00	200	0.38
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Pumps	1	6.00	84	0.74
Building Construction 2	Off-Highway Trucks	1	4.00	220	0.38
Paving	Paving Equipment	1	7.00	132	0.36

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	1	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	2	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3577	3.8429	3.7289	5.1700e-003		0.2456	0.2456		0.2259	0.2259		520.6586	520.6586	0.1621		524.7108
Total	0.3577	3.8429	3.7289	5.1700e-003	0.0000	0.2456	0.2456	0.0000	0.2259	0.2259		520.6586	520.6586	0.1621		524.7108

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	0.0178	0.0135	0.1274	3.2000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		32.1915	32.1915	9.7000e-004		32.2156
Total	0.0178	0.0135	0.1274	3.2000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		32.1915	32.1915	9.7000e-004		32.2156

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3577	3.8429	3.7289	5.1700e-003		0.2456	0.2456		0.2259	0.2259	0.0000	520.6586	520.6586	0.1621		524.7108
Total	0.3577	3.8429	3.7289	5.1700e-003	0.0000	0.2456	0.2456	0.0000	0.2259	0.2259	0.0000	520.6586	520.6586	0.1621		524.7108

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	0.0178	0.0135	0.1274	3.2000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		32.1915	32.1915	9.7000e-004		32.2156
Total	0.0178	0.0135	0.1274	3.2000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		32.1915	32.1915	9.7000e-004		32.2156

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072		467.2759	467.2759	0.0354		468.1598
Total	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072		467.2759	467.2759	0.0354		468.1598

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	0.0108	0.2680	0.0762	5.5000e-004	2.1612	2.0800e-003	2.1633	0.2181	1.9900e-003	0.2201		57.6484	57.6484	3.5200e-003		57.7364
Worker	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0465	0.2949	0.3310	1.2000e-003	14.9365	2.5200e-003	14.9391	1.5029	2.4000e-003	1.5053		122.0313	122.0313	5.4500e-003		122.1676

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	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072	0.0000	467.2759	467.2759	0.0354		468.1598
Total	0.3988	3.1311	2.8540	4.9300e-003		0.2072	0.2072		0.2072	0.2072	0.0000	467.2759	467.2759	0.0354		468.1598

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	0.0108	0.2680	0.0762	5.5000e-004	1.3281	2.0800e-003	1.3302	0.1348	1.9900e-003	0.1367		57.6484	57.6484	3.5200e-003		57.7364
Worker	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0465	0.2949	0.3310	1.2000e-003	9.1730	2.5200e-003	9.1755	0.9266	2.4000e-003	0.9290		122.0313	122.0313	5.4500e-003		122.1676

3.4 Building Construction 2 - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316		649.7963	649.7963	0.2023		654.8535
Total	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316		649.7963	649.7963	0.2023		654.8535

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	8.9100e-003	6.7200e-003	0.0637	1.6000e-004	3.1938	1.1000e-004	3.1939	0.3212	1.0000e-004	0.3213		16.0957	16.0957	4.8000e-004		16.1078
Total	8.9100e-003	6.7200e-003	0.0637	1.6000e-004	3.1938	1.1000e-004	3.1939	0.3212	1.0000e-004	0.3213		16.0957	16.0957	4.8000e-004		16.1078

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	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316	0.0000	649.7963	649.7963	0.2023		654.8535
Total	0.5365	5.9543	2.3987	6.4600e-003		0.2518	0.2518		0.2316	0.2316	0.0000	649.7963	649.7963	0.2023		654.8535

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	8.9100e-003	6.7200e-003	0.0637	1.6000e-004	1.9612	1.1000e-004	1.9613	0.1980	1.0000e-004	0.1981		16.0957	16.0957	4.8000e-004		16.1078
Total	8.9100e-003	6.7200e-003	0.0637	1.6000e-004	1.9612	1.1000e-004	1.9613	0.1980	1.0000e-004	0.1981		16.0957	16.0957	4.8000e-004		16.1078

3.5 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7191	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849		1,003.6638	1,003.6638	0.3125		1,011.4752
Paving	0.0576					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.7768	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849		1,003.6638	1,003.6638	0.3125		1,011.4752

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	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312

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	0.7191	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849	0.0000	1,003.6638	1,003.6638	0.3125		1,011.4752
Paving	0.0576					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.7768	7.6654	6.4734	9.9700e-003		0.4183	0.4183		0.3849	0.3849	0.0000	1,003.6638	1,003.6638	0.3125		1,011.4752

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	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.7938					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171
Total	2.0924	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.1171

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	0.0178	0.0135	0.1274	3.2000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		32.1915	32.1915	9.7000e-004		32.2156
Total	0.0178	0.0135	0.1274	3.2000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		32.1915	32.1915	9.7000e-004		32.2156

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	1.7938					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171
Total	2.0924	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.1171

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	0.0178	0.0135	0.1274	3.2000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		32.1915	32.1915	9.7000e-004		32.2156
Total	0.0178	0.0135	0.1274	3.2000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		32.1915	32.1915	9.7000e-004		32.2156

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 9:35 AM

Rohnert Park Trail Project (Eastern Portion)
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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.39	Acre	1.39	60,720.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Eastern Portion.

Construction Phase - 5-6 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

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Grading - assumed balanced on-site

Trips and VMT - modified

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Off-road Equipment - modified

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	200.00	20.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	NumDays	4.00	50.00
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	PhaseEndDate	4/16/2020	2/22/2019
tblConstructionPhase	PhaseEndDate	6/13/2019	12/7/2018
tblConstructionPhase	PhaseEndDate	9/6/2018	11/9/2018
tblConstructionPhase	PhaseEndDate	4/2/2020	2/8/2019
tblConstructionPhase	PhaseEndDate	3/19/2020	12/28/2018
tblConstructionPhase	PhaseStartDate	4/3/2020	2/9/2019
tblConstructionPhase	PhaseStartDate	9/7/2018	11/10/2018
tblConstructionPhase	PhaseStartDate	3/20/2020	1/19/2019
tblConstructionPhase	PhaseStartDate	6/14/2019	12/8/2018
tblLandUse	LandUseSquareFeet	60,548.40	60,720.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

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tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00

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tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	10.00	0.00
tblTripsAndVMT	VendorTripNumber	10.00	2.00
tblTripsAndVMT	VendorTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0136	0.1372	0.1384	2.1000e-004	0.3359	8.6200e-003	0.3445	0.0338	7.9300e-003	0.0418	0.0000	18.7274	18.7274	5.2200e-003	0.0000	18.8578
2019	0.0212	0.0613	0.0615	1.0000e-004	0.1917	3.3700e-003	0.1951	0.0193	3.1500e-003	0.0225	0.0000	9.3361	9.3361	2.2800e-003	0.0000	9.3931
Maximum	0.0212	0.1372	0.1384	2.1000e-004	0.3359	8.6200e-003	0.3445	0.0338	7.9300e-003	0.0418	0.0000	18.7274	18.7274	5.2200e-003	0.0000	18.8578

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					
2018	0.0136	0.1372	0.1384	2.1000e-004	0.2063	8.6200e-003	0.2150	0.0209	7.9300e-003	0.0288	0.0000	18.7274	18.7274	5.2200e-003	0.0000	18.8578
2019	0.0212	0.0613	0.0615	1.0000e-004	0.1178	3.3700e-003	0.1212	0.0119	3.1500e-003	0.0151	0.0000	9.3361	9.3361	2.2800e-003	0.0000	9.3931
Maximum	0.0212	0.1372	0.1384	2.1000e-004	0.2063	8.6200e-003	0.2150	0.0209	7.9300e-003	0.0288	0.0000	18.7274	18.7274	5.2200e-003	0.0000	18.8578

	ROG	NOx	CO	SO2	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	38.56	0.00	37.70	38.28	0.00	31.68	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/1/2018	11/9/2018	5	50	
2	Building Construction	Building Construction	11/10/2018	12/7/2018	5	20	Culvert Crossing
3	Building Construction 2	Building Construction	12/8/2018	12/28/2018	5	15	45 foot bridge
4	Building Construction 3	Building Construction	12/29/2018	1/18/2019	5	15	35 foot bridge
5	Paving	Paving	1/19/2019	2/8/2019	5	15	
6	Architectural Coating	Architectural Coating	2/9/2019	2/22/2019	5	10	Striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,643

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Building Construction 2	Cranes	0	6.00	231	0.29
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Cranes	0	6.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction 2	Forklifts	0	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Building Construction 2	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Grading	Rubber Tired Dozers	0	6.00	247	0.40

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Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2	Generator Sets	0	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Graders	0	6.00	187	0.41
Building Construction	Welders	0	8.00	46	0.45
Building Construction 2	Welders	0	8.00	46	0.45
Paving	Paving Equipment	1	7.00	132	0.36
Building Construction 3	Cranes	0	6.00	231	0.29
Building Construction 3	Forklifts	0	6.00	89	0.20
Building Construction 3	Generator Sets	0	8.00	84	0.74
Building Construction 3	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction 3	Welders	0	8.00	46	0.45
Grading	Skid Steer Loaders	1	8.00	65	0.37
Grading	Dumpers/Tenders	1	4.00	200	0.38
Building Construction	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Dumpers/Tenders	1	4.00	200	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	0	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3	0	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.9300e-003	0.0960	0.0931	1.3000e-004		6.1300e-003	6.1300e-003		5.6400e-003	5.6400e-003	0.0000	11.7892	11.7892	3.6700e-003	0.0000	11.8810
Total	8.9300e-003	0.0960	0.0931	1.3000e-004	0.0000	6.1300e-003	6.1300e-003	0.0000	5.6400e-003	5.6400e-003	0.0000	11.7892	11.7892	3.6700e-003	0.0000	11.8810

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	4.0000e-004	3.1000e-004	3.0900e-003	1.0000e-005	0.1318	1.0000e-005	0.1318	0.0133	1.0000e-005	0.0133	0.0000	0.7369	0.7369	2.0000e-005	0.0000	0.7374
Total	4.0000e-004	3.1000e-004	3.0900e-003	1.0000e-005	0.1318	1.0000e-005	0.1318	0.0133	1.0000e-005	0.0133	0.0000	0.7369	0.7369	2.0000e-005	0.0000	0.7374

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.9300e-003	0.0960	0.0931	1.3000e-004		6.1300e-003	6.1300e-003		5.6400e-003	5.6400e-003	0.0000	11.7892	11.7892	3.6700e-003	0.0000	11.8810
Total	8.9300e-003	0.0960	0.0931	1.3000e-004	0.0000	6.1300e-003	6.1300e-003	0.0000	5.6400e-003	5.6400e-003	0.0000	11.7892	11.7892	3.6700e-003	0.0000	11.8810

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	4.0000e-004	3.1000e-004	3.0900e-003	1.0000e-005	0.0810	1.0000e-005	0.0810	8.1900e-003	1.0000e-005	8.2000e-003	0.0000	0.7369	0.7369	2.0000e-005	0.0000	0.7374
Total	4.0000e-004	3.1000e-004	3.0900e-003	1.0000e-005	0.0810	1.0000e-005	0.0810	8.1900e-003	1.0000e-005	8.2000e-003	0.0000	0.7369	0.7369	2.0000e-005	0.0000	0.7374

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5700e-003	0.0384	0.0372	5.0000e-005		2.4500e-003	2.4500e-003		2.2600e-003	2.2600e-003	0.0000	4.7157	4.7157	1.4700e-003	0.0000	4.7524
Total	3.5700e-003	0.0384	0.0372	5.0000e-005		2.4500e-003	2.4500e-003		2.2600e-003	2.2600e-003	0.0000	4.7157	4.7157	1.4700e-003	0.0000	4.7524

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	3.2000e-004	2.5000e-004	2.4700e-003	1.0000e-005	0.1054	0.0000	0.1054	0.0106	0.0000	0.0106	0.0000	0.5895	0.5895	2.0000e-005	0.0000	0.5899
Total	3.2000e-004	2.5000e-004	2.4700e-003	1.0000e-005	0.1054	0.0000	0.1054	0.0106	0.0000	0.0106	0.0000	0.5895	0.5895	2.0000e-005	0.0000	0.5899

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	3.5700e-003	0.0384	0.0372	5.0000e-005		2.4500e-003	2.4500e-003		2.2600e-003	2.2600e-003	0.0000	4.7157	4.7157	1.4700e-003	0.0000	4.7524
Total	3.5700e-003	0.0384	0.0372	5.0000e-005		2.4500e-003	2.4500e-003		2.2600e-003	2.2600e-003	0.0000	4.7157	4.7157	1.4700e-003	0.0000	4.7524

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	3.2000e-004	2.5000e-004	2.4700e-003	1.0000e-005	0.0648	0.0000	0.0648	6.5500e-003	0.0000	6.5600e-003	0.0000	0.5895	0.5895	2.0000e-005	0.0000	0.5899
Total	3.2000e-004	2.5000e-004	2.4700e-003	1.0000e-005	0.0648	0.0000	0.0648	6.5500e-003	0.0000	6.5600e-003	0.0000	0.5895	0.5895	2.0000e-005	0.0000	0.5899

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Annual

3.4 Building Construction 2 - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	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
Total	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

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	8.0000e-005	2.0100e-003	5.3000e-004	0.0000	0.0134	2.0000e-005	0.0134	1.3500e-003	1.0000e-005	1.3700e-003	0.0000	0.3980	0.3980	2.0000e-005	0.0000	0.3985
Worker	2.4000e-004	1.8000e-004	1.8500e-003	0.0000	0.0791	0.0000	0.0791	7.9600e-003	0.0000	7.9700e-003	0.0000	0.4421	0.4421	1.0000e-005	0.0000	0.4425
Total	3.2000e-004	2.1900e-003	2.3800e-003	0.0000	0.0925	2.0000e-005	0.0925	9.3100e-003	1.0000e-005	9.3400e-003	0.0000	0.8401	0.8401	3.0000e-005	0.0000	0.8410

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	0.0000	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
Total	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

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	8.0000e-005	2.0100e-003	5.3000e-004	0.0000	8.2300e-003	2.0000e-005	8.2400e-003	8.4000e-004	1.0000e-005	8.5000e-004	0.0000	0.3980	0.3980	2.0000e-005	0.0000	0.3985
Worker	2.4000e-004	1.8000e-004	1.8500e-003	0.0000	0.0486	0.0000	0.0486	4.9100e-003	0.0000	4.9200e-003	0.0000	0.4421	0.4421	1.0000e-005	0.0000	0.4425
Total	3.2000e-004	2.1900e-003	2.3800e-003	0.0000	0.0568	2.0000e-005	0.0568	5.7500e-003	1.0000e-005	5.7700e-003	0.0000	0.8401	0.8401	3.0000e-005	0.0000	0.8410

3.5 Building Construction 3 - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	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
Total	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

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	1.0000e-005	1.3000e-004	4.0000e-005	0.0000	8.9000e-004	0.0000	8.9000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0265	0.0265	0.0000	0.0000	0.0266
Worker	2.0000e-005	1.0000e-005	1.2000e-004	0.0000	5.2700e-003	0.0000	5.2700e-003	5.3000e-004	0.0000	5.3000e-004	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	3.0000e-005	1.4000e-004	1.6000e-004	0.0000	6.1600e-003	0.0000	6.1600e-003	6.2000e-004	0.0000	6.2000e-004	0.0000	0.0560	0.0560	0.0000	0.0000	0.0561

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	0.0000	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
Total	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

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	1.0000e-005	1.3000e-004	4.0000e-005	0.0000	5.5000e-004	0.0000	5.5000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0265	0.0265	0.0000	0.0000	0.0266
Worker	2.0000e-005	1.0000e-005	1.2000e-004	0.0000	3.2400e-003	0.0000	3.2400e-003	3.3000e-004	0.0000	3.3000e-004	0.0000	0.0295	0.0295	0.0000	0.0000	0.0295
Total	3.0000e-005	1.4000e-004	1.6000e-004	0.0000	3.7900e-003	0.0000	3.7900e-003	3.9000e-004	0.0000	3.9000e-004	0.0000	0.0560	0.0560	0.0000	0.0000	0.0561

3.5 Building Construction 3 - 2019

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	0.0000	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
Total	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

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	7.0000e-005	1.7700e-003	4.5000e-004	0.0000	0.0125	1.0000e-005	0.0125	1.2600e-003	1.0000e-005	1.2700e-003	0.0000	0.3689	0.3689	2.0000e-005	0.0000	0.3695
Worker	2.0000e-004	1.5000e-004	1.5300e-003	0.0000	0.0738	0.0000	0.0738	7.4300e-003	0.0000	7.4400e-003	0.0000	0.4003	0.4003	1.0000e-005	0.0000	0.4005
Total	2.7000e-004	1.9200e-003	1.9800e-003	0.0000	0.0863	1.0000e-005	0.0863	8.6900e-003	1.0000e-005	8.7100e-003	0.0000	0.7692	0.7692	3.0000e-005	0.0000	0.7700

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	0.0000	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
Total	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

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	7.0000e-005	1.7700e-003	4.5000e-004	0.0000	7.6800e-003	1.0000e-005	7.6900e-003	7.8000e-004	1.0000e-005	7.9000e-004	0.0000	0.3689	0.3689	2.0000e-005	0.0000	0.3695
Worker	2.0000e-004	1.5000e-004	1.5300e-003	0.0000	0.0453	0.0000	0.0454	4.5900e-003	0.0000	4.5900e-003	0.0000	0.4003	0.4003	1.0000e-005	0.0000	0.4005
Total	2.7000e-004	1.9200e-003	1.9800e-003	0.0000	0.0530	1.0000e-005	0.0530	5.3700e-003	1.0000e-005	5.3800e-003	0.0000	0.7692	0.7692	3.0000e-005	0.0000	0.7700

3.6 Paving - 2019

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	4.7700e-003	0.0500	0.0481	7.0000e-005		2.7100e-003	2.7100e-003		2.4900e-003	2.4900e-003	0.0000	6.7184	6.7184	2.1300e-003	0.0000	6.7716
Paving	1.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	6.5900e-003	0.0500	0.0481	7.0000e-005		2.7100e-003	2.7100e-003		2.4900e-003	2.4900e-003	0.0000	6.7184	6.7184	2.1300e-003	0.0000	6.7716

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	2.2000e-004	1.6000e-004	1.6400e-003	0.0000	0.0791	0.0000	0.0791	7.9600e-003	0.0000	7.9700e-003	0.0000	0.4289	0.4289	1.0000e-005	0.0000	0.4292
Total	2.2000e-004	1.6000e-004	1.6400e-003	0.0000	0.0791	0.0000	0.0791	7.9600e-003	0.0000	7.9700e-003	0.0000	0.4289	0.4289	1.0000e-005	0.0000	0.4292

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	4.7700e-003	0.0500	0.0481	7.0000e-005		2.7100e-003	2.7100e-003		2.4900e-003	2.4900e-003	0.0000	6.7184	6.7184	2.1300e-003	0.0000	6.7716
Paving	1.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	6.5900e-003	0.0500	0.0481	7.0000e-005		2.7100e-003	2.7100e-003		2.4900e-003	2.4900e-003	0.0000	6.7184	6.7184	2.1300e-003	0.0000	6.7716

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	2.2000e-004	1.6000e-004	1.6400e-003	0.0000	0.0486	0.0000	0.0486	4.9100e-003	0.0000	4.9200e-003	0.0000	0.4289	0.4289	1.0000e-005	0.0000	0.4292
Total	2.2000e-004	1.6000e-004	1.6400e-003	0.0000	0.0486	0.0000	0.0486	4.9100e-003	0.0000	4.9200e-003	0.0000	0.4289	0.4289	1.0000e-005	0.0000	0.4292

3.7 Architectural Coating - 2019

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	0.0127					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3300e-003	9.1800e-003	9.2100e-003	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	1.2766	1.2766	1.1000e-004	0.0000	1.2793
Total	0.0140	9.1800e-003	9.2100e-003	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	1.2766	1.2766	1.1000e-004	0.0000	1.2793

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	7.0000e-005	5.0000e-005	5.5000e-004	0.0000	0.0264	0.0000	0.0264	2.6500e-003	0.0000	2.6600e-003	0.0000	0.1430	0.1430	0.0000	0.0000	0.1431
Total	7.0000e-005	5.0000e-005	5.5000e-004	0.0000	0.0264	0.0000	0.0264	2.6500e-003	0.0000	2.6600e-003	0.0000	0.1430	0.1430	0.0000	0.0000	0.1431

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	0.0127					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3300e-003	9.1800e-003	9.2100e-003	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	1.2766	1.2766	1.1000e-004	0.0000	1.2793
Total	0.0140	9.1800e-003	9.2100e-003	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004	0.0000	1.2766	1.2766	1.1000e-004	0.0000	1.2793

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	7.0000e-005	5.0000e-005	5.5000e-004	0.0000	0.0162	0.0000	0.0162	1.6400e-003	0.0000	1.6400e-003	0.0000	0.1430	0.1430	0.0000	0.0000	0.1431
Total	7.0000e-005	5.0000e-005	5.5000e-004	0.0000	0.0162	0.0000	0.0162	1.6400e-003	0.0000	1.6400e-003	0.0000	0.1430	0.1430	0.0000	0.0000	0.1431

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 9:37 AM

Rohnert Park Trail Project (Eastern Portion)
Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.39	Acre	1.39	60,720.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Eastern Portion.

Construction Phase - 5-6 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Summer

Grading - assumed balanced on-site

Trips and VMT - modified

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Off-road Equipment - modified

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	200.00	20.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	NumDays	4.00	50.00
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	PhaseEndDate	4/16/2020	2/22/2019
tblConstructionPhase	PhaseEndDate	6/13/2019	12/7/2018
tblConstructionPhase	PhaseEndDate	9/6/2018	11/9/2018
tblConstructionPhase	PhaseEndDate	4/2/2020	2/8/2019
tblConstructionPhase	PhaseEndDate	3/19/2020	12/28/2018
tblConstructionPhase	PhaseStartDate	4/3/2020	2/9/2019
tblConstructionPhase	PhaseStartDate	9/7/2018	11/10/2018
tblConstructionPhase	PhaseStartDate	3/20/2020	1/19/2019
tblConstructionPhase	PhaseStartDate	6/14/2019	12/8/2018
tblLandUse	LandUseSquareFeet	60,548.40	60,720.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Summer

tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Summer

tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	10.00	0.00
tblTripsAndVMT	VendorTripNumber	10.00	2.00
tblTripsAndVMT	VendorTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.3910	3.8597	3.9912	5.8700e-003	14.9365	0.2458	14.9390	1.5029	0.2261	1.5110	0.0000	589.7009	589.7009	0.1639	0.0000	593.7976
2019	2.8145	6.6883	6.6544	0.0107	14.9365	0.3612	14.9387	1.5029	0.3323	1.6172	0.0000	1,055.2320	1,055.2320	0.3142	0.0000	1,063.0874
Maximum	2.8145	6.6883	6.6544	0.0107	14.9365	0.3612	14.9390	1.5029	0.3323	1.6172	0.0000	1,055.2320	1,055.2320	0.3142	0.0000	1,063.0874

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					
2018	0.3910	3.8597	3.9912	5.8700e-003	9.1730	0.2458	9.1755	0.9266	0.2261	1.0180	0.0000	589.7009	589.7009	0.1639	0.0000	593.7976
2019	2.8145	6.6883	6.6544	0.0107	9.1730	0.3612	9.1752	0.9266	0.3323	1.1241	0.0000	1,055.2320	1,055.2320	0.3142	0.0000	1,063.0874
Maximum	2.8145	6.6883	6.6544	0.0107	9.1730	0.3612	9.1755	0.9266	0.3323	1.1241	0.0000	1,055.2320	1,055.2320	0.3142	0.0000	1,063.0874

	ROG	NOx	CO	SO2	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	38.59	0.00	38.58	38.35	0.00	31.52	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/1/2018	11/9/2018	5	50	
2	Building Construction	Building Construction	11/10/2018	12/7/2018	5	20	Culvert Crossing
3	Building Construction 2	Building Construction	12/8/2018	12/28/2018	5	15	45 foot bridge
4	Building Construction 3	Building Construction	12/29/2018	1/18/2019	5	15	35 foot bridge
5	Paving	Paving	1/19/2019	2/8/2019	5	15	
6	Architectural Coating	Architectural Coating	2/9/2019	2/22/2019	5	10	Striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,643

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Building Construction 2	Cranes	0	6.00	231	0.29
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Cranes	0	6.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction 2	Forklifts	0	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Building Construction 2	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Grading	Rubber Tired Dozers	0	6.00	247	0.40

Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2	Generator Sets	0	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Graders	0	6.00	187	0.41
Building Construction	Welders	0	8.00	46	0.45
Building Construction 2	Welders	0	8.00	46	0.45
Paving	Paving Equipment	1	7.00	132	0.36
Building Construction 3	Cranes	0	6.00	231	0.29
Building Construction 3	Forklifts	0	6.00	89	0.20
Building Construction 3	Generator Sets	0	8.00	84	0.74
Building Construction 3	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction 3	Welders	0	8.00	46	0.45
Grading	Skid Steer Loaders	1	8.00	65	0.37
Grading	Dumpers/Tenders	1	4.00	200	0.38
Building Construction	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Dumpers/Tenders	1	4.00	200	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	0	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3	0	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257		519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003	0.0000	0.2454	0.2454	0.0000	0.2257	0.2257		519.8158	519.8158	0.1618		523.8615

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	0.0169	0.0109	0.1340	3.5000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		34.9426	34.9426	1.0200e-003		34.9681
Total	0.0169	0.0109	0.1340	3.5000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		34.9426	34.9426	1.0200e-003		34.9681

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003	0.0000	0.2454	0.2454	0.0000	0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615

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	0.0169	0.0109	0.1340	3.5000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		34.9426	34.9426	1.0200e-003		34.9681
Total	0.0169	0.0109	0.1340	3.5000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		34.9426	34.9426	1.0200e-003		34.9681

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Summer

3.3 Building Construction - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257		519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257		519.8158	519.8158	0.1618		523.8615

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	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361

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	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615

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	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361

3.4 Building Construction 2 - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0103	0.2641	0.0669	5.6000e-004	2.1612	2.0400e-003	2.1633	0.2181	1.9500e-003	0.2200		59.0996	59.0996	3.2500e-003		59.1807
Worker	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0440	0.2858	0.3349	1.2600e-003	14.9365	2.4800e-003	14.9390	1.5029	2.3600e-003	1.5053		128.9847	128.9847	5.2900e-003		129.1169

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	0.0103	0.2641	0.0669	5.6000e-004	1.3281	2.0400e-003	1.3301	0.1348	1.9500e-003	0.1367		59.0996	59.0996	3.2500e-003		59.1807
Worker	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0440	0.2858	0.3349	1.2600e-003	9.1730	2.4800e-003	9.1755	0.9266	2.3600e-003	0.9289		128.9847	128.9847	5.2900e-003		129.1169

3.5 Building Construction 3 - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0103	0.2641	0.0669	5.6000e-004	2.1612	2.0400e-003	2.1633	0.2181	1.9500e-003	0.2200		59.0996	59.0996	3.2500e-003		59.1807
Worker	0.0337	0.0218	0.2680	7.0000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0440	0.2858	0.3349	1.2600e-003	14.9365	2.4800e-003	14.9390	1.5029	2.3600e-003	1.5053		128.9847	128.9847	5.2900e-003		129.1169

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	0.0103	0.2641	0.0669	5.6000e-004	1.3281	2.0400e-003	1.3301	0.1348	1.9500e-003	0.1367		59.0996	59.0996	3.2500e-003		59.1807
Worker	0.0337	0.0218	0.2680	7.0000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		69.8851	69.8851	2.0400e-003		69.9361
Total	0.0440	0.2858	0.3349	1.2600e-003	9.1730	2.4800e-003	9.1755	0.9266	2.3600e-003	0.9289		128.9847	128.9847	5.2900e-003		129.1169

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Summer

3.5 Building Construction 3 - 2019**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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	9.2700e-003	0.2498	0.0610	5.5000e-004	2.1612	1.7300e-003	2.1630	0.2181	1.6500e-003	0.2197		58.7110	58.7110	3.1000e-003		58.7886
Worker	0.0304	0.0191	0.2386	6.8000e-004	12.7753	4.4000e-004	12.7757	1.2849	4.0000e-004	1.2853		67.7934	67.7934	1.8000e-003		67.8385
Total	0.0397	0.2689	0.2995	1.2300e-003	14.9365	2.1700e-003	14.9387	1.5029	2.0500e-003	1.5050		126.5044	126.5044	4.9000e-003		126.6271

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	9.2700e-003	0.2498	0.0610	5.5000e-004	1.3281	1.7300e-003	1.3298	0.1348	1.6500e-003	0.1364		58.7110	58.7110	3.1000e-003		58.7886
Worker	0.0304	0.0191	0.2386	6.8000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.0000e-004	0.7922		67.7934	67.7934	1.8000e-003		67.8385
Total	0.0397	0.2689	0.2995	1.2300e-003	9.1730	2.1700e-003	9.1752	0.9266	2.0500e-003	0.9286		126.5044	126.5044	4.9000e-003		126.6271

3.6 Paving - 2019

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	0.6363	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319		987.4386	987.4386	0.3124		995.2490
Paving	0.2428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8791	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319		987.4386	987.4386	0.3124		995.2490

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	0.0304	0.0191	0.2386	6.8000e-004	12.7753	4.4000e-004	12.7757	1.2849	4.0000e-004	1.2853		67.7934	67.7934	1.8000e-003		67.8385
Total	0.0304	0.0191	0.2386	6.8000e-004	12.7753	4.4000e-004	12.7757	1.2849	4.0000e-004	1.2853		67.7934	67.7934	1.8000e-003		67.8385

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	0.6363	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319	0.0000	987.4386	987.4386	0.3124		995.2490
Paving	0.2428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8791	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319	0.0000	987.4386	987.4386	0.3124		995.2490

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	0.0304	0.0191	0.2386	6.8000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.0000e-004	0.7922		67.7934	67.7934	1.8000e-003		67.8385
Total	0.0304	0.0191	0.2386	6.8000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.0000e-004	0.7922		67.7934	67.7934	1.8000e-003		67.8385

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Summer

3.7 Architectural Coating - 2019**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	2.5328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	2.7992	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423

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	0.0152	9.5300e-003	0.1193	3.4000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		33.8967	33.8967	9.0000e-004		33.9192
Total	0.0152	9.5300e-003	0.1193	3.4000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		33.8967	33.8967	9.0000e-004		33.9192

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	2.5328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	2.7992	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423

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	0.0152	9.5300e-003	0.1193	3.4000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		33.8967	33.8967	9.0000e-004		33.9192
Total	0.0152	9.5300e-003	0.1193	3.4000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		33.8967	33.8967	9.0000e-004		33.9192

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 9:47 AM

Rohnert Park Trail Project (Eastern Portion)
Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.39	Acre	1.39	60,720.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Eastern Portion.

Construction Phase - 5-6 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Winter

Grading - assumed balanced on-site

Trips and VMT - modified

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Off-road Equipment - modified

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	200.00	20.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	NumDays	4.00	50.00
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	PhaseEndDate	4/16/2020	2/22/2019
tblConstructionPhase	PhaseEndDate	6/13/2019	12/7/2018
tblConstructionPhase	PhaseEndDate	9/6/2018	11/9/2018
tblConstructionPhase	PhaseEndDate	4/2/2020	2/8/2019
tblConstructionPhase	PhaseEndDate	3/19/2020	12/28/2018
tblConstructionPhase	PhaseStartDate	4/3/2020	2/9/2019
tblConstructionPhase	PhaseStartDate	9/7/2018	11/10/2018
tblConstructionPhase	PhaseStartDate	3/20/2020	1/19/2019
tblConstructionPhase	PhaseStartDate	6/14/2019	12/8/2018
tblLandUse	LandUseSquareFeet	60,548.40	60,720.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	HorsePower	16.00	200.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Winter

tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Winter

tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	10.00	0.00
tblTripsAndVMT	VendorTripNumber	10.00	2.00
tblTripsAndVMT	VendorTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00
tblTripsAndVMT	WorkerTripNumber	26.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.3929	3.8648	3.9779	5.8200e-003	14.9365	0.2458	14.9391	1.5029	0.2261	1.5110	0.0000	584.1988	584.1988	0.1638	0.0000	588.2927
2019	2.8153	6.6928	6.6411	0.0106	14.9365	0.3612	14.9387	1.5029	0.3323	1.6172	0.0000	1,049.8891	1,049.8891	0.3141	0.0000	1,057.7419
Maximum	2.8153	6.6928	6.6411	0.0106	14.9365	0.3612	14.9391	1.5029	0.3323	1.6172	0.0000	1,049.8891	1,049.8891	0.3141	0.0000	1,057.7419

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					
2018	0.3929	3.8648	3.9779	5.8200e-003	9.1730	0.2458	9.1755	0.9266	0.2261	1.0180	0.0000	584.1988	584.1988	0.1638	0.0000	588.2927
2019	2.8153	6.6928	6.6411	0.0106	9.1730	0.3612	9.1752	0.9266	0.3323	1.1241	0.0000	1,049.8891	1,049.8891	0.3141	0.0000	1,057.7419
Maximum	2.8153	6.6928	6.6411	0.0106	9.1730	0.3612	9.1755	0.9266	0.3323	1.1241	0.0000	1,049.8891	1,049.8891	0.3141	0.0000	1,057.7419

	ROG	NOx	CO	SO2	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	38.59	0.00	38.58	38.35	0.00	31.52	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/1/2018	11/9/2018	5	50	
2	Building Construction	Building Construction	11/10/2018	12/7/2018	5	20	Culvert Crossing
3	Building Construction 2	Building Construction	12/8/2018	12/28/2018	5	15	45 foot bridge
4	Building Construction 3	Building Construction	12/29/2018	1/18/2019	5	15	35 foot bridge
5	Paving	Paving	1/19/2019	2/8/2019	5	15	
6	Architectural Coating	Architectural Coating	2/9/2019	2/22/2019	5	10	Striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,643

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Building Construction 2	Cranes	0	6.00	231	0.29
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Cranes	0	6.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Building Construction 2	Forklifts	0	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Building Construction 2	Tractors/Loaders/Backhoes	0	6.00	97	0.37

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Grading	Rubber Tired Dozers	0	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 2	Generator Sets	0	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Graders	0	6.00	187	0.41
Building Construction	Welders	0	8.00	46	0.45
Building Construction 2	Welders	0	8.00	46	0.45
Paving	Paving Equipment	1	7.00	132	0.36
Building Construction 3	Cranes	0	6.00	231	0.29
Building Construction 3	Forklifts	0	6.00	89	0.20
Building Construction 3	Generator Sets	0	8.00	84	0.74
Building Construction 3	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Building Construction 3	Welders	0	8.00	46	0.45
Grading	Skid Steer Loaders	1	8.00	65	0.37
Grading	Dumpers/Tenders	1	4.00	200	0.38
Building Construction	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Dumpers/Tenders	1	4.00	200	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	0	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 3	0	8.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257		519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003	0.0000	0.2454	0.2454	0.0000	0.2257	0.2257		519.8158	519.8158	0.1618		523.8615

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	0.0178	0.0135	0.1274	3.2000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		32.1915	32.1915	9.7000e-004		32.2156
Total	0.0178	0.0135	0.1274	3.2000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		32.1915	32.1915	9.7000e-004		32.2156

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003	0.0000	0.2454	0.2454	0.0000	0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615

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	0.0178	0.0135	0.1274	3.2000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		32.1915	32.1915	9.7000e-004		32.2156
Total	0.0178	0.0135	0.1274	3.2000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		32.1915	32.1915	9.7000e-004		32.2156

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3.3 Building Construction - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257		519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257		519.8158	519.8158	0.1618		523.8615

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	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312

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	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615
Total	0.3573	3.8379	3.7232	5.1700e-003		0.2454	0.2454		0.2257	0.2257	0.0000	519.8158	519.8158	0.1618		523.8615

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	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Winter

3.4 Building Construction 2 - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0108	0.2680	0.0762	5.5000e-004	2.1612	2.0800e-003	2.1633	0.2181	1.9900e-003	0.2201		57.6484	57.6484	3.5200e-003		57.7364
Worker	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0465	0.2949	0.3310	1.2000e-003	14.9365	2.5200e-003	14.9391	1.5029	2.4000e-003	1.5053		122.0313	122.0313	5.4500e-003		122.1676

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	0.0108	0.2680	0.0762	5.5000e-004	1.3281	2.0800e-003	1.3302	0.1348	1.9900e-003	0.1367		57.6484	57.6484	3.5200e-003		57.7364
Worker	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0465	0.2949	0.3310	1.2000e-003	9.1730	2.5200e-003	9.1755	0.9266	2.4000e-003	0.9290		122.0313	122.0313	5.4500e-003		122.1676

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Winter

3.5 Building Construction 3 - 2018**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0108	0.2680	0.0762	5.5000e-004	2.1612	2.0800e-003	2.1633	0.2181	1.9900e-003	0.2201		57.6484	57.6484	3.5200e-003		57.7364
Worker	0.0357	0.0269	0.2547	6.5000e-004	12.7753	4.4000e-004	12.7758	1.2849	4.1000e-004	1.2853		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0465	0.2949	0.3310	1.2000e-003	14.9365	2.5200e-003	14.9391	1.5029	2.4000e-003	1.5053		122.0313	122.0313	5.4500e-003		122.1676

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	0.0108	0.2680	0.0762	5.5000e-004	1.3281	2.0800e-003	1.3302	0.1348	1.9900e-003	0.1367		57.6484	57.6484	3.5200e-003		57.7364
Worker	0.0357	0.0269	0.2547	6.5000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.1000e-004	0.7922		64.3829	64.3829	1.9300e-003		64.4312
Total	0.0465	0.2949	0.3310	1.2000e-003	9.1730	2.5200e-003	9.1755	0.9266	2.4000e-003	0.9290		122.0313	122.0313	5.4500e-003		122.1676

Rohnert Park Trail Project (Eastern Portion) - Bay Area AQMD Air District, Winter

3.5 Building Construction 3 - 2019**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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	9.7200e-003	0.2532	0.0696	5.4000e-004	2.1612	1.7600e-003	2.1630	0.2181	1.6800e-003	0.2198		57.2504	57.2504	3.3600e-003		57.3345
Worker	0.0322	0.0236	0.2252	6.3000e-004	12.7753	4.4000e-004	12.7757	1.2849	4.0000e-004	1.2853		62.4506	62.4506	1.7000e-003		62.4930
Total	0.0419	0.2767	0.2949	1.1700e-003	14.9365	2.2000e-003	14.9387	1.5029	2.0800e-003	1.5050		119.7010	119.7010	5.0600e-003		119.8274

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	9.7200e-003	0.2532	0.0696	5.4000e-004	1.3281	1.7600e-003	1.3298	0.1348	1.6800e-003	0.1364		57.2504	57.2504	3.3600e-003		57.3345
Worker	0.0322	0.0236	0.2252	6.3000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.0000e-004	0.7922		62.4506	62.4506	1.7000e-003		62.4930
Total	0.0419	0.2767	0.2949	1.1700e-003	9.1730	2.2000e-003	9.1752	0.9266	2.0800e-003	0.9287		119.7010	119.7010	5.0600e-003		119.8274

3.6 Paving - 2019

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	0.6363	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319		987.4386	987.4386	0.3124		995.2490
Paving	0.2428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8791	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319		987.4386	987.4386	0.3124		995.2490

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	0.0322	0.0236	0.2252	6.3000e-004	12.7753	4.4000e-004	12.7757	1.2849	4.0000e-004	1.2853		62.4506	62.4506	1.7000e-003		62.4930
Total	0.0322	0.0236	0.2252	6.3000e-004	12.7753	4.4000e-004	12.7757	1.2849	4.0000e-004	1.2853		62.4506	62.4506	1.7000e-003		62.4930

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	0.6363	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319	0.0000	987.4386	987.4386	0.3124		995.2490
Paving	0.2428					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.8791	6.6693	6.4159	9.9700e-003		0.3608	0.3608		0.3319	0.3319	0.0000	987.4386	987.4386	0.3124		995.2490

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	0.0322	0.0236	0.2252	6.3000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.0000e-004	0.7922		62.4506	62.4506	1.7000e-003		62.4930
Total	0.0322	0.0236	0.2252	6.3000e-004	7.8449	4.4000e-004	7.8454	0.7918	4.0000e-004	0.7922		62.4506	62.4506	1.7000e-003		62.4930

3.7 Architectural Coating - 2019

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	2.5328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	2.7992	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423

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	0.0161	0.0118	0.1126	3.1000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		31.2253	31.2253	8.5000e-004		31.2465
Total	0.0161	0.0118	0.1126	3.1000e-004	6.3877	2.2000e-004	6.3879	0.6424	2.0000e-004	0.6426		31.2253	31.2253	8.5000e-004		31.2465

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	2.5328					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	2.7992	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423

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	0.0161	0.0118	0.1126	3.1000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		31.2253	31.2253	8.5000e-004		31.2465
Total	0.0161	0.0118	0.1126	3.1000e-004	3.9225	2.2000e-004	3.9227	0.3959	2.0000e-004	0.3961		31.2253	31.2253	8.5000e-004		31.2465

Rohnert Park Trail Project (Single Track Hikers Only Trail)

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	0.32	User Defined Unit	0.32	13,940.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Single Track Hikers Only Trail.

Construction Phase - 2-3 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Grading - assumed balanced on-site

Trips and VMT - modified

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Annual

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	100.00	35.00
tblConstructionPhase	NumDays	2.00	30.00
tblConstructionPhase	PhaseEndDate	7/22/2019	5/30/2019
tblConstructionPhase	PhaseEndDate	3/4/2019	4/11/2019
tblConstructionPhase	PhaseStartDate	3/5/2019	4/12/2019
tblLandUse	LandUseSquareFeet	0.00	13,940.00
tblLandUse	LotAcreage	0.00	0.32
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	4.2000e-003	0.0356	0.0399	6.0000e-005	0.2570	2.3500e-003	0.2594	0.0259	2.1600e-003	0.0281	0.0000	5.5788	5.5788	1.3600e-003	0.0000	5.6128
Maximum	4.2000e-003	0.0356	0.0399	6.0000e-005	0.2570	2.3500e-003	0.2594	0.0259	2.1600e-003	0.0281	0.0000	5.5788	5.5788	1.3600e-003	0.0000	5.6128

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					
2019	4.2000e-003	0.0356	0.0399	6.0000e-005	0.1579	2.3500e-003	0.1602	0.0160	2.1600e-003	0.0181	0.0000	5.5788	5.5788	1.3600e-003	0.0000	5.6128
Maximum	4.2000e-003	0.0356	0.0399	6.0000e-005	0.1579	2.3500e-003	0.1602	0.0160	2.1600e-003	0.0181	0.0000	5.5788	5.5788	1.3600e-003	0.0000	5.6128

	ROG	NOx	CO	SO2	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	38.56	0.00	38.21	38.29	0.00	35.37	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/1/2019	4/11/2019	5	30	
2	Building Construction	Building Construction	4/12/2019	5/30/2019	5	35	trail construction

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2019

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4900e-003	0.0351	0.0345	5.0000e-005		2.3400e-003	2.3400e-003		2.1500e-003	2.1500e-003	0.0000	4.1850	4.1850	1.3200e-003	0.0000	4.2181
Total	3.4900e-003	0.0351	0.0345	5.0000e-005	0.0000	2.3400e-003	2.3400e-003	0.0000	2.1500e-003	2.1500e-003	0.0000	4.1850	4.1850	1.3200e-003	0.0000	4.2181

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	3.3000e-004	2.4000e-004	2.4600e-003	1.0000e-005	0.1186	0.0000	0.1186	0.0120	0.0000	0.0120	0.0000	0.6433	0.6433	2.0000e-005	0.0000	0.6437
Total	3.3000e-004	2.4000e-004	2.4600e-003	1.0000e-005	0.1186	0.0000	0.1186	0.0120	0.0000	0.0120	0.0000	0.6433	0.6433	2.0000e-005	0.0000	0.6437

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Annual

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4900e-003	0.0351	0.0345	5.0000e-005		2.3400e-003	2.3400e-003		2.1500e-003	2.1500e-003	0.0000	4.1850	4.1850	1.3200e-003	0.0000	4.2181
Total	3.4900e-003	0.0351	0.0345	5.0000e-005	0.0000	2.3400e-003	2.3400e-003	0.0000	2.1500e-003	2.1500e-003	0.0000	4.1850	4.1850	1.3200e-003	0.0000	4.2181

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	3.3000e-004	2.4000e-004	2.4600e-003	1.0000e-005	0.0729	0.0000	0.0729	7.3700e-003	0.0000	7.3800e-003	0.0000	0.6433	0.6433	2.0000e-005	0.0000	0.6437
Total	3.3000e-004	2.4000e-004	2.4600e-003	1.0000e-005	0.0729	0.0000	0.0729	7.3700e-003	0.0000	7.3800e-003	0.0000	0.6433	0.6433	2.0000e-005	0.0000	0.6437

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Annual

3.3 Building Construction - 2019**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	0.0000	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
Total	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

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	3.8000e-004	2.8000e-004	2.8800e-003	1.0000e-005	0.1384	1.0000e-005	0.1384	0.0139	1.0000e-005	0.0139	0.0000	0.7505	0.7505	2.0000e-005	0.0000	0.7510
Total	3.8000e-004	2.8000e-004	2.8800e-003	1.0000e-005	0.1384	1.0000e-005	0.1384	0.0139	1.0000e-005	0.0139	0.0000	0.7505	0.7505	2.0000e-005	0.0000	0.7510

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Annual

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	0.0000	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
Total	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

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	3.8000e-004	2.8000e-004	2.8800e-003	1.0000e-005	0.0850	1.0000e-005	0.0850	8.6000e-003	1.0000e-005	8.6100e-003	0.0000	0.7505	0.7505	2.0000e-005	0.0000	0.7510
Total	3.8000e-004	2.8000e-004	2.8800e-003	1.0000e-005	0.0850	1.0000e-005	0.0850	8.6000e-003	1.0000e-005	8.6100e-003	0.0000	0.7505	0.7505	2.0000e-005	0.0000	0.7510

Rohnert Park Trail Project (Single Track Hikers Only Trail)
Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	0.32	User Defined Unit	0.32	13,940.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Single Track Hikers Only Trail.

Construction Phase - 2-3 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Grading - assumed balanced on-site

Trips and VMT - modified

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Summer

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	100.00	35.00
tblConstructionPhase	NumDays	2.00	30.00
tblConstructionPhase	PhaseEndDate	7/22/2019	5/30/2019
tblConstructionPhase	PhaseEndDate	3/4/2019	4/11/2019
tblConstructionPhase	PhaseStartDate	3/5/2019	4/12/2019
tblLandUse	LandUseSquareFeet	0.00	13,940.00
tblLandUse	LotAcreage	0.00	0.32
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.2556	2.3517	2.4816	3.6200e-003	9.5815	0.1564	9.7379	0.9636	0.1439	1.1075	0.0000	358.3869	358.3869	0.0987	0.0000	360.8533
Maximum	0.2556	2.3517	2.4816	3.6200e-003	9.5815	0.1564	9.7379	0.9636	0.1439	1.1075	0.0000	358.3869	358.3869	0.0987	0.0000	360.8533

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					
2019	0.2556	2.3517	2.4816	3.6200e-003	5.8837	0.1564	6.0401	0.5939	0.1439	0.7377	0.0000	358.3869	358.3869	0.0987	0.0000	360.8533
Maximum	0.2556	2.3517	2.4816	3.6200e-003	5.8837	0.1564	6.0401	0.5939	0.1439	0.7377	0.0000	358.3869	358.3869	0.0987	0.0000	360.8533

	ROG	NOx	CO	SO2	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	38.59	0.00	37.97	38.37	0.00	33.39	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/1/2019	4/11/2019	5	30	
2	Building Construction	Building Construction	4/12/2019	5/30/2019	5	35	trail construction

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2019**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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2328	2.3374	2.3027	3.1100e-003		0.1560	0.1560		0.1436	0.1436		307.5419	307.5419	0.0973		309.9744
Total	0.2328	2.3374	2.3027	3.1100e-003	0.0000	0.1560	0.1560	0.0000	0.1436	0.1436		307.5419	307.5419	0.0973		309.9744

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	0.0228	0.0143	0.1789	5.1000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		50.8451	50.8451	1.3500e-003		50.8789
Total	0.0228	0.0143	0.1789	5.1000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		50.8451	50.8451	1.3500e-003		50.8789

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Summer

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2328	2.3374	2.3027	3.1100e-003		0.1560	0.1560		0.1436	0.1436	0.0000	307.5419	307.5419	0.0973		309.9744
Total	0.2328	2.3374	2.3027	3.1100e-003	0.0000	0.1560	0.1560	0.0000	0.1436	0.1436	0.0000	307.5419	307.5419	0.0973		309.9744

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	0.0228	0.0143	0.1789	5.1000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		50.8451	50.8451	1.3500e-003		50.8789
Total	0.0228	0.0143	0.1789	5.1000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		50.8451	50.8451	1.3500e-003		50.8789

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Summer

3.3 Building Construction - 2019**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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0228	0.0143	0.1789	5.1000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		50.8451	50.8451	1.3500e-003		50.8789
Total	0.0228	0.0143	0.1789	5.1000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		50.8451	50.8451	1.3500e-003		50.8789

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Summer

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	0.0228	0.0143	0.1789	5.1000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		50.8451	50.8451	1.3500e-003		50.8789
Total	0.0228	0.0143	0.1789	5.1000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		50.8451	50.8451	1.3500e-003		50.8789

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/30/2018 10:06 AM

Rohnert Park Trail Project (Single Track Hikers Only Trail)
Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	0.32	User Defined Unit	0.32	13,940.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Trail to Crane Creek Regional Park Project

Land Use - Single Track Hikers Only Trail.

Construction Phase - 2-3 month construction period

Off-road Equipment - default

Off-road Equipment - modified

Off-road Equipment - modified

Grading - assumed balanced on-site

Trips and VMT - modified

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Winter

On-road Fugitive Dust - Assumed 90% paved

Architectural Coating -

Construction Off-road Equipment Mitigation - Comply with BAAQMD fugitive dust BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	100.00	35.00
tblConstructionPhase	NumDays	2.00	30.00
tblConstructionPhase	PhaseEndDate	7/22/2019	5/30/2019
tblConstructionPhase	PhaseEndDate	3/4/2019	4/11/2019
tblConstructionPhase	PhaseStartDate	3/5/2019	4/12/2019
tblLandUse	LandUseSquareFeet	0.00	13,940.00
tblLandUse	LotAcreage	0.00	0.32
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	HaulingPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	VendorPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.2569	2.3550	2.4716	3.5800e-003	9.5815	0.1564	9.7379	0.9636	0.1439	1.1075	0.0000	354.3798	354.3798	0.0986	0.0000	356.8442
Maximum	0.2569	2.3550	2.4716	3.5800e-003	9.5815	0.1564	9.7379	0.9636	0.1439	1.1075	0.0000	354.3798	354.3798	0.0986	0.0000	356.8442

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					
2019	0.2569	2.3550	2.4716	3.5800e-003	5.8837	0.1564	6.0401	0.5939	0.1439	0.7377	0.0000	354.3798	354.3798	0.0986	0.0000	356.8442
Maximum	0.2569	2.3550	2.4716	3.5800e-003	5.8837	0.1564	6.0401	0.5939	0.1439	0.7377	0.0000	354.3798	354.3798	0.0986	0.0000	356.8442

	ROG	NOx	CO	SO2	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	38.59	0.00	37.97	38.37	0.00	33.39	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/1/2019	4/11/2019	5	30	
2	Building Construction	Building Construction	4/12/2019	5/30/2019	5	35	trail construction

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	231	0.29
Building Construction	Forklifts	0	6.00	89	0.20
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	0	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2019

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2328	2.3374	2.3027	3.1100e-003		0.1560	0.1560		0.1436	0.1436		307.5419	307.5419	0.0973		309.9744
Total	0.2328	2.3374	2.3027	3.1100e-003	0.0000	0.1560	0.1560	0.0000	0.1436	0.1436		307.5419	307.5419	0.0973		309.9744

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	0.0241	0.0177	0.1689	4.7000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		46.8379	46.8379	1.2700e-003		46.8697
Total	0.0241	0.0177	0.1689	4.7000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		46.8379	46.8379	1.2700e-003		46.8697

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Winter

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2328	2.3374	2.3027	3.1100e-003		0.1560	0.1560		0.1436	0.1436	0.0000	307.5419	307.5419	0.0973		309.9744
Total	0.2328	2.3374	2.3027	3.1100e-003	0.0000	0.1560	0.1560	0.0000	0.1436	0.1436	0.0000	307.5419	307.5419	0.0973		309.9744

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	0.0241	0.0177	0.1689	4.7000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		46.8379	46.8379	1.2700e-003		46.8697
Total	0.0241	0.0177	0.1689	4.7000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		46.8379	46.8379	1.2700e-003		46.8697

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Winter

3.3 Building Construction - 2019**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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0241	0.0177	0.1689	4.7000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		46.8379	46.8379	1.2700e-003		46.8697
Total	0.0241	0.0177	0.1689	4.7000e-004	9.5815	3.3000e-004	9.5818	0.9636	3.0000e-004	0.9639		46.8379	46.8379	1.2700e-003		46.8697

Rohnert Park Trail Project (Single Track Hikers Only Trail) - Bay Area AQMD Air District, Winter

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	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

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	0.0241	0.0177	0.1689	4.7000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		46.8379	46.8379	1.2700e-003		46.8697
Total	0.0241	0.0177	0.1689	4.7000e-004	5.8837	3.3000e-004	5.8840	0.5939	3.0000e-004	0.5942		46.8379	46.8379	1.2700e-003		46.8697

APPENDIX B

Biological Studies

December 18, 2018

9810

Mary Grace Pawson
Director of Development Services
City of Rohnert Park
130 Avram Avenue
Rohnert Park, California 94928

Subject: Biological Constraints Report for the Crane Creek Trail Project in Rohnert Park, Sonoma County, California

Dear Ms. Pawson:

At the request of the City of Rohnert Park, Dudek has prepared this letter report documenting the methodology and results of a biological constraints analysis performed for a supplemental trail alignment at the proposed Crane Creek Trail Project (Project), located east of the City of Rohnert Park in Sonoma County, California (Figure 1). Specifically, the analysis focused on identifying biological resources, particularly those considered of special status by local, state, and/or federal resource agencies, within or immediately adjacent to the Project site.

PROJECT DESCRIPTION AND LOCATION

A trail is proposed within Crane Creek Park to connect existing trails to proposed project trail alignments to the west (Project site). Dudek biologists previously analyzed biological resources potentially present within the project site (Dudek 2018a). In order to cover the expanded trail footprint into Crane Creek Park an additional survey area is analyzed in this document. Furthermore, an expansion of the road shoulder to accommodate pedestrian and bicycle access from the crossing at Laurel Drive along Petaluma Hill road where Petaluma Hill Road crosses Copeland Creek is proposed as part of the Project.

The additional survey area is located within Crane Creek Regional Park at 5000 Presley Rd, Santa Rosa, CA 95404. The center of the survey area corresponds to 38°, 20, 40.6" north latitude and 122°, 38, 47.8" west longitude, in township 6 North, Range 7 West, and Section 21 of the "Cotati, California" U.S. Geological Survey 7.5-minute quadrangle.

METHODS

Literature Review

For this report, special-status plant and wildlife species are those that are (1) listed, proposed for listing, or candidates for listing under the federal Endangered Species Act as threatened or endangered; (2) listed or candidates for listing under the California Endangered Species Act as threatened or endangered; (3) a state fully-protected species; (4) a CDFW Species of Special Concern; or (5) a species listed on the CNPS Inventory of Rare and Endangered Plants with a California Rare Plant Rank of 1B or 2B.

Special-status vegetation communities are those communities identified as high priority for inventory in the List of Vegetation Alliances and Associations (CDFW 2010) with a state rarity ranking of S1, S2, or S3. Special-status communities also include wetland and riparian communities of which impacts to could trigger the need for regulatory permits pursuant to the federal Clean Water Act, Regional Water Quality Control Board, and/or the California Fish and Game Code.

Special-status species and vegetation community resources present or potentially present on the Project site were identified through a literature search using the following sources: the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) Trust Resource Report (USFWS 2018); the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) (CDFW 2018); and the California Native Plant Society (CNPS) online Inventory of Rare, Threatened, and Endangered Plants (CNPS 2018). Searches were completed for the following U.S. Geological Survey 7.5-minute quadrangles: Sebastopol, Santa Rosa, Kenwood, Two Rock, Cotati, Glen Ellen, Point Reyes NE, Petaluma, and Petaluma River.

Dudek also reviewed historic aerial photography of the project site dating back to 1952 (Nationwide 2018).

Field Reconnaissance

Dudek biologist Paul Keating conducted a reconnaissance-level site assessment on November 12, 2018. Because the focus of the site visit and this report was to identify potential constraints to future development of the site posed by onsite biological resources and/or the potential of sensitive biological resources to occur, no focused presence/absence surveys for special-status plant or wildlife species were conducted. However, all observed native and naturalized plant species as well as any wildlife species encountered within the Project site during the site visit

Ms. Pawson

Subject: Biological Constraints Report for the Crane Creek Trail Project in Rohnert Park, Sonoma County, California

were identified and recorded. The potential for special-status plant and wildlife species to occur within the Project site was evaluated based on the vegetation communities and soils present, the results of the database review discussed above, and on known life history requirements and ranges of special-status species known to occur in the region.

Natural vegetation communities were mapped directly in the field using the Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009) and the List of Vegetation Alliances and Associations (CDFW 2010).

Latin and common names for plant species with a California Rare Plant Rank follow the CNPS Inventory of Rare and Endangered Plants (CNPS 2018). For plant species without a California Rare Plant Rank, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2018), and common names follow the United States Department of Agriculture's Natural Resources Conservation Service Plants Database (USDA 2018).

Dudek geographic information systems (GIS) specialists mapped observed biological resources into GIS and provided figures using ArcGIS software.

RESULTS

Site Description

The additional survey area is a generally westward facing hill with an elevation of approximately 350 feet above mean sea level. The additional survey area is a part of Crane Creek Regional Park and contains multi-use trails used by hikers, bikers, equestrians, and Frisbee golfers. It is entirely surrounded by existing rural residential development (Figure 2).

Soils

One soil type is mapped in the additional survey area: Goulding – Toomes complex, 9 to 50 percent slopes (Figure 3). Goulding soils consist of shallow, somewhat excessively drained soils formed in material weathered from metavolcanic or metasedimentary rocks. Goulding soils are located on mountains with slopes from 5% to 75%. Toomes series consist of very shallow and shallow, well to somewhat excessively drained soils formed in material weathered from tuff breccia, basalt and andesite. (USDA 2018).

Vegetation Communities and Land Covers

At the time of the 2018 site visit, one vegetation community, California Annual Grassland, was mapped in the additional survey area. Arroyo willow thickets were present along Copeland Creek at the Petaluma Hill Road crossing and were previously mapped during 2017 surveys and verified again in 2018 (Figure 2). These land cover types are described in further detail in the following text and representative photographs are included as Attachment 1. A list of plant species observed onsite during the 2018 survey is included in Attachment 2.

California Annual Grassland

California annual grassland is the dominant land cover type within the overall project site and it was the only land cover type present in the additional survey area (Figure 4). This vegetation community is dominated by non-native grasses such as slender wild oats (*Avena barbata*), soft chess (*Bromus hordeaceus*), and hedgehog dog tail grass (*Cynosurus echinatus*). Vegetation within the survey area contained a higher percentage of nuisance species such as spreading hedgeparsley (*Torilis arvensis*) and was generally more disturbed than areas previously surveyed by Dudek, this was likely due to the relatively higher level of human disturbance from hikers, Frisbee golfers, and equestrians.

Arroyo Willow Thickets (*Salix lasiolepis* Shrubland Alliance)

Arroyo willow thicket typically is present along Copeland Creek within the project site. It is dominant or co-dominant in the shrub or tree canopy and comprises >50% relative cover. Other species observed with the arroyo willow thickets along Copeland Creek include non-native fennel (*Foeniculum vulgare*), blue gum (*Eucalyptus globulus*), and Himalayan blackberry (*Rubus armeniacus*).

Wetlands and Waters of the United States

Waters of the United States, including wetlands, are special habitats regulated by the U.S. Army Corps of Engineers (ACOE), and other state and federal agencies, in accordance with the federal Clean Water Act. Some isolated features that may not fall under the jurisdiction of the ACOE would potentially fall under the jurisdiction of the Regional Water Quality Control Board as waters of the state. Determining the extent of waters of the United States and waters of the state on a given site requires that a wetland delineation be prepared according to standards issued by the ACOE and submitted to the ACOE for review and verification.

Dudek biologist Laura Burris performed a wetland delineation of the original project site in 2017 (Dudek 2018a). Copeland Creek was assessed during this review and is anticipated to meet the criteria for jurisdictional waters of the United States, including wetlands, based on an analysis of the three parameters for wetlands (soils, hydrology, and vegetation) and connectivity/proximity to known waters of the United States. No formal wetland delineation has been prepared for the additional survey area. During the 2018 survey Dudek biologist Paul Keating evaluated the additional survey area for potential wetland constraints. The Project site is a west-facing hillside with no depressional features and the only source of hydrology is precipitation. Water from the site drains towards the previously surveyed areas and no wetland indicator plants were observed. Given the lack of wetland indicators, no further waters of the United States or waters of the state occur in the additional survey area, and an additional formal wetland delineation and verification by the ACOE is not anticipated to be required.

Common Wildlife

Four common species of wildlife, northern harrier (*Circus hudsonius*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaidura macroura*), and western bluebird (*Sialia mexicana*), were recorded within and adjacent to the Project site during the site visit (Attachment 3). Given the extensive use of the site for recreational purposes, common wildlife is expected to be species adapted to life in proximity to humans such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and coyote (*Canis latrans*) which are likely to move through the site on a regular basis in search of food and cover. A wide variety of common native and non-native bird species are expected to use the site for nesting and foraging.

Special-Status Plant Species

New searches of the appropriate databases were conducted to ensure that no new occurrences were added in the intervening time since the original Biological Resource Assessment and are included in Attachment 4. A total of 65 special-status plant species are known to occur within the Project quadrangle or eight surrounding quadrangles (CDFW 2018). However, no special-status plant species have been previously documented within the Project site (Figure 4). Of these, 57 were removed from consideration based on lack of suitable soils or habitat on the Project site, or because the Project site is outside of the known elevation or geographic range for the species. These species are not discussed further in this document. While the remaining eight species typically occur within grasslands that are represented onsite, because of the prevalence of non-native grass species and the disturbed nature of the habitat within the additional study area, these species are not likely to occur there.

Special-Status Wildlife Species

A total of 31 special-status wildlife species are known to occur within the Project quadrangle or eight surrounding quadrangles (Figure 4) (CDFW 2018). Of these, 26 were removed from consideration based on lack of suitable habitat or because the site is outside of the known geographic or elevation range for the species (Attachment 4). These species are not discussed further in this document. No new occurrences were identified during the database searches. The only change from the 2017 literature review is the listing status of tri-colored blackbird, which changed from a species of special concern to threatened by CDFW. The five remaining special-status wildlife species have some potential to occur on the site or were previously observed during surveys (Appendix D). Copeland Creek provides suitable habitat for Central California Coast coho salmon DPS (*Oncorhynchus kisutch*, FE SE) and Central California Coast steelhead ESU (*O. mykiss irideus*, FT), both of which have been documented in the creek. Western burrowing owl (*Athene cunicularia*) was observed in the eastern portion of the Project site during 2017 surveys (Dudek 2018a). While no burrows were observed during the 2018 survey in the additional survey area, burrowing owl may use the area for foraging. Foraging habitat for golden eagle (*Aquila chrysaetos*) is present on the site, and there are documented occurrences of this species in the Sonoma Mountain area approximately three miles east of the site

CONSTRAINTS ANALYSIS

This section addresses potential constraints on future development of the Project site posed by special-status biological resources that were either observed during the site visit or that could potentially occur on the site in the future. Most special-status biological resources are protected or otherwise regulated by state and/or federal resource agencies; adverse impacts on these resources, should they occur, could potentially conflict with such regulations and also possibly be considered a significant impact under CEQA. For the purposes of this analysis, it is assumed that the entire Project site will be disturbed under the proposed new development.

During the 2018 surveys no burrows suitable for burrowing owl were observed and no trees were present within the additional survey area; however, birds could move into the area. If construction activities occur within the nesting bird season a preconstruction survey for ground nesting birds is recommended. If construction activities occur outside the nesting season no survey is necessary. While the additional survey area is more disturbed than the overall project site as a whole, many of the same recommendations and measures previously detailed in the biological resource assessment apply and are provided below.

A formal wetland delineation was prepared for the original study area. No additional wetland features were found in the additional study area and no further wetland delineation is anticipated to be required. The additional crossing option at Petaluma Hill Road and Copeland creek would require following the same recommendations and measures previously detailed in the jurisdictional delineation report and are provided below.

Vegetation Communities and Land Cover Types

Project design that avoids and/or minimizes impacts to sensitive vegetation communities and land cover types within the site, including riparian habitat and aquatic resources under jurisdiction of CDFW, ACOE or RWQCB, can avoid/minimize the need for resource agency permits and mitigation requirements under CEQA. If avoidance is not possible, impacts on riparian/aquatic resources regulated by CDFW and/or ACOE will likely require appropriate regulatory permits; and impacts to vegetation communities considered significant under CEQA may result in the need for measures to mitigate these impacts. Significant impacts would include removal or degradation of these habitats, as well as temporary disturbances due to installation of stream crossings or dewatering activities. All of the natural vegetation communities identified on site provide suitable habitat for a variety of special-status plant and animal species, as discussed below.

Special-Status Plants and Wildlife

Plants

Destruction of individual plants or populations of plants would be considered potentially significant under CEQA. To avoid impacts to special-status plants within the project site, focused rare plant surveys should be performed within the additional study area during the blooming season for the following species with potential to occur in the disturbed grassland: Franciscan onion (*Allium peninsulare* var. *franciscanum*), bent-flowered fiddleneck (*Amsinckia lunaris*), pappose tarplant (*Centromadia parryi* ssp. *Parryi*), fragrant fritillary (*Fritillaria liliacea*), congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *Congesta*), Jepson's leptosiphon (*Leptosiphon jepsonii*), and two-fork clover (*Trifolium amoenum*) within suitable habitat. Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*) has potential to occur within riparian habitat present at the proposed creek crossing along Petaluma hill road. If any of these plants or populations of plants are detected during focused surveys, avoidance is recommended. Where avoidance is not possible, consultation with CDFW would be necessary to determine if potential propagation, relocation or other mitigation options would be required for the project. If none of the species are detected during surveys, no further surveys or mitigation would be

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Subject: Biological Constraints Report for the Crane Creek Trail Project in Rohnert Park, Sonoma County, California

necessary; however, if more than one year lapses between protocol surveys and the initiation of construction, preconstruction surveys are recommended to identify any annual special-status plant species present within the project footprint.

Native Birds

All native birds in California are protected by the federal Migratory Bird Treaty Act (MBTA), and Section 3503.5 of the California Fish and Game Code specifically protects raptors. Ground disturbance that would result in destruction of active bird nests could potentially be a violation of the MBTA and the Fish and Game Code, as well as a significant impact under CEQA.

If construction activities occur during the nesting season and active burrowing owl nests are discovered, a 250-foot buffer around each active burrow is recommended to avoid impacts to burrowing owls. The buffer should be implemented by installing Environmentally Sensitive Area (ESA) fencing (or other high visibility fencing) prior to the onset of construction. Installation of this fencing should be monitored by a qualified biologist to determine if the burrowing owls exhibit agitated behavior (distress calls, leaving the burrow, etc.). If these behaviors are observed by the qualified biologist during installation of fencing or during construction, the biologist should stop work in the vicinity of the burrows and initiate consultation with CDFW to determine appropriate next steps to avoid further disturbance to active burrows.

Anadromous Fish

Avoidance of Copeland Creek is recommended to ensure that no adverse impacts to coho salmon, steelhead, or critical habitat occur as a result of project activities. Best Management Practices (BMPs) including straw wattles, silt fencing, and other erosion control measures should be installed prior to initiation of construction activities to avoid sedimentation of the creek.

Wildlife Corridors

The property is not recognized as an important wildlife corridor by any regional or state agency or jurisdiction and is not considered critical to the ecological functioning of adjoining open space areas. However, Copeland Creek provides cover and food resources for many different wildlife species, and is likely used by several common and special-status species when moving between similar habitats in the region. Impacts to Copeland Creek and/or associated riparian vegetation could be considered significant under CEQA and would trigger the need for regulatory authorizations.

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Sonoma County, California*

Potentially Jurisdictional Wetlands

Impacts to wetland/aquatic jurisdictional features would potentially require authorization from the resource agencies listed in Section 3.5 in the form of regulatory permits (e.g., Clean Water Act Section 404 Nationwide Permit, Section 401 Water Quality Certification, and CDFG Code Section 1602 Streambed Alteration Agreement, respectively). These permits typically include measures to minimize and/or mitigate these impacts. Impacts to these resources would also be considered a significant impact under CEQA.

If impacts to jurisdictional features cannot be avoided, early consultation with the associated resource agencies is recommended to discuss and address the potential impacts, determine the permits that would be required prior to the impacts, and stipulations and measures required by the permits to mitigate the impacts. There are no additional wetlands and the only potential impacts would be along Copeland Creek. The prepared jurisdictional delineation report (Dudek 2018b) included the following recommendation:

- Minimize vegetation removal to the maximum extent feasible at the Copeland Creek bridge crossing. Vegetation removal and the installation of the bridge crossing will require authorization from the CDFW under Section 1602 of the Fish and Game Code. If feasible, a clear-span bridge crossing should be installed to minimize potential impacts to the creek channel or banks.

Sensitive Resources and Habitats

Impacts to environmentally sensitive habitats, including riparian corridors, wetlands, oak woodlands, and habitats supporting rare, threatened, or endangered species would be considered potentially significant under CEQA. Any project activities that could potentially result in impacts to these habitats or associated special-status species would require permits from CDFW; therefore, project design that avoids impacts to these resources is recommended. Similarly, the Sonoma County Tree Ordinance requires a permit for removal of any landmark or heritage trees. If avoidance is not feasible, a certified arborist should be consulted to identify any landmark or heritage trees on the project site before they are removed.

If you have any questions or concerns regarding the content of this letter report, please contact me at 760.334.1592 or pkeating@dudek.com.

Sincerely,

Ms. Pawson

Subject: *Biological Constraints Report for the Crane Creek Trail Project in Rohnert Park, Sonoma County, California*



Paul Keating
Biologist

Att.: *Figures*

Figure 1 – Project Location

Figure 2 – Vegetation Communities and Land Cover Types

Figure 3 – Soils

Figure 4 – CNDDB 5-Mile Radius Map

Att. 1 – Representative Site Photographs

Att. 2 – Vascular Plant Species Observed On Site

Att. 3 – Wildlife Species Observed On Site

Att. 4– Table of Potentially Occurring Species

REFERENCES CITED

Cal-IPC (California Invasive Plant Council). 2018. *California Invasive Plant Inventory Database*. <http://www.cal-ipc.org/plants/inventory/>

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Dudek. 2018a. *Biological Resources Assessment for the Copeland Creek Detention Basin and Trail Project*. Prepared for the City of Rohnert Park by Dudek. Sonoma County, California. January 2018.

Ms. Pawson

Subject: *Biological Constraints Report for the Crane Creek Trail Project in Rohnert Park, Sonoma County, California*

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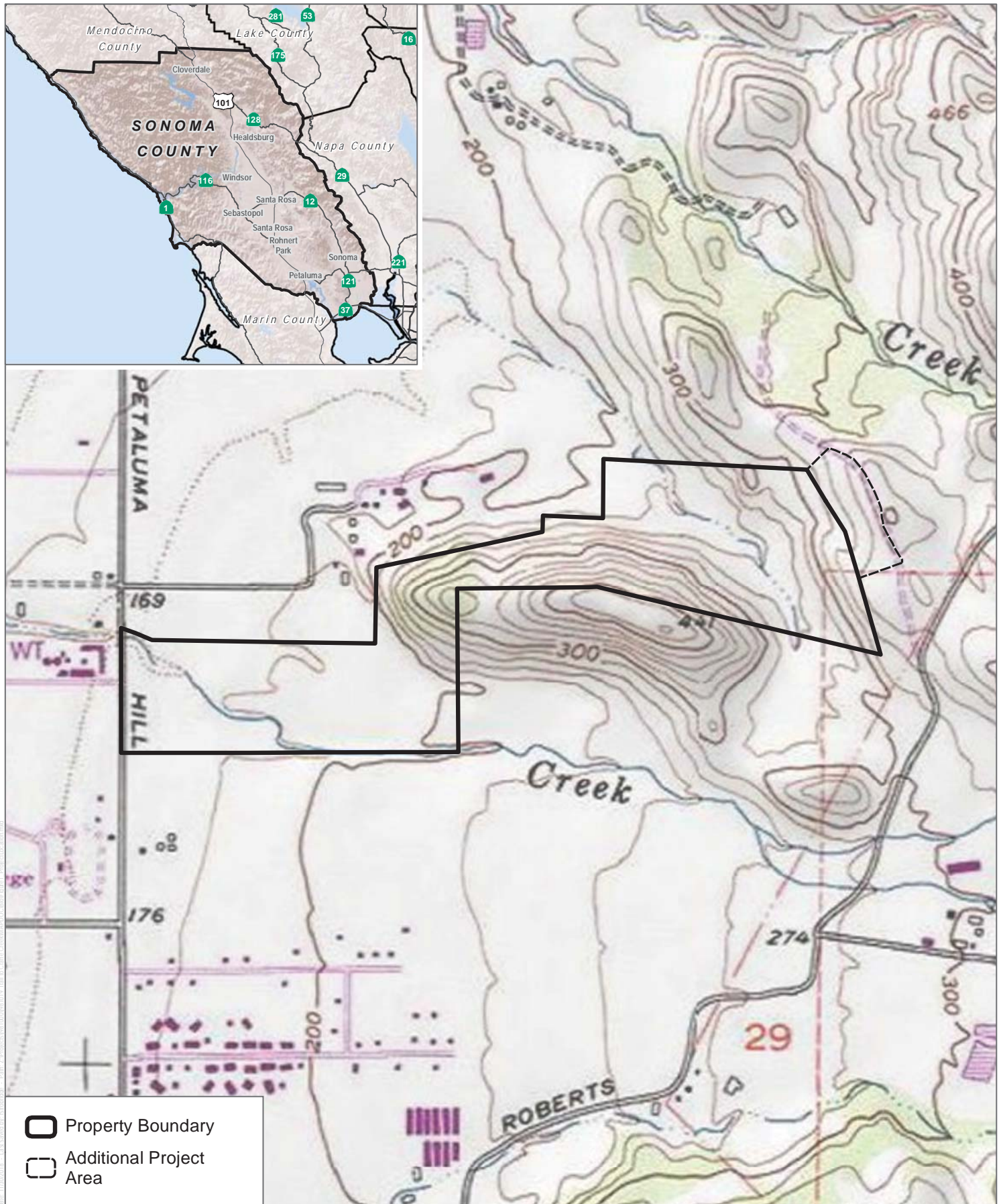
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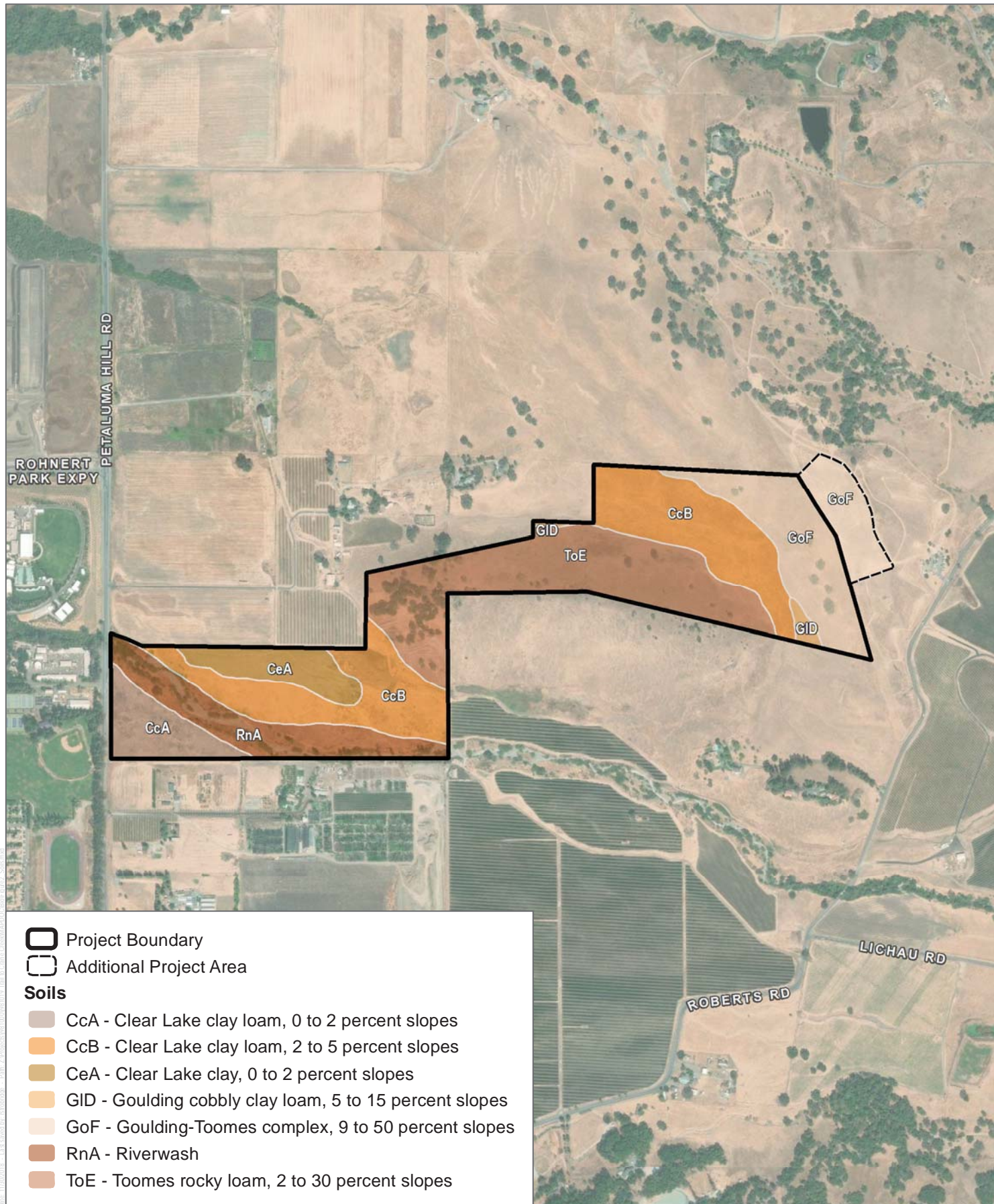
FIGURES



SOURCE: USDA 2016; Sonoma County 2016

FIGURE 1

Project Location



SOURCE: USDA 2016; Sonoma County 2016

FIGURE 2

Soils

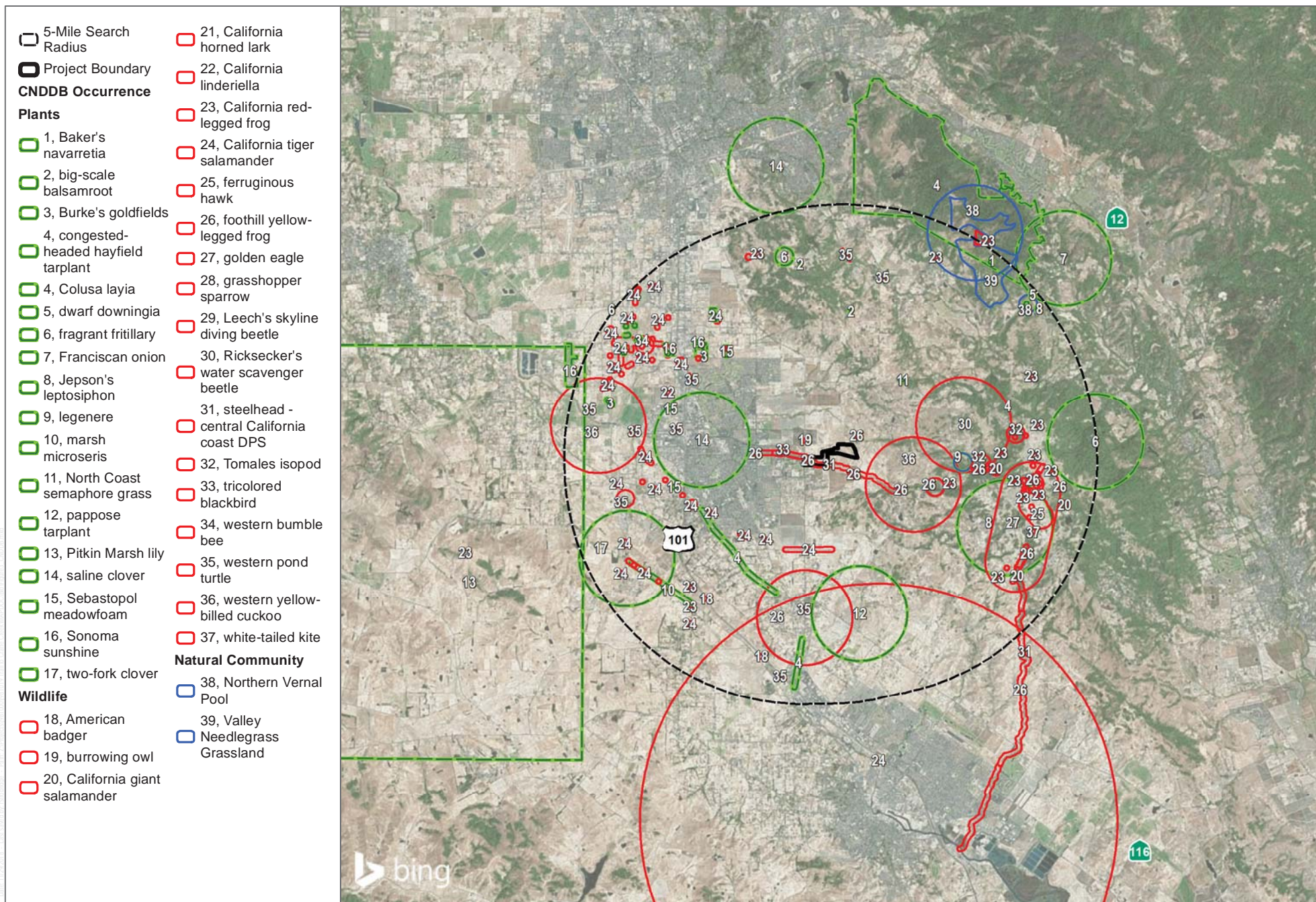
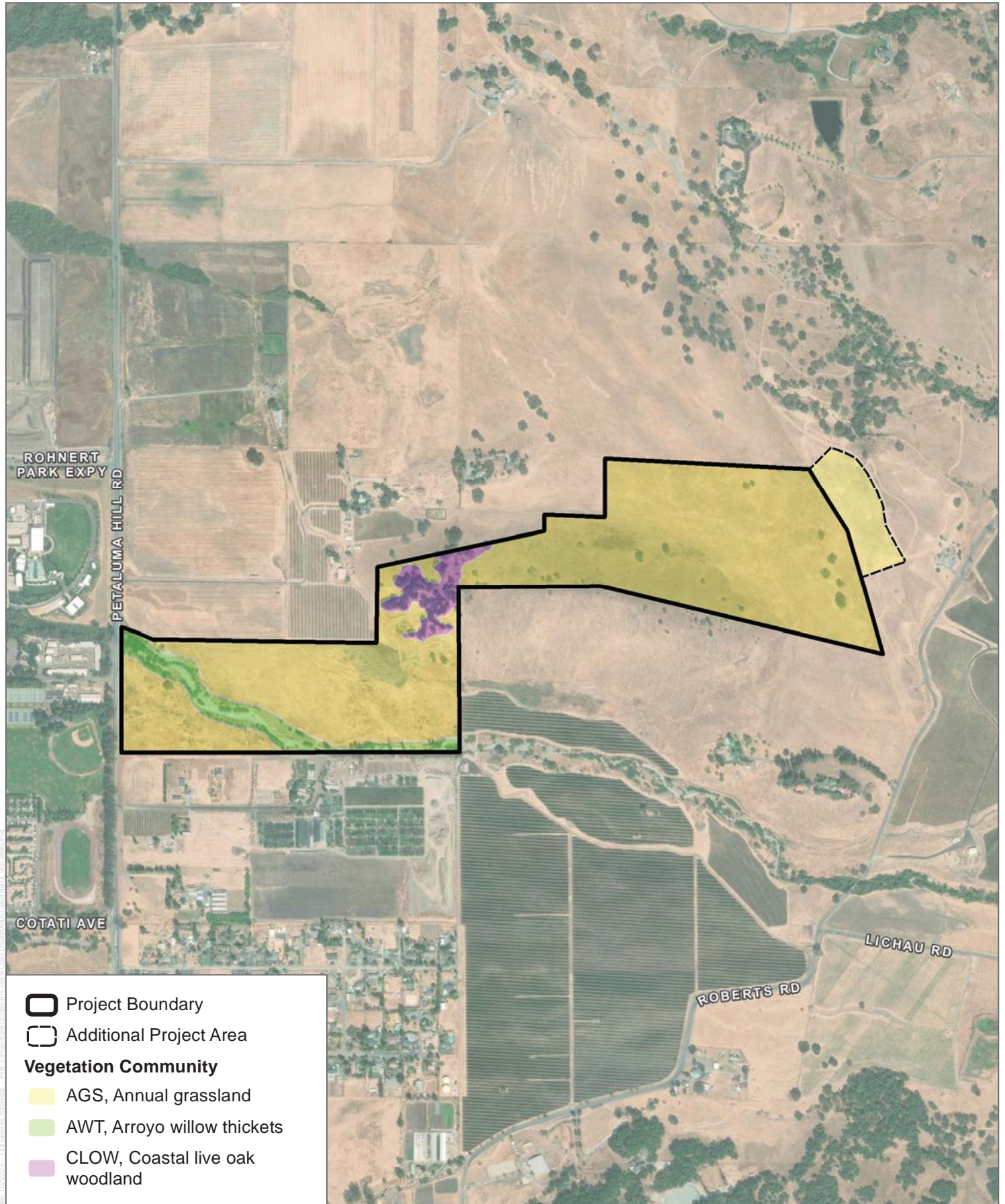


FIGURE 3
CNDDDB 5-Mile Radius Search
 Biological Resources Constraints Letter



SOURCE: USDA 2016; Sonoma County 2016

ATTACHMENT 1
Representative Site Photographs

ATTACHMENT 1

Representative Photographs



1. Representative photograph looking West towards proposed trail area



2. Representative photograph looking north into Crane Creek Regional Park

ATTACHMENT D (Continued)

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ATTACHMENT 2
Vascular Plant Species Observed On Site

Attachment 2
Plant Species Observed on the Crane Creek Trail Project Site in
Sonoma County, California

MONOCOTS

POACEAE—GRASS FAMILY

- * *Avena fatua*—wild oat
- * *Bromus hordeaceus*—soft brome
- * *Festuca perennis*—perennial rye grass

EUDICOTS

APIACEAE—CARROT FAMILY

- * *Foeniculum vulgare*—fennel
- * *Torilis arvensis*—spreading hedgeparsley

ASTERACEAE—SUNFLOWER FAMILY

- * *Carduus pycnocephalus*—Italian plumeless thistle
- * *Lactuca serriola*—prickly lettuce

BRASSICACEAE—MUSTARD FAMILY

- * *Brassica nigra*—black mustard

EUPHORBIACEAE—SPURGE FAMILY

Croton setiger—dove weed

* signifies introduced (non-native) species

ATTACHMENT 3
Wildlife Species Observed On Site

Attachment 3

Wildlife Species Observed on the Crane Creek Trail Project Site in Sonoma County, California

BIRDS

HAWKS

ACCIPITRIDAE—HAWKS, KITES, EAGLES, & ALLIES

Circus hudsonius—northern harrier

JAYS, MAGPIES & CROWS

CORVIDAE—CROWS & JAYS

Corvus brachyrhynchos—American crow

PIGEONS & DOVES

COLUMBIDAE—PIGEONS & DOVES

Zenaida macroura—mourning dove

THRUSHES

TURDIDAE—THRUSHES

Sialia mexicana—western bluebird

ATTACHMENT 4
Table of Potentially Occurring Species

Attachment 4

Special-Status Plant Species with Known or Potential Occurrence in the Vicinity of the Crane Creek Trail Project in Sonoma County, California

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion	None/None, 1B.2	Perennial bulbiferous herb. Cismontane woodland, valley and foothill grassland. Elevation 170–1,000 feet. Blooms May–Jun.	Moderate potential to occur. The grasslands onsite provide potentially suitable habitat for this species. The nearest documented occurrence is located approximately 5.5 miles north of the project site (CDFW 2018).
<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Sonoma alopecurus	Endangered/None, 1B.1	Perennial herb. Marshes and swamps (freshwater), riparian scrub. Elevation 15–1,200 feet. Blooms May–Jul.	Moderate potential to occur. The riparian scrub onsite provides potentially suitable habitat for this species. The nearest documented occurrence is located approximately 5 miles west of the project site (CDFW 2018).
<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None/None, 1B.2	Perennial deciduous shrub. Broadleaved upland forest (openings), chaparral, cismontane woodland. Elevation 390–6,560 feet. Blooms Apr–Jul.	Not expected to occur. The site lacks suitable habitat for this species. The nearest documented occurrence for this species is located approximately 8 miles northeast of the project site (CDFW 2018).
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	None/None, 1B.2	Annual herb. Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation 5–1,640 feet. Blooms Mar–Jun.	Moderate potential to occur. The grasslands onsite provide potentially suitable habitat for this species. The nearest documented occurrence for this species is located approximately 5.5 miles north of the project site (CDFW 2018).
<i>Arctostaphylos densiflora</i>	Vine Hill manzanita	None/Endangered, 1B.1	Perennial evergreen shrub. Chaparral (acid marine sand). Elevation 160–395 feet. Blooms Mar–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	Rincon Ridge manzanita	None/None, 1B.1	Perennial evergreen shrub. Chaparral (rhyolitic), cismontane woodland. Elevation 245–1,215 feet. Blooms Feb–Apr.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	Endangered/Threatened, 1B.1	Annual herb. Chaparral (openings), cismontane woodland, valley and foothill grassland. Elevation 245–900 feet. Blooms Mar–May.	Not expected to occur. Although grasslands onsite may provide suitable habitat for this species, it has not been documented within 10 miles of the project site (CDFW 2018).

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	None/None, 1B.2	Annual herb. Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation 0–195 feet. Blooms Mar–Jun.	Not expected to occur. The site lacks suitable adobe clay soils for this species. The nearest documented occurrence for this species is located approximately 6.4 miles south of the project site (CDFW 2018).
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	None/None, 1B.2	Perennial herb. Chaparral, cismontane woodland, valley and foothill grassland. Elevation 145–5,100 feet. Blooms Mar–Jun.	Low potential to occur. Although the grassland onsite may provide suitable habitat for this species, the nearest documented occurrence is located approximately 10 miles east of the project site (CDFW 2018).
<i>Blennosperma bakeri</i>	Sonoma sunshine	Endangered/Endangered, 1B.1	Annual herb. Valley and foothill grassland (mesic), vernal pools. Elevation 30–360 feet. Blooms Mar–May.	Low potential to occur. There is marginally suitable habitat for this species in mesic areas of the grassland onsite; however, the site does not contain vernal pool habitat preferred by this species. The nearest documented occurrence for this species is located approximately 2.6 miles northwest of the project site (CDFW 2018).
<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None/None, 1B.2	Perennial bulbiferous herb. Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation 360–3,000 feet. Blooms May–Jul.	Low potential to occur. Although the grassland on site may provide suitable habitat for this species, the nearest documented occurrence is located approximately 9 miles east of the project site (CDFW 2018).
<i>Calamagrostis crassiglumis</i>	Thurber's reed grass	None/None, 2B.1	Perennial rhizomatous herb. Coastal scrub (mesic), marshes and swamps (freshwater). Elevation 30–195 feet. Blooms May–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>California macrophylla</i>	round-leaved filaree	None/None, 1B.2	Annual herb. Cismontane woodland, valley and foothill grassland. Elevation 45–3,935 feet. Blooms Mar–May.	Low potential to occur. Although the grassland on site may provide suitable habitat for this species, the nearest documented occurrence is located approximately 7.5 miles south of the project site (CDFW 2018).

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Campanula californica</i>	swamp harebell	None/None, 1B.2	Perennial rhizomatous herb. Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (freshwater), North Coast coniferous forest. Elevation 0–1,330 feet. Blooms Jun–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Castilleja uliginosa</i>	Pitkin Marsh paintbrush	None/Endangered, 1A	Perennial herb (hemiparasitic). Marshes and swamps (freshwater). Elevation 785 feet. Blooms Jun–Jul.	Not expected to occur. The site lacks suitable habitat and outside the elevation range for this species.
<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None/None, 1B.1	Perennial evergreen shrub. Closed-cone coniferous forest, chaparral, cismontane woodland. Elevation 245–3,495 feet. Blooms Feb–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus divergens</i>	Calistoga ceanothus	None/None, 1B.2	Perennial evergreen shrub. Chaparral (serpentinite or volcanic, rocky). Elevation 555–3,115 feet. Blooms Feb–Apr.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus foliosus</i> var. <i>vineatus</i>	Vine Hill ceanothus	None/None, 1B.1	Perennial evergreen shrub. Chaparral. Elevation 145–1,000 feet. Blooms Mar–May.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus masonii</i>	Mason's ceanothus	None/Rare, 1B.2	Perennial evergreen shrub. Chaparral (openings, rocky, serpentinite). Elevation 750–1,640 feet. Blooms Mar–Apr.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None/None, 1B.2	Perennial evergreen shrub. Chaparral, cismontane woodland. Elevation 390–2,100 feet. Blooms Feb–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None/None, 1B.2	Perennial evergreen shrub. Chaparral (sandy, serpentinite or volcanic). Elevation 705–2,625 feet. Blooms Feb–Apr.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	None/None, 1B.2	Annual herb. Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). Elevation 0–1,380 feet. Blooms May–Nov.	High potential to occur. Seasonally mesic areas of the grassland on site provide potentially suitable habitat for this species. The nearest documented occurrence for this species is located approximately 2 miles south of the project site (CDFW 2018).

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes bird's-beak	None/None, 1B.2	Annual herb (hemiparasitic). Marshes and swamps (coastal salt). Elevation 0–35 feet. Blooms Jun–Oct.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Chloropyron molle</i> ssp. <i>molle</i>	soft bird's-beak	Endangered/Rare, 1B.2	Annual herb (hemiparasitic). Marshes and swamps (coastal salt). Elevation 0–10 feet. Blooms Jun–Nov.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Chorizanthe valida</i>	Sonoma spineflower	Endangered/Endangered, 1B.1	Annual herb. Coastal prairie (sandy). Elevation 30–1,000 feet. Blooms Jun–Aug.	Not expected to occur. The site lacks suitable sandy soils and coastal habitat for this species.
<i>Cirsium andrewsii</i>	Franciscan thistle	None/None, 1B.2	Perennial herb. Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation 0–490 feet. Blooms Mar–Jul.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Clarkia imbricata</i>	Vine Hill clarkia	Endangered/Endangered, 1B.1	Annual herb. Chaparral, valley and foothill grassland. Elevation 160–245 feet. Blooms Jun–Aug.	Not expected to occur. This species occurs in a defined geographic region at Vine Hill, more than 10 miles northeast of the project site (CDFW 2018).
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	None/None, 2B.2	Annual vine (parasitic). Marshes and swamps (freshwater). Elevation 45–920 feet. Blooms Jul–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Delphinium bakeri</i>	Baker's larkspur	Endangered/Endangered, 1B.1	Perennial herb. Broadleaved upland forest, coastal scrub, valley and foothill grassland. Elevation 260–1,000 feet. Blooms Mar–May.	Not expected to occur. While the grassland on site may provide marginally suitable habitat for this species, it is known from environs closer to the coast. The nearest documented occurrence is located approximately 9.7 miles southwest of the project site (CDFW 2018).
<i>Delphinium luteum</i>	golden larkspur	Endangered/Rare, 1B.1	Perennial herb. Chaparral, coastal prairie, coastal scrub. Elevation 0–330 feet. Blooms Mar–May.	Not expected to occur. The site lacks suitable chaparral or coastal habitat for this species.
<i>Downingia pusilla</i>	dwarf downingia	None/None, 2B.2	Annual herb. Valley and foothill grassland (mesic), vernal pools. Elevation 0–1,460 feet. Blooms Mar–May.	Low potential to occur. There is marginally suitable habitat for this species in mesic areas of the grassland onsite; however, the site does not contain vernal pool habitat preferred by this species. The nearest documented occurrence for this species is located approximately 4.9 miles northwest of the project site (CDFW 2018).

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Eriogonum luteolum</i> <i>var. caninum</i>	Tiburon buckwheat	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation 0–2,295 feet. Blooms May–Sep.	Not expected to occur. Although there is potentially suitable habitat in the grassland on site, this species has not been previously documented within 10 miles of the project site (CDFW 2018).
<i>Fritillaria lanceolata</i> <i>var. tristulis</i>	Marin checker lily	None/None, 1B.1	Perennial bulbiferous herb. Coastal bluff scrub, coastal prairie, coastal scrub. Elevation 45–490 feet. Blooms Feb–May.	Not expected to occur. The site lacks suitable coastal habitat for this species.
<i>Fritillaria liliacea</i>	fragrant fritillary	None/None, 1B.2	Perennial bulbiferous herb. Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation 5–1,345 feet. Blooms Feb–Apr.	High potential to occur. The grasslands on site provide suitable habitat for this species. The nearest documented occurrence for this species is located approximately 3.5 miles east of the project site (CDFW 2018).
<i>Gilia capitata</i> ssp. <i>tomentosa</i>	woolly-headed gilia	None/None, 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland. Elevation 30–720 feet. Blooms May–Jul.	Not expected to occur. Although there is potentially suitable habitat in the grassland on site, this species appears to prefer more coastal environments and has not been previously documented within 10 miles of the project site (CDFW 2018).
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	congested-headed hayfield tarplant	None/None, 1B.2	Annual herb. Valley and foothill grassland. Elevation 65–1,835 feet. Blooms Apr–Nov.	High potential to occur. The grassland on site provides suitable habitat for this species. The nearest documented occurrence for this species is located approximately 2.5 miles southwest of the project site (CDFW 2018).
<i>Hesperolinon</i> <i>congestum</i>	Marin western flax	Threatened/Threatened, 1B.1	Annual herb. Chaparral, valley and foothill grassland. Elevation 15–1,215 feet. Blooms Apr–Jul.	Not expected to occur. Although there is potentially suitable habitat in the grassland on site, this species has not been previously documented within 10 miles of the project site (CDFW 2018).
<i>Horkelia tenuiloba</i>	thin-lobed horkelia	None/None, 1B.2	Perennial herb. Broadleaved upland forest, chaparral, valley and foothill grassland. Elevation 160–1,640 feet. Blooms May–Jul.	Low potential to occur. The grassland on site may provide suitable habitat for this species; however, the nearest documented occurrence for this species is approximately 7.5 miles northwest of the project site (CDFW 2018).

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Lasthenia burkei</i>	Burke's goldfields	Endangered/Endangered, 1B.1	Annual herb. Meadows and seeps (mesic), Vernal pools. Elevation 45–1,970 feet. Blooms Apr–Jun.	Low potential to occur. There is marginally suitable habitat for this species in mesic areas of the grassland onsite; however, the site does not contain vernal pool habitat preferred by this species. The nearest documented occurrence for this species is located approximately 2 miles northwest of the project site (CDFW 2018).
<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	None/None, 1B.2	Perennial herb. Closed-cone coniferous forest (openings), coastal scrub, meadows and seeps, marshes and swamps. Elevation 195–1,705 feet. Blooms Apr–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	Endangered/None, 1B.1	Annual herb. Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation 0–1,540 feet. Blooms Mar–Jun.	Not expected to occur. The site lacks suitable alkaline habitat for this species, and it has not been previously documented within 10 miles of the project site (CDFW 2018).
<i>Layia septentrionalis</i>	Colusa layia	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Elevation 325–3,595 feet. Blooms Apr–May.	Low potential to occur. The grassland on may provide suitable habitat for this species. The nearest documented occurrence for this species is located approximately 5 miles north of the project site (CDFW 2018).
<i>Legenere limosa</i>	legenere	None/None, 1B.1	Annual herb. Vernal pools. Elevation 0–2,885 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Elevation 325–1,640 feet. Blooms Mar–May.	High potential to occur. Grassland on site provide suitable habitat for this species. The nearest documented occurrence is located approximately 2 miles southeast of the project site (CDFW 2018).
<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	Pitkin Marsh lily	Endangered/Endangered, 1B.1	Perennial bulbiferous herb. Cismontane woodland, meadows and seeps, marshes and swamps (freshwater). Elevation 110–215 feet. Blooms Jun–Jul.	Not expected to occur. This species occurs at one isolated geographic location at the Pitkin Marsh, greater than 5 miles southwest of the project site.
<i>Limnanthes vinculans</i>	Sebastopol meadowfoam	Endangered/Endangered, 1B.1	Annual herb. Meadows and seeps, valley and foothill grassland, Vernal pools. Elevation 45–1,000 feet. Blooms Apr–May.	Not expected to occur. The site lacks suitable habitat for this species.

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Microseris paludosa</i>	marsh microseris	None/None, 1B.2	Perennial herb. Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation 15–1,165 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	None/None, 1B.1	Annual herb. Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Elevation 15–5,710 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Navarretia leucocephala</i> ssp. <i>pliantha</i>	many-flowered navarretia	Endangered/Endangered, 1B.2	Annual herb. Vernal pools (volcanic ash flow). Elevation 95–3,115 feet. Blooms May–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Penstemon newberryi</i> var. <i>sonomensis</i>	Sonoma beardtongue	None/None, 1B.3	Perennial herb. Chaparral (rocky). Elevation 2,295–4,495 feet. Blooms Apr–Aug.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Plagiobothrys mollis</i> var. <i>vestitus</i>	Petaluma popcornflower	None/None, 1A	Perennial herb. Marshes and swamps (coastal salt), valley and foothill grassland (mesic). Elevation 30–165 feet. Blooms Jun–Jul.	Not expected to occur. Although mesic areas in the grassland onsite may provide marginally suitable habitat, the nearest documented occurrence for this species is located approximately 7 miles south of the project site (CDFW 2018).
<i>Pleuropogon hooverianus</i>	North Coast semaphore grass	None/Threatened, 1B.1	Perennial rhizomatous herb. Broadleaved upland forest, meadows and seeps, North Coast coniferous forest. Elevation 30–2,200 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Potentilla uliginosa</i>	Cunningham Marsh cinquefoil	None/None, 1A	Perennial herb. Marshes and swamps. Elevation 95–130 feet. Blooms May–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Rhynchospora alba</i>	white beaked-rush	None/None, 2B.2	Perennial rhizomatous herb. Bogs and fens, meadows and seeps, marshes and swamps (freshwater). Elevation 195–6,695 feet. Blooms Jun–Aug.	Not expected to occur. The site lacks suitable habitat for this species.

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Rhynchospora californica</i>	California beaked-rush	None/None, 1B.1	Perennial rhizomatous herb. Bogs and fens, lower montane coniferous forest, meadows and seeps (seeps), marshes and swamps (freshwater). Elevation 145–3,315 feet. Blooms May–Jul.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Rhynchospora capitellata</i>	brownish beaked-rush	None/None, 2B.2	Perennial herb. Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. Elevation 145–6,560 feet. Blooms Jul–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Rhynchospora globularis</i>	round-headed beaked-rush	None/None, 2B.1	Perennial rhizomatous herb. Marshes and swamps (freshwater). Elevation 145–195 feet. Blooms Jul–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i>	Point Reyes checkerbloom	None/None, 1B.2	Perennial rhizomatous herb. Marshes and swamps (freshwater, near coast). Elevation 5–245 feet. Blooms Apr–Sep.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Sidalcea oregana</i> ssp. <i>valida</i>	Kenwood Marsh checkerbloom	Endangered/Endangered, 1B.1	Perennial rhizomatous herb. Marshes and swamps (freshwater). Elevation 375–490 feet. Blooms Jun–Sep.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Trifolium amoenum</i>	two-fork clover	Endangered/None, 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland (sometimes serpentinite). Elevation 15–1,360 feet. Blooms Apr–Jun.	Moderate potential to occur. The grassland onsite may provide suitable habitat for this species. The nearest documented occurrence for this species is located approximately 2.5 miles west of the project site (CDFW 2018).
<i>Trifolium buckwestiorum</i>	Santa Cruz clover	None/None, 1B.1	Annual herb. Broadleaved upland forest, cismontane woodland, coastal prairie. Elevation 340–2,000 feet. Blooms Apr–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Trifolium hydrophilum</i>	saline clover	None/None, 1B.2	Annual herb. Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation 0–985 feet. Blooms Apr–Jun.	Low potential to occur. Although the grassland onsite provides potentially suitable habitat for this species, there are no alkaline soils present. The nearest documented occurrence for this species is located approximately 1.2 miles west of the project site (CDFW 2018).

Attachment 4 (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Triphysaria floribunda</i>	San Francisco owl's-clover	None/None, 1B.2	Annual herb. Coastal prairie, coastal scrub, valley and foothill grassland. Elevation 30–525 feet. Blooms Apr–Jun.	Not expected to occur. Although the grassland on site may provide suitable habitat for this species, it is restricted to coastal environs and has not been documented within 10 miles of the project site (CDFW 2018).
<i>Triquetrella californica</i>	coastal triquetrella	None/None, 1B.2	Moss. Coastal bluff scrub, coastal scrub. Elevation 30–330 feet.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Viburnum ellipticum</i>	oval-leaved viburnum	None/None, 2B.3	Perennial deciduous shrub. Chaparral, cismontane woodland, lower montane coniferous forest. Elevation 705–4,595 feet. Blooms May–Jun.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.

Status Legend:

FE: Federally listed as endangered

FT: Federally listed as threatened

FC: Federal Candidate for listing

DL: Delisted

SE: State listed as endangered

ST: State listed as threatened

SR: State Rare

CRPR 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere

CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere

CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

2 Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)

3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Sources:

California Native Plant Society (CNPS). 2018. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. Accessed November 2018.

Attachment 4 (Continued)

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Attachment 4

Special-Status Wildlife Species with Known or Potential Occurrence in the Vicinity of the Crane Creek Trail Project in Sonoma County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
<i>Invertebrates</i>				
California freshwater shrimp	<i>Syncaris pacifica</i>	Endangered/ Endangered	California freshwater shrimp is found in low to moderate gradient perennial creeks and streams where there is some emergent vegetation, high water quality, low levels of pollution and good oxygen levels. Some salinity is tolerated, although they are not found in any tidally influenced or brackish waters. Oviposition occurs in late spring and eggs hatch in June.	Not expected to occur. Copeland Creek is an intermittent stream and therefore does not provide suitable habitat for this species.
San Bruno elfin butterfly	<i>Callophrys mossii bayensis</i>	Endangered/None	The San Bruno Elfin Butterfly inhabits rocky outcrops and cliffs in coastal scrub in the coastal mountains near San Francisco Bay, in the fog-belt of steep north facing slopes that receive little direct sunlight. Elfin butterflies feed on other flowers in addition to their host plant, stonecrop (<i>Sedum spathulifolium</i>), which is associated with rocky outcrops. Adult food plants have not been fully determined. All known locations are restricted to San Mateo County.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
<i>Fish</i>				
coho salmon - central California coast ESU	<i>Oncorhynchus kisutch</i>	Endangered/ Endangered	Coho spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries. Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean. They feed on plankton and insects in freshwater and switch to a diet of small fishes while in the ocean.	High potential to occur. Suitable habitat for this species is present within Copeland Creek and they are known to occur in Copeland Creek.
longfin smelt	<i>Spirinchus thaleichthys</i>	Candidate Threatened/ Threatened, SSC	The longfin smelt is a pelagic estuarine fish. Longfin smelt generally spawn in freshwater and then move downstream to brackish water to mature. The life cycle of most longfin smelt generally requires estuarine conditions. Juvenile and adult longfin smelt have been found throughout the year in salinities ranging from pure freshwater to pure seawater, although once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 parts per thousand. Longfin smelt are thought to be restricted by high water temperatures, generally greater than 22 degrees °C. Most longfin smelt in the San Francisco Bay are believed to breed in the lower reaches of the Sacramento and San Joaquin Rivers.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	None/SSC	Splittail are endemic to the Central Valley of California and depend on both brackish-water rearing habitats in the San Francisco estuary and on floodplain and river-edge spawning habitats immediately above the estuary. Most migrate between these two habitat types on a near annual basis. They are adapted to a wide range of salinities. From November through February, adults migrate upstream in pulses in response to flow events. Adults spawn on floodplains or flooded edge habitats in March and April and then migrate back downstream. Embryos and larvae remain in flooded vegetation for 3-6 weeks during March and April.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
steelhead – central California coast DPS (NMFS)	<i>Oncorhynchus mykiss irideus</i>	Threatened/None	Central California coast steelhead (and their progeny) spawns in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). They also occur in drainages of San Francisco and San Pablo Bays. Regardless of life history strategy, for the first year or two of life rainbow trout and steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant.	High potential to occur. Suitable habitat for this species is present within Copeland Creek and they are known to occur in Copeland Creek.
<i>Amphibians and Reptiles</i>				
California giant salamander	<i>Dicamptodon ensatus</i>	None/SSC	California giant salamander occurs in wet coastal forests in or near clear, cold permanent and semi-permanent streams and seepages. Aquatic larvae transform into four-legged salamanders that live on the ground and breathe air with lungs. Neotenic adults which retain their gills and continue to live in water are found in many populations. This salamander is nocturnal, but also active in daylight in wet conditions. They can be found walking across roads on rainy nights, especially with the first heavy rains of the fall, usually in November. Adults are also found under cover objects such as rocks, logs and artificial cover.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
California red-legged frog	<i>Rana draytonii</i>	Threatened/None, SSC	California red-legged frogs occur in different habitats depending on their life stage, the season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. These frogs also breed in artificial	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area. Copeland Creek does not provide a

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
			impoundments including stock ponds, irrigation ponds, and siltation ponds. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (<i>Salix</i> spp.) are preferred, although the absence of vegetation at an aquatic site does not rule out the possibility of occupancy. Adult frogs prefer dense, shrubby or emergent riparian vegetation near deep (≥ 2 to 3 feet), still or slow moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail occur adjacent to open water.	permanent water source for this species, and the nearest occurrence record is located approximately four miles east of the site
California tiger salamander	<i>Ambystoma californiense</i>	Threatened/Threatened	California tiger salamander (CTS) may be found in riparian and wet meadow habitats, but is more common in grasslands. CTS spend most of its life cycle underground in adjacent valley oak woodland or grassland habitat, primarily in rodent burrows. Breeding takes place following the first heavy winter rains. Temporary or permanent freshwater pools or slowly flowing streams are required for egg-laying and larval development. They appear to be absent in waters containing predatory game fish.	Not expected to occur. Multiple sampling efforts for larvae and adults from 1994-2003 in the vicinity of the site resulted in negative findings, and the nearest historical documented occurrence is approximately 1.80 miles south of the site. The site is outside of the planning area for the CTS Recovery Plan.
foothill yellow-legged frog	<i>Rana boylei</i>	None/Candidate Threatened, SSC	Frequents rocky streams and rivers with rocky substrate and open, sunny banks, in forests, chaparral, and woodlands. Sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	Low potential to occur. Suitable habitat for this species occurs intermittently throughout the year within Copeland Creek. Because the creek only provides water temporarily for this species in the winter and spring, it is unlikely to occur within the project area during most of the year. There is a CNDDDB occurrence just north of the eastern survey area along Crane creek (CNDDDB 2018); however no aquatic habitat present. This species likely moves through the site sporadically to access adjacent habitat; however, the dense

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
				nature of the vegetation along the creek within the project area likely precludes this species from staying on the site.
red-bellied newt	<i>Taricha rivularis</i>	None/SSC	Red-bellied newt is a stream or river dweller found in coastal woodlands and redwood forest along the coast of northern California from near Bodega, Sonoma county, to near Honeydew, Humboldt county, and inland to Lower lake and Kelsey Creek, Lake County. Adults are terrestrial, becoming aquatic when breeding. Terrestrial animals spend the dry summer in moist habitats under woody debris, rocks, in animal burrows. Juveniles apparently spend most of their time underground and are not active on the surface until near sexual maturity. Ponds, lakes, and other standing waters are avoided.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
western pond turtle	<i>Emys marmorata</i>	None/SSC	Western pond turtles use both aquatic and terrestrial habitats. They are found in rivers, lakes, streams, ponds, wetlands, ephemeral creeks, reservoirs, agricultural ditches, estuaries, and brackish waters. Western pond turtles prefer areas that provide cover from predators, such as vegetation and algae, as well as basking sites for thermoregulation. Adults tend to favor deeper, slow moving water, whereas hatchlings search for slow and shallow water that is slightly warmer. Terrestrial habitats are used for wintering and usually consist of burrows in leaves and soil. Western pond turtles also lay their eggs in terrestrial habitats. They are rarely found at altitudes above 1,500 meters.	Low potential to occur. Although Copeland Creek provides suitable habitat for this species, the nearest documented occurrence is approximately 3 miles west of the site.
<i>Birds</i>				
bank swallow	<i>Riparia riparia</i>	None/Threatened	Restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils, into which it digs nesting holes. Feeds predominantly over open riparian areas, but also over brushland, grassland, wetlands, water, and cropland.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
burrowing owl	<i>Athene cunicularia</i>	None/SSC	The burrowing owl utilizes abandoned ground squirrel burrows in open habitats and grasslands, also disturbed areas. Diet consists of insects, small mammals, reptiles and amphibians. Commonly uses burrows on levees or mounds where there are unobstructed	High potential to occur. Burrowing owls were observed during the November 9, 2017 survey. No suitable burrows

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
			views of possible predators such as raptors or foxes.	were observed during November 2018 survey in the eastern survey area.
California black rail	<i>Laterallus jamaicensis coturniculus</i>	None/Threatened, FP	California black rail occurs near freshwater marshes along the margins of ponds, lakes, and water impoundments; also herb dominated wetlands on sloped ground associated with springs, canal leaks, seepage from impoundments and agricultural irrigation. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
California Ridgway's rail	<i>Rallus obsoletus obsoletus</i>	Endangered/ Endangered, FP	Populations of the California Ridgway's rail now live almost exclusively in the marshes of the San Francisco estuary. They inhabit a range of salt and brackish water marshes and tidal sloughs. They typically utilize salt marshes dominated by both pickleweed (<i>Salicornia virginica</i>) and Pacific cordgrass (<i>Spartina foliosa</i>).	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
golden eagle	<i>Aquila chrysaetos</i>	None/None, FP, BGEPA	Golden eagle is found in open country including mountains, foothills, and plains. In the west, they are found over prairie, rangeland, or desert. They are very wide-ranging in winter, and more restricted to areas with good nest sites in summer, which consist of cliff ledges or often large trees.	Moderate potential to occur. Suitable foraging habitat is present within the site, and there are recent occurrence records from the Sonoma Mountain area approximately 3 miles east of the site.
grasshopper sparrow	<i>Ammodramus savannarum</i>	None/SSC	Grasshopper sparrow is found in grasslands, hayfields and prairies. Breeds in dry fields and prairies, especially those with fairly tall grass and weeds and a few scattered shrubs. Also nests in overgrown pastures and hayfields, and sometimes in fields of other crops. May nest in small colonies. Forages for mostly insects and seeds.	Low potential to occur. Suitable habitat for this species is present within project site; however, the nearest documented occurrence is 5.5 miles east of the site.
northern spotted owl	<i>Strix occidentalis caurina</i>	Threatened/ Threatened, SSC	Northern spotted owls generally inhabit older stands of forested habitats that contain the necessary habitat characteristics for nesting and foraging, including multi-layered, multi-species canopy with moderate to high canopy closure. These stands typically contain a high number of trees with large cavities and other types of deformities; large snags (standing dead trees); an abundance of large, dead wood on the ground; and open space within and below the upper canopy for spotted owls to fly.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	None/SSC	The saltmarsh common yellowthroat remains locally numerous in areas where extensive wetlands with adjacent riparian thickets remain. In brackish and saline tidal marsh habitat around San Francisco Bay, yellowthroats prefer habitats consisting of rushes (<i>Scirpus</i> spp.), peppergrass (<i>Leipidium latifolium</i>), and <i>Juncus</i> .	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	None/SSC	San Pablo song sparrow inhabits salt marshes along the northern edge of the San Francisco and San Pablo bays, and on the south side of San Pablo Bay southwest to San Pablo Point on the Richmond headland.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
short-eared owl	<i>Asio flammeus</i>	None/SSC	Short-eared owl lives in open terrain throughout California, such as prairies and marshes. Nests on the ground and eats small mammals.	Low potential to occur. Although suitable habitat exists for this species on site, there are no documented occurrences in the vicinity of the site.
Swainson's hawk	<i>Buteo swainsoni</i>	None/Threatened	Swainson's hawk spends the breeding season in the Central Valley of California and is commonly found in agricultural areas or open grasslands containing solitary trees for nesting. Diet consists of small mammals and reptiles.	Not expected to occur. The site is outside of the known breeding range for this species.
tricolored blackbird	<i>Agelaius tricolor</i>	None/Threatened	Tricolored blackbird is a colonial species found almost exclusively in California. It utilizes wetlands, marshes and agricultural grain fields for foraging and nesting. The tricolored blackbird population has declined significantly in the past 6 years due to habitat loss and harvest of grain fields before young have fledged.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Threatened/Endangered	Western yellow-billed cuckoo inhabits woodlands, thickets, orchards, streamside groves. Breeds mostly in dense deciduous stands, including forest edges, tall thickets, dense second growth, overgrown orchards, scrubby oak woods. Often in willow groves around marshes. In the west, mostly in streamside trees, including cottonwood-willow groves in arid country. Forages by scaling through shrubs and trees, gleaning insects from foliage and branches.	Low potential to occur. Suitable riparian habitat occurs within the site; however, the nearest documented occurrence is approximately 2 miles east of the site and is from 1975.
yellow rail	<i>Coturnicops noveboracensis</i>	None/SSC	Yellow rail is highly secretive and range and abundance is incompletely known because of this. They prefer densely vegetated	Not expected to occur. Suitable habitat for this species

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
			marshes, and sedge marshes/meadows with moist soil or shallow standing water for breeding. They are very rare, but currently known to winter in a few coastal marshes and Suisun Marsh near Fairfield, California.	is not present within or adjacent to the project area.
<i>Mammals</i>				
American badger	<i>Taxidea taxus</i>	None/SSC	American badger is most abundant in drier open stages of most shrub, forest and herbaceous habitats with friable soils. Will dig burrows for cover. Will reuse burrows occasionally but also may dig new burrows each night in summer. Diet consists of rodents, small mammals, reptiles, insects, birds and carrion.	Low potential to occur. Although suitable habitat for this species is present within the site, no burrows were observed during the November 2018 survey.
pallid bat	<i>Antrozous pallidus</i>	None/SSC	Pallid bat occupies a variety of habitats including grassland, shrubland, woodland and forests from sea level up through mixed conifer forest. Roosts in caves, mines, crevices and occasionally hollow trees or buildings. Prefers open habitats for foraging.	Moderate potential to occur. Suitable foraging habitat exists within the project site. No suitable roosting habitat present in eastern survey area; however, potential roosting at Copeland creek crossing.
salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	Endangered/ Endangered	The salt marsh harvest mouse occurs in tidal flats and on the shore in estuarine habitats, and in herbaceous wetlands. Occurs in salt and brackish marshes where plants provide a dense mat for cover, with a high percentage of pickleweed, along with a complex structure of other plant species. The salt marsh harvest mouse needs access to high ground for refuge/cover, especially during high tides in the winter. Diet is composed of green vegetation including salt grass and pickleweed, along with some seeds, but varies by available vegetation.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	None/SSC	Townsend's big-eared bat is found throughout most of western North America. Hibernates and roosts in caves and mines near entrances, or cave like structures such as buildings or under decks. Forages in forested habitats, along open edges.	Not expected to occur. Suitable foraging and roosting habitat for this species is not present within or adjacent to the project area.
western red bat	<i>Lasiurus blossevillei</i>	None/SSC	Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Roosts primarily in trees. Feeds over a wide variety of habitats including grasslands, shrublands, open	Not expected to occur. The oak woodland habitat on site is likely too small to provide

ATTACHMENT 4 (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
			woodlands and forests, and croplands. Not found in desert areas.	suitable roosting habitat for this species and no suitable roosting habitat occurs in the vicinity of the site.

Status Legend:

SSC: Species of Special Concern (CDFW)

FP: Fully Protected (CDFW)

BGEPA: Bald and Golden Eagle Protection Act (CDFW)

Sources

CDFW (California Department of Fish and Wildlife). November 2018. California Natural Diversity Database (CNDDB). Rarefind, Version 5 (Commercial Subscription). Sacramento, California. Accessed November 2018.

USFWS (U.S. Fish and Wildlife Service). 2018. Information, Planning and Conservation (IPaC). Accessed November 2018.

DRAFT

**BIOLOGICAL RESOURCES ASSESSMENT
COPELAND CREEK DETENTION BASIN AND TRAIL
PROJECT
SONOMA COUNTY, CALIFORNIA**

Prepared for:

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JANUARY 2018

January 9, 2018

9810

Mary Grace Pawson
Director of Development Services
City of Rohnert Park
130 Avram Avenue
Rohnert Park, California 94928

***Subject: Biological Resources Assessment for the Copeland Creek Detention Basin
and Trail Project, Sonoma County, California***

Dear Ms. Pawson:

In November of 2017, Dudek biologist Lisa Achter conducted a reconnaissance level general biological field survey at the Copeland Creek Detention Basin and Trail project site in Sonoma County, California (Figure 1). The focus of the survey was to characterize existing site conditions, document biological resources, and to summarize potential biological constraints associated with the proposed development and associated improvements to the site. A description of the methods and results of the biological survey and related recommendations is provided below.

1 SITE LOCATION AND PROJECT DESCRIPTION

The 128-acre project site is located just east of the City of Rohnert Park, at 6626 Petaluma Hill Road (Figure 2). The project site is characterized by relatively flat terrain in the western portion of the site where the proposed detention basin will be located, and rolling hills in the eastern portion of the site where the trail will be located (Figure 2). Copeland Creek flows from east to west along the southern boundary and through the southwestern corner of the site. Elevation within the project site varies from approximately 175 feet above mean sea level (AMSL) in the southwestern flatlands to 400 feet AMSL in the hills of the eastern portion of the site. The site is situated immediately east of Petaluma Hill Road (APN 047-132-038) in Township 6 North, Range 7 West, and Sections 20, 21, 28, 29 and 30 in the 7.5-minute U.S. Geological Survey (USGS) Cotati quadrangle. The center of the site location corresponds to 38°20'37" north latitude and 122°39'33" west longitude. Annual grassland is the dominant vegetation community within the site; however, a small patch of coast live oak (*Quercus agrifolia*) woodland occurs in the center of the site on a hill that divides the western and eastern portions of the site, and oaks occur sporadically throughout the eastern portion of the site (Figure 3). Surrounding land use includes rural residential lots to the north that are dominated by annual grassland habitat, Crane Creek

Ms. Mary Grace Pawson

Subject: Biological Resources Assessment for the Copeland Creek Detention Basin and Trail Project, Sonoma County, California

Regional Park to the east, Sonoma State University and residential development to the west, and a nursery to the south of the Copeland Creek corridor. No structures exist on the project site.

The proposed project involves construction of an off-channel detention basin in the western portion of the site and a future recreational trail on undeveloped pastureland in the eastern portion of the site. The detention basin would be designed for a 10-year storm event and construction would include associated maintenance and access structures north of Copeland Creek. A recreational trail is proposed on the eastern portion of the property and would extend from the basin to Crane Creek Regional Park to the east.

This multi-benefit project, developed with collaboration from the Sonoma County Water Agency (SCWA), Sonoma County Agricultural Preservation and Open Space District, Sonoma County Regional Parks, County of Sonoma, and City of Rohnert Park would improve flood protection for area residents, reduce sediment deposits downstream in Copeland Creek, assist groundwater recharge, improve salmonid habitat, provide salmonid refugia, conserve energy resulting from reduced pumping and importation of potable surface water, and create a site for public access and education about the hydrology, water cycle, fish habitat, and geomorphic processes in the upper Copeland Creek Watershed.

2 SITE EVALUATION METHODS

2.1 Preliminary Review

Special-status plant and wildlife species present or potentially present on the site were identified through a desktop literature search using the following sources: U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) Trust Resource Report; California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB); and the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Vascular Plants. Additionally, the Natural Resources Conservation Service (NRCS), Web Soil Survey (WSS) was queried to determine soil types present within the project boundary (USDA 2017). The database searches for the CNDDDB and CNPS reports included the 7.5' USGS Cotati quadrangle and surrounding eight quadrangles. The IPaC search included the project site and a five-mile buffer surrounding the site. Special-status species include those that are listed as threatened, endangered, or a candidate species, or species of special concern by the CDFW, USFWS or CNPS. Only California Rare Plant Rank (CRPR) 1 and 2 plant species were included in the CNPS search. Following a review of these resources, Dudek also reviewed relevant life history information on those species documented as occurring in the region, including habitat type, soils, and elevation preferences.

2.2 Field Assessment

The biological reconnaissance survey was performed by Dudek biologist Lisa Achter on November 9, 2017, and consisted of walking throughout the site and along the periphery of the site to characterize and map existing vegetation communities, evaluate the relative quality and potential of on-site habitats to support the special-status species identified during the preliminary database and resources review (discussed above), and to identify any other sensitive biological resources present or potentially present within the site. An aerial photograph (Google Earth 2017) and georeferenced mobile map with an overlay of the property boundary, and surrounding buffer was utilized to map vegetation communities and record any special-status or sensitive biological resources while in the field. Incidental observations of wildlife or wildlife sign and dominant plant species were also recorded. Since the field assessment was conducted outside the breeding/blooming season of special-status plant and wildlife species known to occur in the region and potentially occurring on the site, focused or protocol-level surveys for these species were not conducted. However, any incidental observations of such species were documented.

Concurrent with the biological reconnaissance survey described above, Dudek botanist Laura Burris conducted a wetland delineation on the project site to identify and map wetlands and other aquatic features likely to be under the jurisdiction of the U.S. Army Corps of Engineers pursuant to Section 404 of the federal Clean Water Act. Potentially jurisdictional features were initially identified based on aerial signatures and field observations according to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands, Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*, and the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*, as well as criteria developed under CDFW Section 1602, Lake and Streambed Alteration Agreements.

3 RESULTS

3.1 Soils

Six soil types, as mapped by the NRCS (USDA 2017) occur within the project site (Figure 4). These include: Clear Lake clay loam (0–2% slopes, 2–5% slopes), Clear Lake clay, 0–2% slopes, Goulding cobbly clay loam, 5–15% slopes, Goulding-Toomes complex, 9–50% slopes, Riverwash, and Toomes rocky loam, 2–30% slopes.

Clear Lake clay and loam soils are very deep, poorly drained soils that formed in fine textured alluvium derived from sandstone and shale. Clear Lake soils are present in basins and swales of drainageways. Goulding soils consist of shallow, somewhat excessively drained soils formed in

material weathered from metavolcanic or metasedimentary rocks. Goulding soils are located on mountains with slopes from 5% to 75%. Toomes series consist of very shallow and shallow, well to somewhat excessively drained soils formed in material weathered from tuff breccia, basalt and andesite. These soils occur on ridges and plateaus with slopes from 2% to 75%. Riverwash lands are excessively drained and consist of highly stratified, water- and wind-deposited, stony, cobbly, and gravelly sand, loamy sand, and sandy loam and contain only a small amount of silt and clay. Additionally, they are subject to flooding, scouring, and deposition during and immediately following storms (USDA 2017).

3.2 Vegetation Communities and Land Cover Types

Four vegetation communities or land cover types were identified and mapped during the field assessment using the classifications described in A Manual of California Vegetation (MCV) by Sawyer and Keeler-Wolf (2009). Generic descriptions from the MCV are presented for each of the four communities below, as well as site specific characteristics observed within each community during the survey (Figure 3).

A total of 25 species of native or naturalized plants, 10 native (40%) and 15 non-native (60%), was recorded on the site (see Appendix A).

California Annual Grassland

California annual grassland is the dominant land cover type within the project site (Figure 5). This vegetation community is dominated by non-native grasses such as slender wild oats (*Avena barbata*), soft chess (*Bromus hordeaceus*), and hedgehog dog tail grass (*Cynosurus echinatus*). Also present in this vegetation community are non-native forbs such as bristly ox-tongue (*Helminthotheca echioides*), Italian plumeless thistle (*Carduus pycnocephalus*), woolly distaff thistle (*Carthamus lanatus*), and rose clover (*Trifolium hirtum*). Native forbs such as rosinweed (*Calycadenia truncata*) are present in low density.

Coast Live Oak Woodland (*Quercus agrifolia* Woodland Alliance)

One stand (approximately 5.84 acres) of coast live oak woodland occurs within the project site and coast live oak is dominant in the canopy. This is a mature stand and co-occurs with other hardwood species such as Oregon white oak (*Quercus garryana*) and California buckeye (*Aesculus californica*). Annual grasses, similar to those described above for California annual grassland, are the dominant understory of this habitat type.

Arroyo Willow Thickets (*Salix lasiolepis* Shrubland Alliance)

Arroyo willow thicket typically occurs along drainages and is present along Copeland Creek within the project site. It is dominant or co-dominant in the shrub or tree canopy and comprises >50% relative cover. Other species observed with the arroyo willow thickets along Copeland Creek include non-native fennel (*Foeniculum vulgare*), blue gum (*Eucalyptus globulus*), and Himalayan blackberry (*Rubus armeniacus*).

Aquatic Habitat Types

There are four types of drainages (creek, intermittent drainage, ephemeral drainage, and vegetated swale) and two types of wetlands (seasonal wetland and seasonal wetland swale) within the project site (refer to Appendix B, Figure 4).

3.3 Special-Status Species Potentially Occurring on the Project Site

Special-status plant and wildlife species determined to have potential to occur on the site, based on the preliminary review (discussed above) and the results of the field assessment, are discussed below. Tables summarizing the potential for occurrence of special-status plant and wildlife species are included in Appendices C and D. Species were described as ‘not expected to occur’ when the site was clearly outside the known geographic range of the species, or if there was no suitable habitat for the species on or adjacent to the site.

Special-Status Plants

Results of the CNDDDB and CNPS searches indicated that 65 special-status plant species have some potential to occur in the vicinity of the project site. Of the 65 species, 57 were removed from consideration due to lack of suitable habitat within or adjacent to the project site, or the project site is outside of the species’ known range (refer to Appendix C). The remaining eight special-status plant species are described in more detail below (CNPS 2017).

Franciscan onion (*Allium peninsulare* var. *franciscanum*)

Franciscan onion is a CRPR 1B.2 plant, meaning it is rare or endangered in California and elsewhere, and is fairly endangered in California. This species is a perennial bulbiferous herb usually found in cismontane woodland and valley and foothill grassland. Franciscan onion generally blooms from May through June at elevations ranging from 170 to 1,000 feet AMSL. The on-site oak woodland and grassland provide potentially suitable habitat for this species.

Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*)

Sonoma alopecurus is a federally endangered, CRPR 1B.1 plant, meaning it is rare or endangered in California and elsewhere, and is seriously endangered in California. This species is a perennial herb found in freshwater marshes and swamps and riparian scrub habitats. Sonoma alopecurus generally blooms from May through July at elevations ranging from 15 to 1,200 feet AMSL. The riparian scrub on site provides potentially suitable habitat for this species.

Bent-flowered fiddleneck (*Amsinckia lunaris*)

Bent-flowered fiddleneck is a CRPR 1B.2 plant, meaning it is rare or endangered in California and elsewhere, and is fairly endangered in California. This species is an annual herb found in coastal bluff scrub, cismontane woodland, and valley and foothill grassland habitats. Bent-flowered fiddleneck generally blooms from March through June at elevations ranging from 5–1,640 feet AMSL. The oak woodland and grassland on site provide potentially suitable habitat for this species.

Pappose tarplant (*Centromadia parryi* ssp. *parryi*)

Pappose tarplant is a CRPR 1B.2 plant, meaning it is rare or endangered in California and elsewhere, and is fairly endangered in California. This species is an annual herb found in chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernal mesic valley and foothill grassland habitats. Pappose tarplant generally blooms from May through November at elevations ranging from 0–1,380 feet AMSL. Seasonally mesic grassland areas on site provide potentially suitable habitat for this species, and the nearest documented occurrence is located approximately two miles south of the project site (CDFW 2017).

Fragrant fritillary (*Fritillaria liliacea*)

Fragrant fritillary is a CRPR 1B.2 plant, meaning it is rare or endangered in California and elsewhere, is a perennial bulbiferous herb found in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland. Fragrant fritillary generally blooms from February through April at elevations ranging from 5–1,345 feet AMSL. The oak woodland and grassland on site provide suitable habitat for this species, and the nearest documented occurrence is located approximately 3.9 miles east of the project site (CDFW 2017).

Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*)

Congested-headed hayfield tarplant is a CRPR 1B.2 plant, meaning it is rare or endangered in California and elsewhere, and is fairly endangered in California. It is an annual herb found in valley and foothill grassland habitats. This species generally blooms from April through November at elevations ranging from 65–1,835 feet AMSL. The grassland on site provides suitable habitat for this species, and the nearest documented occurrence for this species is located approximately 2.3 miles southwest of the project site (CDFW 2017).

Jepson's leptosiphon (*Leptosiphon jepsonii*)

Jepson's leptosiphon is a CRPR 1B.2 plant, meaning it is rare or endangered in California and elsewhere, and is fairly endangered in California. It is an annual herb that occurs in chaparral, cismontane woodland, and valley and foothill grassland habitats. Jepson's leptosiphon generally blooms from March through May at elevations ranging from 325–1,640 feet AMSL. The oak woodland and grassland on site provide suitable habitat for this species, and the nearest documented occurrence is located approximately 2.3 miles southeast of the project site (CDFW 2017).

Two-fork clover (*Trifolium amoenum*)

Two-fork clover is a federally endangered, CRPR 1B.1 plant, meaning it is rare or endangered in California and elsewhere, and is seriously endangered in California. It is an annual herb found in coastal bluff scrub, and valley and foothill grassland (sometimes in serpentine soils). Two-fork clover generally blooms from April through June at elevations ranging from 15–1,360 feet AMSL. The grassland on site may provide suitable habitat for this species.

Special-Status Wildlife

Results of the CNDDB and IPaC searches indicated 31 special-status wildlife species known to occur within a five-mile radius of the site; no occurrences have been historically recorded on the site (Appendix D). Of the 31 species, 26 are not expected to occur on the site due to a lack of suitable habitat, or the site is outside of the species known range and was removed from further consideration.

The five remaining special-status wildlife species have some potential to occur on the site or were observed during surveys (Appendix D). Copeland Creek provides suitable habitat for Central California Coast coho salmon DPS (*Oncorhynchus kisutch*, FE SE) and Central California Coast steelhead ESU (*O. mykiss irideus*, FT), both of which have been documented in the creek. Two western burrowing owls (*Athene cunicularia*) were observed in active burrows located in the

eastern portion of the site during the November 9, 2017 surveys (Figure 3). Foraging habitat for golden eagle (*Aquila chrysaetos*) is present on the site, and there are documented occurrences of this species in the Sonoma Mountain area approximately three miles east of the site. Pallid bat (*Antrozous pallidus*) has some potential to forage on or adjacent to the site, and there are known occurrences of this species in the vicinity of the site.

Common Wildlife Species

Twenty-one common wildlife species were observed during the on-site biological survey. Of these, 15 were birds, five were mammals, and one was an amphibian. A list of common wildlife species observed on the site is provided in Appendix E.

Common wildlife species adapted to life in proximity to human disturbance such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and coyote (*Canis latrans*) are likely to move through the site on a regular basis in search of food and cover. A wide variety of common native and non-native bird species are expected to use the site for nesting and foraging.

3.4 Jurisdictional Aquatic Resources

A wetland delineation was performed by Dudek biologist Laura Burris during the biological field assessment. The project site supports 0.734 acres of wetlands and 6,962.856 linear feet of other waters that are anticipated to meet the criteria for jurisdictional waters of the United States, including wetlands, based on an analysis of the three parameters for wetlands (soils, hydrology, and vegetation) and connectivity/proximity to known waters of the United States.

Thirteen features were mapped on the site, including two ephemeral drainages (totaling 960 linear feet), one intermittent drainage (2,245 linear feet), one creek (3,077 linear feet), three vegetated swales (totaling 681 linear feet), two seasonal wetlands (totaling 0.141 acres), and four seasonal wetland swales (totaling 0.593 acres). Detailed results of the jurisdictional delineation are presented in Appendix B.

Copeland Creek (Creek-01) flows from southeast to west through the lower portion of the project site (Figure 5). This drainage flows intermittently, and is fed primarily by rainwater runoff from the surrounding hills and tributaries east of the site. One intermittent drainage (ID-01) occurs in the northeastern portion of the project site. This drainage flows from southeast to northwest through the site during and for short periods following rainfall events based on runoff from the surrounding hills. Two ephemeral drainages (ED-01 and ED-02) occur within the project site and are typically located in topographic declinations between hills. These appear to channel water only during storm events, remaining dry for the majority of the year. Three vegetated

swales (VS-01 through VS-03) occur within the project site, and consist of topographic features that have formed from rainwater runoff, and only exist for a short and do not have connectivity to other water features, or occur along a roadside and have formed as a result of construction of the access road.

Two seasonal wetlands occur in topographic depressions in the northern portion of the project site at the base of a north-aspect slope, where water runoff from the hillside pools for a sufficient period to create wetland hydrology, soils, and vegetation. Seasonal wetland swales (SWS-01 through SWS-04) occur primarily in the southern portion of the project site. These features are similar to seasonal wetlands except that they are linear in shape due to topographic and hydrologic attributes.

3.5 Sensitive Resources and Habitats

The project site contains a number of sensitive resources or habitats, including the thirteen potentially jurisdictional features described above, and the riparian and oak woodland habitats (Figure 5). The location and extent of riparian habitat on the property includes the arroyo willow thickets along Copeland Creek as depicted in Figure 3.

Riparian habitat within the site is considered sensitive by CDFW (California Fish and Game code Section 1602), which requires a Lake and Streambed Alteration Agreement (LSAA) for any activity that will substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or deposit debris, waste or other materials that could pass into any river, stream or lake. Impacts to wetlands and waters under jurisdiction of the ACOE, CDFW, or the RWQCB would be considered potentially significant under CEQA. Impacts to these features would require permitting in the form of a LSAA, 404 or 401 Clean Water Act permit, and would require mitigation in the form of preservation or creation of similar habitat.

3.6 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal.

The Sonoma Valley Wildlife Corridor stretches from Sonoma Mountain (located east of the project site) across Sonoma Creek and the valley floor, and east to the top of the Mayacama mountain range. This corridor is approximately five miles long and 0.75-mile wide at its narrowest point.

Although this corridor is recognized as an important corridor for wildlife within Sonoma County, it is located approximately five miles east of the project site.

The project site has value as a potential habitat linkage between areas of adjacent grassland and other habitats. Copeland Creek flows from east to west through the site, and this corridor is likely used by several special-status and common wildlife species as cover and foraging habitat, and to move between adjacent similar habitats.

4 POTENTIAL CONSTRAINTS TO DEVELOPMENT AND RECOMMENDATIONS

This section addresses potential constraints to proposed future development of the property based on the presence of sensitive biological resources, and potential impacts to these resources associated with the development of the site. Recommendations to address potential biological resource constraints are described below.

4.1 Vegetation Communities and Land Cover Types

Project design that avoids and/or minimizes impacts to sensitive vegetation communities and land cover types within the site, including riparian habitat and aquatic resources under jurisdiction of CDFW, ACOE or RWQCB, can avoid/minimize the need for resource agency permits and mitigation requirements under CEQA. If avoidance is not possible, impacts on riparian/aquatic resources regulated by CDFW and/or ACOE will likely require appropriate regulatory permits; and impacts to vegetation communities considered significant under CEQA may result in the need for measures to mitigate these impacts. Significant impacts would include removal or degradation of these habitats, as well as temporary disturbances due to installation of stream crossings or dewatering activities. All of the natural vegetation communities identified on site provide suitable habitat for a variety of special-status plant and animal species, as discussed below.

4.2 Special-Status Plants and Wildlife

Plants

Destruction of individual plants or populations of plants would be considered potentially significant under CEQA. To avoid impacts to special-status plants within the project site, focused rare plant surveys should be performed during the blooming season for Franciscan onion, Sonoma alopecurus, bent-flowered fiddleneck, pappose tarplant, fragrant fritillary, congested-headed hayfield tarplant, Jepson's leptosiphon, and two-fork clover within suitable habitat. If any of these plants or populations of plants are detected during focused surveys, avoidance is recommended.

Ms. Mary Grace Pawson

Subject: Biological Resources Assessment for the Copeland Creek Detention Basin and Trail Project, Sonoma County, California

Where avoidance is not possible, consultation with CDFW would be necessary to determine if potential propagation, relocation or other mitigation options would be required for the project. If none of the species are detected during surveys, no further surveys or mitigation would be necessary; however, if more than one year lapses between protocol surveys and the initiation of construction, preconstruction surveys are recommended to identify any annual special-status plant species present within the project footprint.

Native Birds

All native birds in California are protected by the federal Migratory Bird Treaty Act (MBTA), and Section 3503.5 of the California Fish and Game Code specifically protects raptors. Ground disturbance that would result in destruction of active bird nests could potentially be a violation of the MBTA and the Fish and Game Code, as well as a significant impact under CEQA.

Dudek recommends a nesting bird survey be completed during the nesting season by a qualified biologist no earlier than two weeks prior to construction (February 1–September 1, depending on the species) to determine if any native birds are nesting on or near the site (including a 250-foot buffer for raptors). If any active nests are observed during surveys, a suitable avoidance buffer around the nests should be established by the qualified biologist based on species, location, and extent and type of planned construction activity. These nests would be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist. Dudek also recommends removing any habitat (i.e., trees and vegetation) outside of the breeding bird season to avoid impacts to nesting birds.

To avoid impacts to active burrowing owl burrows on the site, a 250-foot buffer around each active burrow is recommended. The buffer should be implemented by installing Environmentally Sensitive Area (ESA) fencing (or other high visibility fencing) prior to the onset of construction. Installation of this fencing should be monitored by a qualified biologist to determine if the burrowing owls exhibit agitated behavior (distress calls, leaving the burrow, etc.). If these behaviors are observed by the qualified biologist during installation of fencing or during construction, the biologist should stop work in the vicinity of the burrows and initiate consultation with CDFW to determine appropriate next steps to avoid further disturbance to active burrows.

Mammals

Impacts to foraging bats would be considered potentially significant under CEQA. Limiting construction activities to daylight hours would avoid impacts to foraging bats on the site.

Anadromous Fish

Impacts to coho salmon, steelhead, or critical habitat in Copeland Creek potentially resulting from the diversion of flow into the detention basin and subsequent discharge back into Copeland Creek, as well as pollution, sedimentation, or other impacts associated with the construction and operation of the detention basin would be considered potentially significant under CEQA and the Endangered Species Act. A National Marine Fisheries Service (NMFS) Biological Assessment (BA) will be required to evaluate the potential impacts of the construction and operation (diversion of flow into the basin and subsequent discharge back into the creek) of the detention basin on coho salmon, steelhead, and critical habitat in Copeland Creek. Additionally, any impacts to these species or their habitat would require consultation under Section 7 of the Endangered Species Act.

Avoidance of Copeland Creek is recommended to ensure that no adverse impacts to coho salmon, steelhead, or critical habitat occur as a result of project activities. However, the construction of a diversion weir and basin discharge structures may potentially adversely impact these species and their critical habitat. Additionally, appropriate Best Management Practices (BMPs) including straw wattles, silt fencing, and other erosion control measures should be installed at least 25 feet from the creek prior to initiation of construction activities to avoid sedimentation of the creek.

4.3 Wildlife Corridors

The property is not recognized as an important wildlife corridor by any regional or state agency or jurisdiction and is not considered critical to the ecological functioning of adjoining open space areas. However, Copeland Creek serves as a corridor that provides cover and food resources for many different wildlife species, and is likely used by several common and special-status species when moving between similar habitats in the region. Impacts to Copeland Creek and/or associated riparian vegetation could be considered significant under CEQA and would trigger the need for regulatory authorizations.

4.4 Potentially Jurisdictional Wetlands

Impacts to wetland/aquatic jurisdictional features would potentially require authorization from the resource agencies listed in Section 3.5 in the form of regulatory permits (e.g., Clean Water Act Section 404 Nationwide Permit, Section 401 Water Quality Certification, and CDFG Code Section 1602 Streambed Alteration Agreement, respectively). These permits typically include measures to minimize and/or mitigate these impacts. Impacts to these resources would also be considered a significant impact under CEQA.

If impacts to jurisdictional features cannot be avoided, early consultation with the associated resource agencies is recommended to discuss and address the potential impacts, determine the

permits that would be required prior to the impacts, and stipulations and measures required by the permits to mitigate the impacts. Appendix E provides a detailed jurisdictional delineation report and related recommendations, which include the following:

- To the maximum extent feasible, improvements shall avoid wetlands and waterways. If avoidance is not possible, consultation and appropriate authorizations will be required from the ACOE, RWQCB, CDFW, and USFWS for impacts to wetlands and federally-listed species habitat. Mitigation for all impacted wetlands will be required by purchasing credits in a conservation bank or through compensatory mitigation either on site or off site at similar wetlands. Exact mitigation ratios and methods will be determined through the permitting process.
- Appropriate avoidance buffers shall be established around any wetland or waterway adjacent to staging, parking, or roadway improvement areas. These buffers will consist of a 100-foot no-construction zone that will minimize disturbance to a wetland from adjacent development.
- Sediment and erosion control BMP's shall be utilized for all construction adjacent to wetlands. BMPs may include, but are not limited to, hydroseeding, installation of biodegradable straw wattles, covering stockpiles with tarps, and silt fencing.
- Minimize vegetation removal to the maximum extent feasible at the Copeland Creek bridge crossing. Vegetation removal and the installation of the bridge crossing will require authorization from the CDFW under Section 1602 of the Fish and Game Code. If feasible, a clear-span bridge crossing should be installed to minimize potential impacts to the creek channel or banks.

4.5 Sensitive Resources and Habitats

Impacts to environmentally sensitive habitats, including riparian corridors, wetlands, oak woodlands, and habitats supporting rare, threatened, or endangered species would be considered potentially significant under CEQA. Any project activities that could potentially result in impacts to these habitats or associated special-status species would require permits from CDFW; therefore, project design that avoids impacts to these resources is recommended. Similarly, the Sonoma County Tree Ordinance requires a permit for removal of any landmark or heritage trees. If avoidance is not feasible, a certified arborist should be consulted to identify any landmark or heritage trees on the project site before they are removed.

If you have any questions about the survey or this report, please feel free to call me at 530.217.8952 or email lachter@dudek.com.

Ms. Mary Grace Pawson

Subject: *Biological Resources Assessment for the Copeland Creek Detention Basin and Trail Project, Sonoma County, California*

Sincerely,



Lisa Achter
Wildlife Biologist

DUDEK

lachter@dudek.com

530.217.8952

Att: *Figures 1–5*

Appendix A – Plant Species Observed

Appendix B – Jurisdictional Delineation

Appendix C – Special-Status Plant Species with Known or Potential Occurrence

Appendix D – Special-Status Wildlife Species with Known or Potential Occurrence

Appendix E – Wildlife Species Observed

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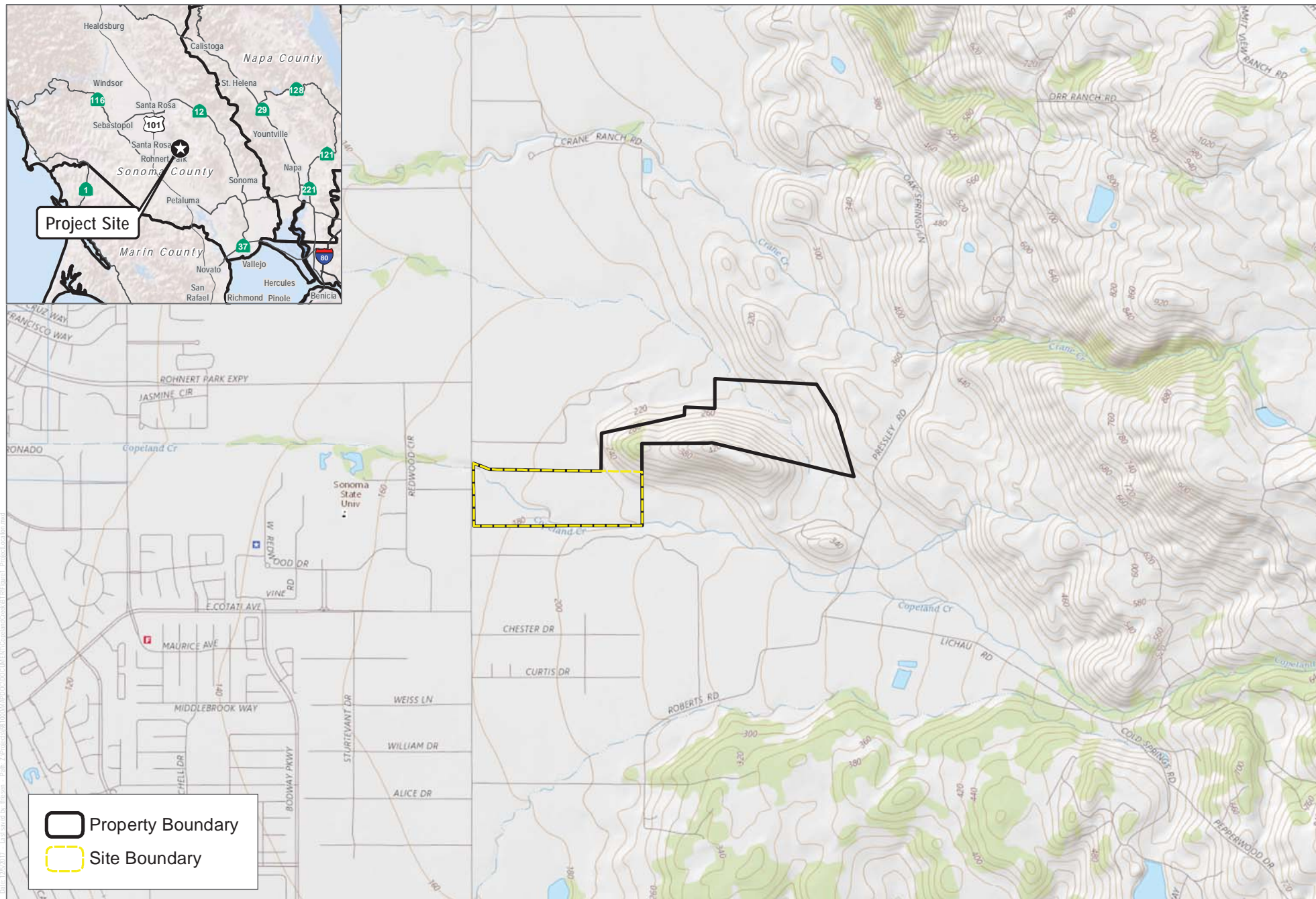
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Ms. Mary Grace Pawson

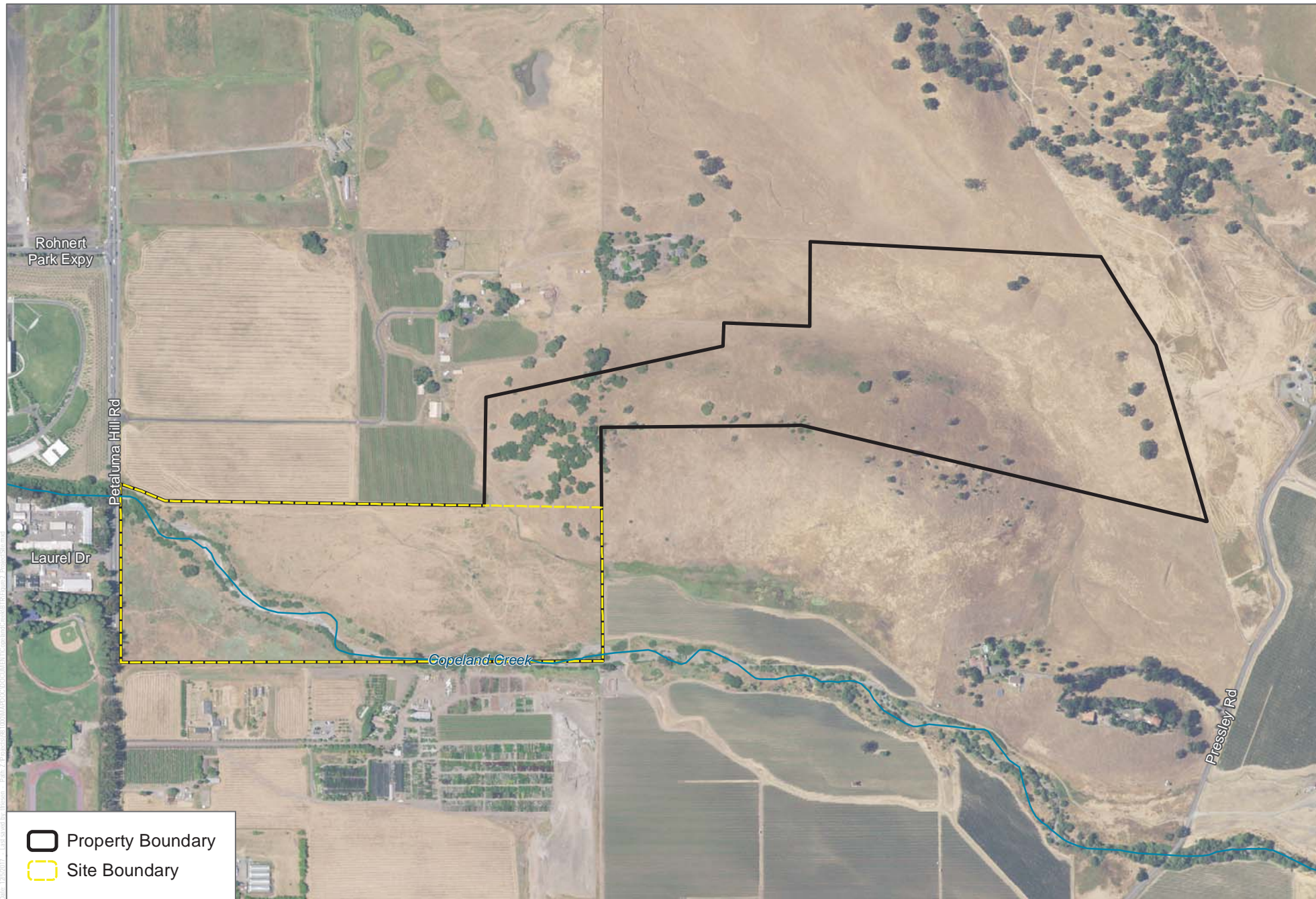
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Project, Sonoma County, California*

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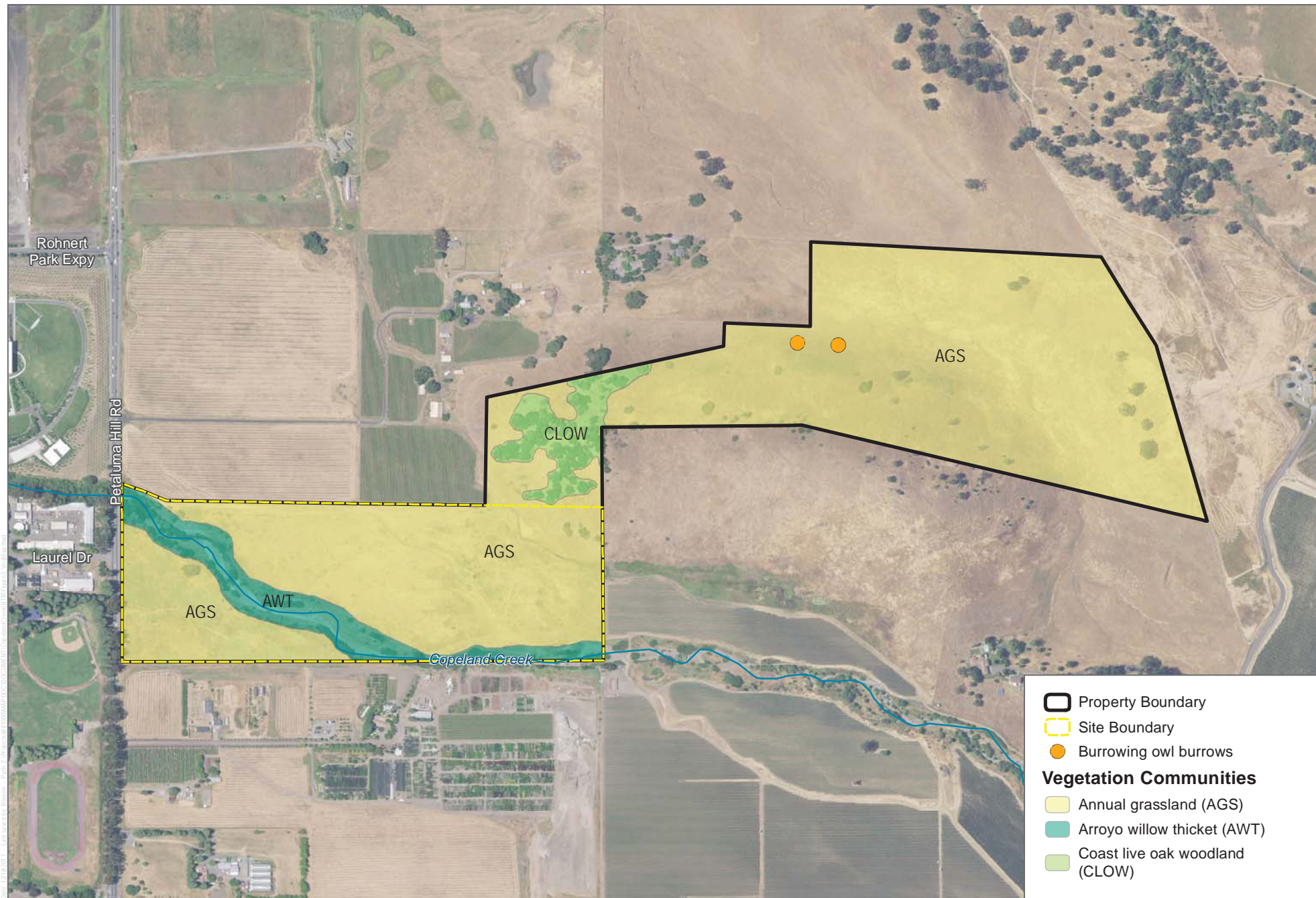
SOURCE: USGS 7.5-Minute Cotati Quadrangle
Township 6N; Range 7W; Sections 20, 21, 28, 29, 30

FIGURE 1
Site and Vicinity
Copeland Creek Regional Detention Basin and Trail Project



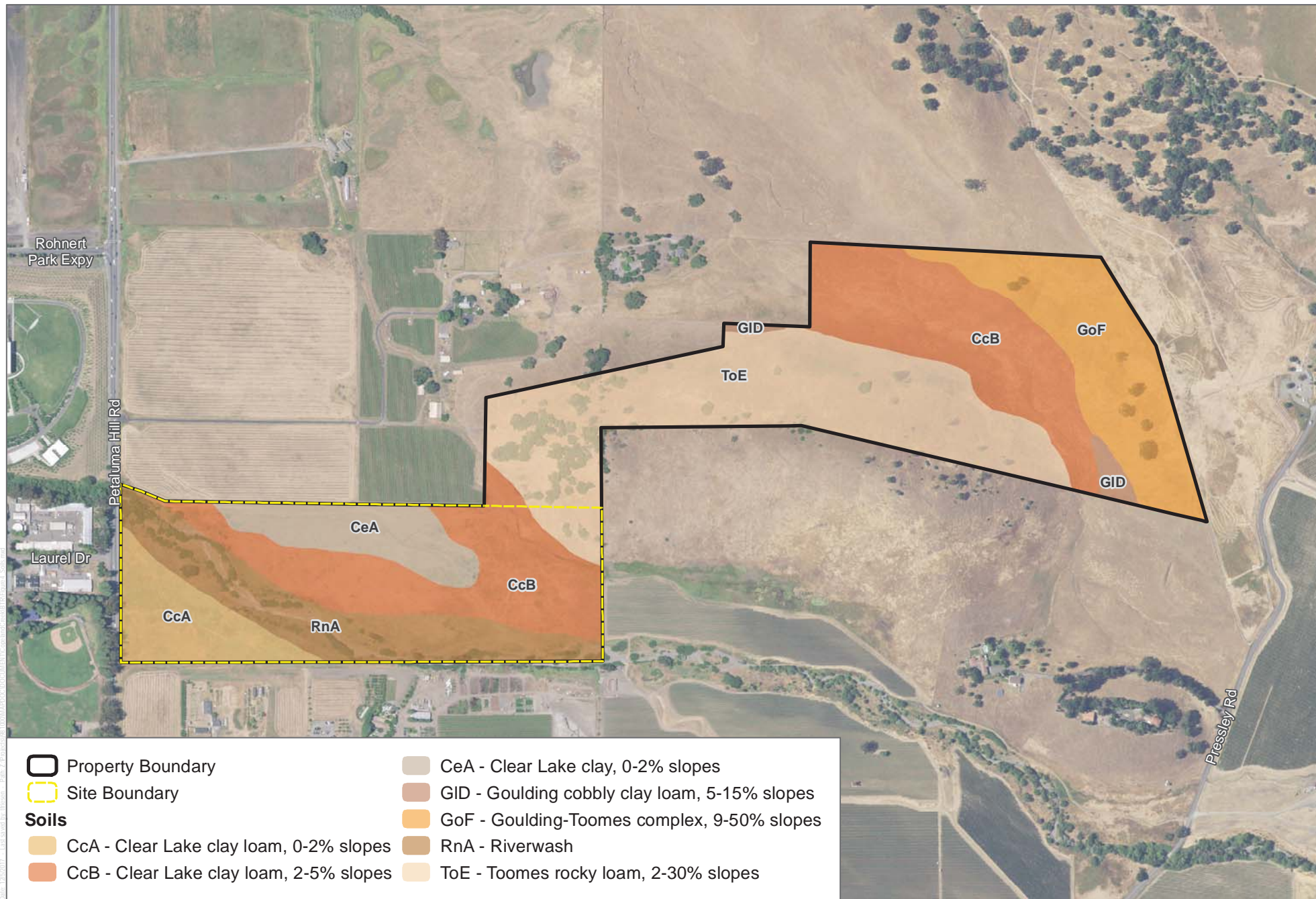
SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

FIGURE 2
Site and Vicinity
 Copeland Creek Regional Detention Basin and Trail Project



SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

FIGURE 3
Vegetation Communities
Copeland Creek Regional Detention Basin and Trail Project



SOURCE: USDA NAIP Imagery (2016); USDA NRCS SSURGO Soils Data; Sonoma County GIS

FIGURE 4
Soils



Photo 1: Active western burrowing owl burrow



Photo 2: Coast live oak woodland



Photo 3: Copeland Creek



Photo 4: Looking east from the center of the site



Photo 5: Looking west toward Copeland Creek

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SOURCE: DUDEK 2017

DUDEK

FIGURE 5

Photos/Views of Project Site

Copeland Creek Regional Detention Basin and Trail Project

APPENDIX A

Plant Species Observed

APPENDIX A
Plant Species Observed on the Copeland Creek Detention Basin and
Trail Project Site in Sonoma County, California

FERNS AND FERN ALLIES

PTERIDACEAE—BRAKE FAMILY

Pentagramma triangularis—goldback fern

MONOCOTS

POACEAE—GRASS FAMILY

- * *Avena fatua*—wild oat
- * *Bromus hordeaceus*—soft brome
- * *Cynosurus echinatus*—annual dogtails
- * *Festuca perennis*—perennial rye grass

EUDICOTS

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Toxicodendron diversilobum—poison oak

APIACEAE—CARROT FAMILY

- * *Foeniculum vulgare*—fennel

ASTERACEAE—SUNFLOWER FAMILY

- * *Carduus pycnocephalus*—Italian plumeless thistle
- * *Lactuca serriola*—prickly lettuce
- Artemisia californica*—California sagebrush
- Baccharis pilularis*—coyote brush

BRASSICACEAE—MUSTARD FAMILY

- * *Brassica nigra*—black mustard

EUPHORBIACEAE—SPURGE FAMILY

Croton setiger—dove weed

FABACEAE—LEGUME FAMILY

- * *Trifolium hirtum*—rose clover

FAGACEAE—OAK FAMILY

Quercus garryana—Oregon white oak
Quercus agrifolia—coast live oak

APPENDIX A (Continued)

GENTIANACEAE—GENTIAN FAMILY

- * *Centaurium tenuiflorum*—slender centaury

GERANIACEAE—GERANIUM FAMILY

- * *Erodium botrys*—longbeak stork's bill

LYTHRACEAE—LOOSESTRIFE FAMILY

- * *Lythrum hyssopifolia*—hyssop loosestrife

MYRTACEAE—MYRTLE FAMILY

- * *Eucalyptus globulus*—Tasmanian bluegum

POLYGONACEAE—BUCKWHEAT FAMILY

- * *Rumex crispus*—curly dock

ROSACEAE—ROSE FAMILY

- * *Rubus armeniacus*—Himalayan blackberry

SALICACEAE—WILLOW FAMILY

Salix lasiolepis—arroyo willow

Salix exigua—sandbar willow

SAPINDACEAE—SOAPBERRY FAMILY

Aesculus californica—California buckeye

* signifies introduced (non-native) species

APPENDIX B

Jurisdictional Delineation

DRAFT

PRELIMINARY JURISDICTIONAL DELINEATION OF WETLANDS AND WATERS OF THE UNITED STATES COPELAND CREEK DETENTION BASIN AND TRAIL PROJECT SONOMA COUNTY, CALIFORNIA

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JANUARY 2018

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

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Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ACOE	U.S. Army Corps of Engineers
CDFW	California Department of Fish and Wildlife
CWA	Clean Water Act
ED	ephemeral drainage
ID	intermittent drainage
OHWM	ordinary high water mark
RWQCB	Regional Water Quality Control Board
SW	seasonal wetlands
SWANCC	<i>Solid Waste Agency of Northern Cook County v. United States Corps of Engineers</i>
SWS	seasonal wetland swale
TNW	traditional navigable waters
VS	vegetated swale

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Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

1 INTRODUCTION

This report documents the results of a preliminary jurisdictional delineation of wetlands and other waters of the United States conducted for the approximately 128-acre City of Rohnert Park's Copeland Creek Detention Basin and Trail Project (project) located east of the City of Rohnert Park, Sonoma County, California. The results of this delineation are preliminary until verified by the San Francisco District of the U.S. Army Corps of Engineers (ACOE).

1.1 Project Location

The project consists of the 128-acre Anderson Property (Study Area) located just west of the City of Rohnert Park, in Sonoma County (County) (see Figure 1, Project Location). The Study Area is located on the east side of Petaluma Hill Road and Sonoma State University. The region was historically used for ranch and farmland. The Study Area is situated in Township 6 North, Range 7 West, and Sections 20, 21, 28, 29 and 30 in the 7.5-minute U.S. Geological Survey (USGS) Cotati quadrangle. The center of the site location corresponds to 38°20'37" north latitude and 122°39'33" west longitude.

1.2 Directions to the Study Area

From San Francisco, travel north on U.S. Highway 101. Take exit 476 for Old Redwood Highway toward Penngrove. In approximately 1.5 miles, take a right onto Main Street / Petaluma Hill Road. Travel 3.3 miles and the site is on the right, just after crossing over Copeland Creek.

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2 PROJECT DESCRIPTION

The project involves construction of an off-channel detention basin and future recreational trail on undeveloped pastureland east of Petaluma Hill Road with a physical address of 6626 Petaluma Hill Road (Figure 2, Site and Vicinity; APN 047-132-038). The detention basin would be designed for 10-year storm event detention and construction would include associated maintenance and access structures adjacent to Copeland Creek on the western portion of the property. A recreational trail is proposed for the western portion of the property and would extend from the basin to Crane Creek Regional Park to the west.

The multi-benefit project, developed with collaboration from the Sonoma County Water Agency (SCWA), Sonoma County Agricultural Preservation and Open Space District, Sonoma County Regional Parks, County of Sonoma, and City of Rohnert Park would improve flood protection for area residents, reduce sediment deposits downstream in Copeland Creek, assist groundwater recharge, improve salmonid habitat, provide salmonid refugia, conserve energy resulting from reduced pumping and importation of potable surface water, and create a site for public access and education about the hydrology, water cycle, fish habitat, and geomorphic processes in the upper Copeland Creek Watershed.

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3 REGULATORY BACKGROUND

3.1 Federal Statutes and Regulations – U.S. Army Corps of Engineers

Any person or public agency proposing to discharge dredged or fill material into waters of the United States, including jurisdictional wetlands, must obtain a permit from the ACOE.

As defined in Title 33 of the Code of Federal Regulations, Section 328.3, waters of the United States include all waters subject to interstate or foreign commerce, including tidal waters, interstate waters and wetlands, many intrastate waters, impoundments, tributaries, the territorial seas, and adjacent wetlands. Specifically, Section 328.3 of Title 33 of the Code of Federal Regulations defines waters of the United States as follows:

1. For purposes of the Clean Water Act, 33 U.S.C. 1251 et seq. and its implementing regulations, subject to the exclusions in paragraph (b) of this section, the term “waters of the United States” means:
 1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
 2. All interstate waters, including interstate wetlands;
 3. The territorial seas;
 4. All impoundments of waters otherwise identified as waters of the United States under this section;
 5. All tributaries, as defined in paragraph (c)(3) of this section, of waters identified in paragraphs (a)(1) through (3) of this section;
 6. All waters adjacent to a water identified in paragraphs (a)(1) through (5) of this section, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.
2. The following are not “waters of the United States” even where they otherwise meet the terms of paragraphs (a)(4) through (8) of this section.
 1. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act.
 2. Prior converted cropland. Notwithstanding the determination of an area’s status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

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For non-tidal waters of the United States, the lateral limits of ACOE jurisdiction extend to the ordinary high water mark (OHWM) when no adjacent wetlands are present. As defined in the Code of Federal Regulations, Title 33, Section 328.3(e), the OHWM is “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.” If adjacent wetlands are present, the jurisdiction extends to the limit of wetlands.

Wetlands are “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3). Wetlands are jurisdictional if they meet this definition and the definition of waters of the United States. The ACOE predominantly uses *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008) methodology to determine the presence of wetlands. According to the manual (ACOE 2008), three criteria must be satisfied to classify an area as a wetland: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation); (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils); and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology). Further guidance for determining jurisdictional limits in ephemeral riverine systems in the Arid West is detailed in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2010).

In the last two decades, two major court cases have affected the jurisdictional reach of Section 404 of the Clean Water Act (CWA): (1) *Solid Waste Agency of Northern Cook County v. United States Corps of Engineers* (SWANCC), and (2) *Rapanos v. United States* and *Carabell v. United States Army Corps of Engineers* (Rapanos).

Solid Waste Agency of Northern Cook County v. United States Corps of Engineers

In 1986, in an attempt to clarify the reach of its jurisdiction, ACOE stated that Section 404(a) of the CWA extends to intrastate waters (51 FR 41217):

- a. Which are or would be used as habitat by birds protected by Migratory Bird Treaties; or
- b. Which are or would be used as habitat by other migratory birds which cross state lines; or
- c. Which are or would be used as habitat for endangered species; or
- d. Used to irrigate crops sold in interstate commerce.

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In 2001, the U.S. Supreme Court, in its judgment on the *SWANCC* case, held that the Code of Federal Regulations, Title 33, Section 328.3(a)(3), as clarified and applied to the *SWANCC* site pursuant to the Migratory Bird Rule (51 FR 41217), exceeded the authority granted to ACOE under Section 404(a) of the CWA. Therefore, ACOE may not rely on the Migratory Bird Rule to establish a “significant nexus” to interstate or foreign commerce. In additional language, the U.S. Supreme Court majority opinion reasoned that these types of waters required some nexus to navigable waters. Although no formal guidance was issued by ACOE interpreting the extent to which the *SWANCC* decision would limit jurisdictional determinations, in practice, ACOE considers intrastate waters as waters of the United States where there is an appropriate connection to navigable water or other clear interstate commerce connection (*Solid Waste Agency of Northern Cook County v. United States Corps of Engineers* 2001).

Rapanos v. United States and Carabell v. United States Army Corps of Engineers

In 2006, the U.S. Supreme Court again issued an opinion on the extent ACOE had jurisdiction over certain waters under Section 404 of the CWA. The *Rapanos/Carabell* consolidated decisions addressed the question of jurisdiction over attenuated tributaries to waters of the United States, as well as wetlands adjacent to those tributaries (*Rapanos v. United States* 2006).

ACOE and the U.S. Environmental Protection Agency issued guidance related to the *Rapanos* decision on June 5, 2007. The guidance identifies the waters the agencies (i.e., ACOE and the U.S. Environmental Protection Agency) will assert jurisdiction over categorically and on a case-by-case basis based on the reasoning of the *Rapanos* opinions. In summary, ACOE will continue to assert jurisdiction over the following:

- Traditional navigable waters (TNWs) and their adjacent wetlands.
- Non-navigable tributaries of TNWs that are relatively permanent (e.g., tributaries that typically flow year-round or have a continuous flow at least seasonally) and wetlands that directly abut such tributaries (e.g., not separated by uplands, berm, dike, or similar feature).

Note: Relatively permanent waters do not include ephemeral tributaries, which flow only in response to precipitation, and intermittent streams, which do not typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months).

- Non-relatively permanent waters, if determined (on a fact-specific analysis) to have a significant nexus with a TNW—including non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally, wetlands adjacent to such tributaries, and wetlands adjacent to but that do not directly abut such tributaries. Absent a significant nexus, jurisdiction is lacking.

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A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW. Principal considerations when evaluating significant nexus include volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, including hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands. Certain ephemeral waters in the Arid West are distinguishable from the geographic features described previously, where such ephemeral waters are tributaries and have a significant nexus to downstream TNWs. For example, these ephemeral tributaries may serve as a transitional area between the upland environment and the TNW. These ephemeral tributaries may provide habitat for wildlife and aquatic organisms in downstream TNWs and support nutrient cycling, sediment retention and transport, pollutant trapping and filtration, and improvement of water quality.

Swales or erosional features (e.g., gullies and small washes characterized by low-volume, infrequent, or short-duration flow) are generally not considered waters of the United States because they are not tributaries or they do not have a significant nexus to downstream TNWs. In addition, ditches (including roadside ditches) excavated wholly in and draining only uplands, and that do not carry a relatively permanent flow of water, are generally not considered waters of the United States because they are not tributaries or they do not have a significant nexus to downstream TNWs. Even when not jurisdictional under Section 404 of the CWA, these features may still be jurisdictional at state or local levels, such as under Section 401 of the CWA, the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and Section 1602 of the California Fish and Game Code.

Prior to the *Rapanos* guidance, ACOE required its regional districts to request concurrence for only those jurisdictional determinations where the district was planning to assert jurisdiction over a non-navigable, intrastate, isolated water and/or wetland. The agencies now require that all determinations for non-navigable, intrastate, isolated waters be submitted for ACOE and U.S. Environmental Protection Agency review prior to the district making a final decision on the jurisdictional determination.

ACOE-Regulated Activities

Under Section 404 of the CWA, ACOE regulates activities that involve a discharge of dredged or fill material, including but not limited to grading, placing riprap for erosion control, pouring concrete, laying sod, and stockpiling excavated material into waters of the United States. Activities that generally do not involve a regulated discharge (if performed specifically in a manner to avoid discharges) include driving pilings, providing some drainage channel maintenance activities, and excavating without stockpiling.

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3.2 State of California

California Department of Fish and Wildlife

Pursuant to Section 1602 of the California Fish and Game Code, the California Department of Fish and Wildlife (CDFW) regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife.

In Title 14 of the California Code of Regulations, Section 1.72, CDFW defines a “stream” (including creeks and rivers) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.”

In Title 14 of the California Code of Regulations, Section 1.56, CDFW’s definition of “lake” includes “natural lakes or man-made reservoirs.” Diversion, obstruction, or change to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by entering into an agreement pursuant to Section 1602 of the Fish and Game Code.

California Regional Water Quality Control Board

Pursuant to Section 401 of the federal CWA, the Regional Water Quality Control Board (RWQCB) regulates discharging waste, or proposing to discharge waste, within any region that could affect a water of the state (California Water Code, Section 13260(a)), pursuant to provisions of the Porter-Cologne Act. “Waters of the state” are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (California Water Code, Section 13050(e)). Before ACOE will issue a CWA Section 404 permit, applicants must receive a CWA Section 401 Water Quality Certification from the RWQCB. If a CWA Section 404 permit is not required for the project, the RWQCB may still require a permit (i.e., Waste Discharge Requirement) for impacts to waters of the state under the Porter-Cologne Act.

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4 METHODOLOGY

4.1 Literature Review

Prior to conducting fieldwork at the Study Area, Dudek biologists reviewed the following available resources:

- *Preliminary Advisory Assessment Waters of the United States, Anderson 53 Site, Petaluma Hill Road (East Side), Sonoma County, CA* (Winfield 2016)
- 1:200-scale aerial photograph (Bing Maps 2017; Google Earth 2017)
- Historic aerial photographs (Historicaerials.com 2017)
- U.S. Geological Survey 7.5-minute topographic quadrangle (USGS 2017)
- U.S. Department of Agriculture Natural Resources Conservation Services Web Soil Survey (USDA 2017a)
- National Wetland Inventory (USFWS 2017)

4.2 Jurisdictional Delineation

Potential wetland waters of the United States were delineated based on methodology described in the 1987 Corps of Engineers Wetlands Delineation Manual (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008). Non-wetland waters of the United States are delineated based on the presence of an OHWM, as determined using the methodology in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (ACOE 2010). Dudek biologists collected photographic records that represent the on-site habitats and wetlands (Appendix A).

4.3 Flora

To the extent feasible due to the timing of the survey and the phenology of the plants, Dudek biologists identified all plant species encountered to the lowest taxonomic level needed to determine wetland plant indicator status. Those species that could not be immediately identified were brought into the laboratory for further investigation. Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2017), and common names follow the U.S. Department of Agriculture Natural Resources Conservation Service PLANTS Database (USDA 2017b). Wetland plant indicator status for each plant was determined using the Arid West regional list of the National

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Wetland Plant List: 2016 (ACOE 2016). Appendix A shows representative site photographs, and Appendix B contains a complete list of plant species observed during the field surveys.

4.4 Field Visit

Dudek biologists Laura Burris conducted a survey of the Study Area on November 9, 2017 to document current site conditions and assess potential wetlands and other waters of the United States. Dudek biologists reviewed previous wetland delineation mapping efforts presented in the *Preliminary Advisory Assessment Waters of the United States, Anderson 53 Site, Petaluma Hill Road (East Side), Sonoma County, CA* (Winfield 2016) prepared for the lower 53 acres of the Study Area. Dudek biologists took sample points in representative locations and, when necessary to assess the potential for hydric soils, hydrophytic vegetation and hydrology. Sample point data sheets are included in this report as Appendix C. In addition to the sample point data stations to assess wetlands, data at four stream transects were collected to assess stream hydrology and geomorphology. Evidence of an OHWM was present in the form of shelving, undercut banks, wracking, and changes in sediment and vegetation. Data sheets for stream transects are included in Appendix C. Results of the sample points and OHWM analyses are presented in Section 6, Results of the Jurisdictional Delineation.

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5 PHYSICAL CHARACTERISTICS

5.1 Land Uses

The Study Area is currently undeveloped land that appears to have been used for grazing in the past.

Surrounding land use includes rural residential to the north that are dominated by annual grassland habitat, Crane Creek Regional Park to the east, Sonoma State University and residential development to the west, and a nursery to the south of the Copeland Creek corridor. No structures exist on the project site.

5.2 Topography and Soils

Elevation throughout the Study Area varies from approximately 175 feet above mean sea level (AMSL) in the southwestern flatlands to 400 feet AMSL in the hills of the western portion of the site. Nine soil types occur in the Study Area (Figure 3, Soils; USDA 2017a). These soil types consist of Alluvial land, sandy; Clear Lake clay loam, 0% to 2% slopes; Clear Lake clay loam, 2% to 5% slopes; Clear Lake clay, sandy substratum, drained, 0% to 2% slopes; Clear Lake clay, ponded, 0% to 2% slopes; Goulding cobbly clay loam, 5% to 15% slopes; Goulding5-Toomes complex, 9% to 50% slopes; Riverwash; and Toomes rocky loam, 2% to 30% slopes.

Alluvial land and riverwash are derived from alluvium and are primarily associated with Copeland Creek. Clear Lake clay loams consist of alluvium derived from sedimentary rock. Goulding cobbly clay loam and the Goulding-Toomes complex are residuum weathered from metavolcanics. Toomes rocky loam is residuum weathered from igneous rock.

The Clear Lake clay loams and riverwash are hydric soils as defined by the U.S. Department of Agriculture (USDA 2017a).

5.3 Watershed and Hydrology

The Study Area is within the Upper Laguna de Santa Rosa subwatershed (Hydrologic Unit Code 180101100701). This subwatershed is part of the greater Laguna de Santa Rosa watershed, which drains approximately 254 square miles through approximately 435 miles of stream to the Russian River (SRCD 2017). The Russian River eventually drains to the Pacific Ocean west of the Study Area.

Two streams shape the local hydrology of the Study Area: Copeland Creek at the southern extent, and an unnamed tributary to Hinebaugh Creek in the northern extent. Both channels

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transport water from east to west through the Study Area and appear to be fed primarily by rainwater runoff from surrounding hills.

The National Wetlands Inventory (NWI) identifies Copeland Creek as permanently flooded, unconsolidated bottom, lower perennial riverine habitat (R2UBH; USFWS 2017). Additionally, the NWI shows an ephemeral drainage in the northeastern portion of the Study Area as seasonally flooded, streambed, intermittent riverine (R4SBC).

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6 RESULTS OF THE JURISDICTIONAL DELINEATION

The land cover within the project area consists of a combination of terrestrial non-vegetative land covers and natural vegetation communities, as well as aquatic land cover types. The vegetation communities and land covers have been adapted from *A Manual of California Vegetation*, second edition (Sawyer et.al 2009), and the California Wildlife Habitat Relationships System (CDFW 2017, originally published by Mayer and Laudenslayer in 1988). The following vegetation communities and land cover types were documented on site and are described in further detail in the following sections: California annual grassland, arroyo willow thickets, coast live oak woodland, intermittent drainage, ephemeral drainage, vegetated swale, seasonal wetland, and seasonal wetland swale.

6.1 Terrestrial Habitat Types

California Annual Grassland. California annual grassland is the dominant land cover within the Study Area. This vegetation community is dominated by non-native grasses such as slender wild oats (*Avena barbata*), soft chess (*Bromus hordeaceus*), and hedgehog dog tail grass (*Cynosurus echinatus*). Also present in this vegetation community are non-native forbs such as bristly ox-tongue (*Helminthotheca echioides*), Italian plumeless thistle (*Carduus pycnocephalus*), woolly distaff thistle (*Carthamus lanatus*), and rose clover (*Trifolium hirtum*). Native forbs such as rosinweed (*Calycadenia truncata*) are present in low density.

Arroyo Willow Thickets (*Salix lasiolepis* Shrubland Alliance). Arroyo willow (*Salix lasiolepis*) is the dominant tree in this vegetation community. This vegetation community occurs along the Copeland Creek in the southern portion of the Study Area. Other species observed with the arroyo willow thickets along Copeland Creek include non-native fennel (*Foeniculum vulgare*), blue gum (*Eucalyptus globulus*), and Himalayan blackberry (*Rubus armeniacus*).

Coast Live Oak Woodland (*Quercus agrifolia* Woodland Alliance). One stand of coast live oak woodland occurs within the central portion of the Study Area and coast live oak is dominant in the canopy. This is a mature stand and co-occurs with other hardwood species such as Oregon white oak (*Quercus garryana*) and California buckeye (*Aesculus californica*). Annual grasses similar to those found in the California annual grassland dominate the understory of this habitat type.

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6.2 Aquatic Habitat Types

Other Waters of the United States

There are four types of drainages within the Study Area: creek, intermittent drainage, ephemeral drainage, and vegetated swale (refer to Figures 4-1 through 4-4, Delineation of Wetlands and Waters of the United States).

Creek. Copeland Creek (Creek-01) flows from southeast to west through the lower portion of the Study Area. This drainage flows intermittently, fed primarily by rainwater runoff from surrounding hills and tributaries east of the Study Area. Copeland Creek contains a defined bed and bank, with large cobbles to boulders in the channel. Vegetation is sparse to absent in the bed of the creek, and the banks are dominated by arroyo willow thickets for most of its length in the Study Area. Other evidence of an OHWM includes undercut banks, debris wracking, and change in sediment texture and vegetation cover. The NWI defines this channel as unconsolidated bottom, lower perennial riverine, permanently flooded; however, this system does not maintain water on an annual basis and should be classified as intermittent (USFWS 2017).

Intermittent Drainage (ID). One intermittent drainages (ID-01) occurs in the northeastern portion of the Study Area. This drainage flows when rainwater runoff from surrounding hills channels into this drainage, flowing from southeast to northwest through the Study Area. The channel contains a defined bed and bank, and evidence of an OHWM is present in the cut banks, change in vegetation, and change in sediment. Vegetation along the margins of ID-01 is consistent with the surrounding California annual grassland. There were several pockets of water remaining in the channel at the time of the survey. Water from this channel eventually connects with Hinebaugh Creek, thence the Laguna de Santa Rosa to the west of the Study Area. The NWI defines this features as seasonally flooded, intermittent streambed riverine (USFWS 2017).

Ephemeral Drainage (ED). There are two ephemeral drainages (ED-01 and ED-02) within the Study Area. Ephemeral drainages on site are typically located in topographic declinations between hills and contain marginal bed and bank; they appear to channel water only during storm events, remaining dry for much of the year. The dominant vegetation community associated with ephemeral drainages in the Study Area is California annual grassland. Both ED-01 and ED-02 channel rainwater runoff from surrounding hills to ID-01.

Vegetated Swale (VS). Three vegetated swales (VS-01 through VS-03) occur in the Study Area. VS-01 and VS-02 appear to be topographic features that have formed from rainwater runoff and only exist for a short length and do not have connectivity to other water features. They do not contain a bed or bank and no evidence of an OHWM is present. Vegetation is consistent with the

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surrounding California annual grassland. VS-03 appears to be a roadside swale formed because of construction of the access road. This swale does not have a defined bed or bank, and no evidence of an OHWM is present. VS-03 drains into seasonal wetland swales on site.

Wetlands

Two types of wetlands occur within the Study Area: seasonal wetland and seasonal wetland swale (refer to Figures 4-1 through 4-4).

Seasonal Wetlands (SW). Two seasonal wetlands occur in topographic depressions in the northern portion of the Study Area. SW-01 and SW-02 occur along a low area at the base of a north-aspect slope where water runoff from the hillside collects long enough to create wetland hydrology, soils, and vegetation. These features were delineated based on the three parameters for wetlands (refer to Appendix C for data sheets). The dominance of Italian rye grass (*Festuca perennis*) and curly dock (*Rumex crispus*) shows the presence of hydrophytic vegetation. Hydric soils are present as indicated by redoximorphic features in a depleted soil matrix (Depleted Matrix – Hydric Soil Indicator F3). The presence of oxidized rhizospheres along living roots (Wetland Hydrology Indicator C3) provides evidence of wetland hydrology.

Seasonal Wetland Swale (SWS). Seasonal wetland swales (SWS-01 through SWS-04) occur primarily in the southern portion of the Study Area. These features are similar to seasonal wetlands except that they take on linear shapes based on topography and hydrology. Vegetation in these features is similar to seasonal wetlands and the surrounding California annual grassland.

6.3 Results of Data Points

Results from three representative data points document potentially jurisdictional wetland features within the Study Area based on observable field indicators (Table 1). The data collected at each data station are included in Appendix C, on the ACOE's Wetland Determination Data Forms for the Arid West Region.

Table 1
Data Point Summary

Data Point	Wetland Determination Field Indicators			Determination	Jurisdiction
	Vegetation	Hydric Soils	Hydrology		
1	None	None	None	Upland	None
2	None	None	None	Upland	None
3	✓	✓	✓	Seasonal Wetland	ACOE, RWQCB

ACOE = U.S. Army Corps of Engineers; CDFW = California Department of Fish and Wildlife; RWQCB = Regional Water Quality Control Board.

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7 CONCLUSIONS

The Study Area supports 0.734 acres of wetlands and 6,962.856 linear feet of other waters that are anticipated to meet the criteria for jurisdictional waters of the United States, including wetlands, based on an analysis of the three parameters for wetlands (soils, hydrology, and vegetation) and connectivity/proximity to known waters of the United States.

The study area does not support TNWs, interstate waters, or waters that support interstate commerce (33 CFR 328.3(a)(1–4)); therefore, potential ACOE jurisdiction was determined based on connectivity or adjacency to off-site waters of the United States (33 CFR 328.3(a)(5)).

Figures 4-1 through 4-4 depict the geographic extent of wetland features within the Study Area, and Table 2 includes the total acreage of wetland features and other waters of the United States. An aquatic resources table in accordance with the ACOE format is provided in Appendix D.

Table 2
Wetlands and Waters in the Study Area

Feature	Cowardin Code	Potential Jurisdiction	Acres	Linear Feet
<i>Wetlands</i>				
SW-01	PEM2	ACOE/RWQCB	0.086	N/A
SW-02	PEM2	ACOE/RWQCB	0.055	N/A
SWS-01	PEM2	ACOE/RWQCB	0.336	N/A
SWS-02	PEM2	ACOE/RWQCB	0.244	N/A
SWS-03	PEM2	ACOE/RWQCB	0.010	N/A
SWS-04	PEM2	ACOE/RWQCB	0.003	N/A
Total			0.734	N/A
<i>Other Waters</i>				
Creek-01	R4	ACOE/RWQCB/CDFW	3.648	3,076.730
ID-01	R4	ACOE/RWQCB/CDFW	0.103	2,244.954
ED-01	R6	ACOE/RWQCB/CDFW	0.005	471.541
ED-02	R6	ACOE/RWQCB/CDFW	0.006	488.209
VS-01	U	None	0.001	121.840
VS-02	U	None	0.001	19.755
VS-03	U	None	0.012	539.827
Total			3.776	6,962.856

ACOE = Army Corps of Engineers; CDFW = California Department of Fish and Wildlife; ED = Ephemeral Drainage; ID = Intermittent Drainage; N/A = not applicable; PEM2 = Palustrine, emergent, nonpersistent; R4 = Riverine, intermittent; R6 = Riverine, ephemeral; RWQCB; Regional Water Quality Control Board; SW = Seasonal Wetland; SWS = Seasonal Wetland Swale; U = Upland; VS = Vegetated Swale.

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

All features identified as potentially under ACOE jurisdiction are potentially jurisdictional wetlands or waters of the United States. These findings are preliminary until verified by the San Francisco District of the ACOE.

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

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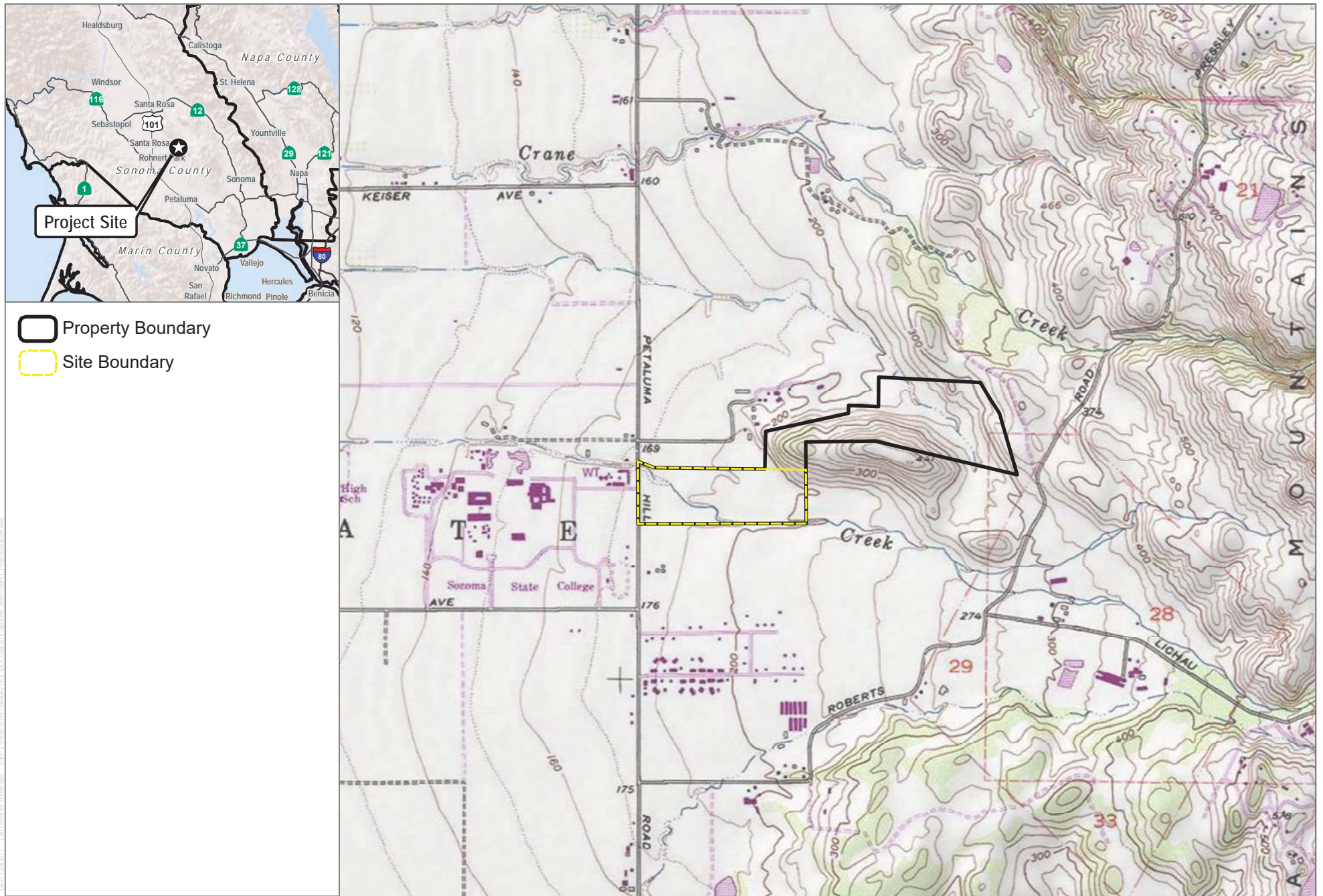
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Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

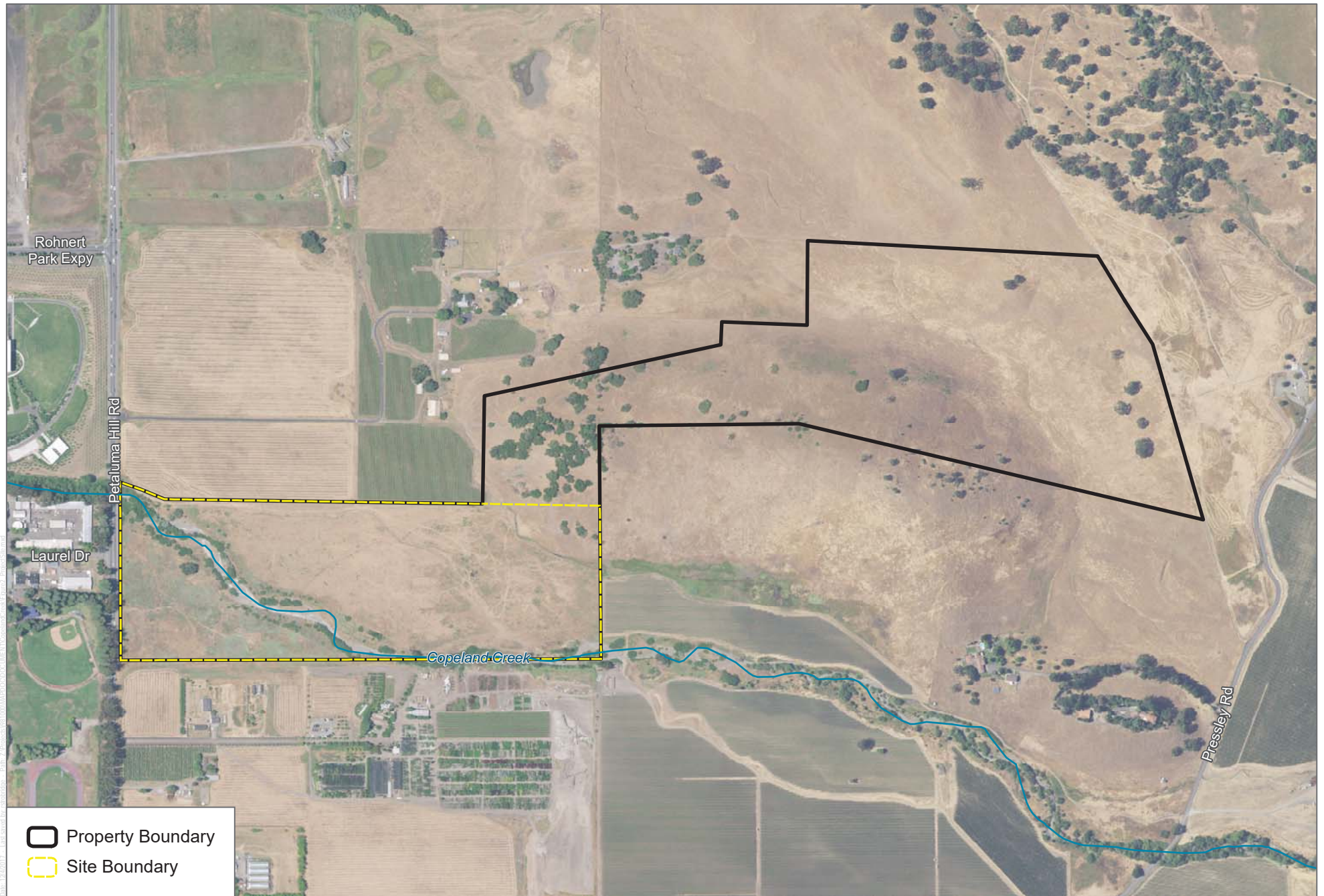
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SOURCE: USGS 7.5-Minute Cotati Quadrangle
Township 6N; Range 7W; Sections 20, 21, 28, 29, 30

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

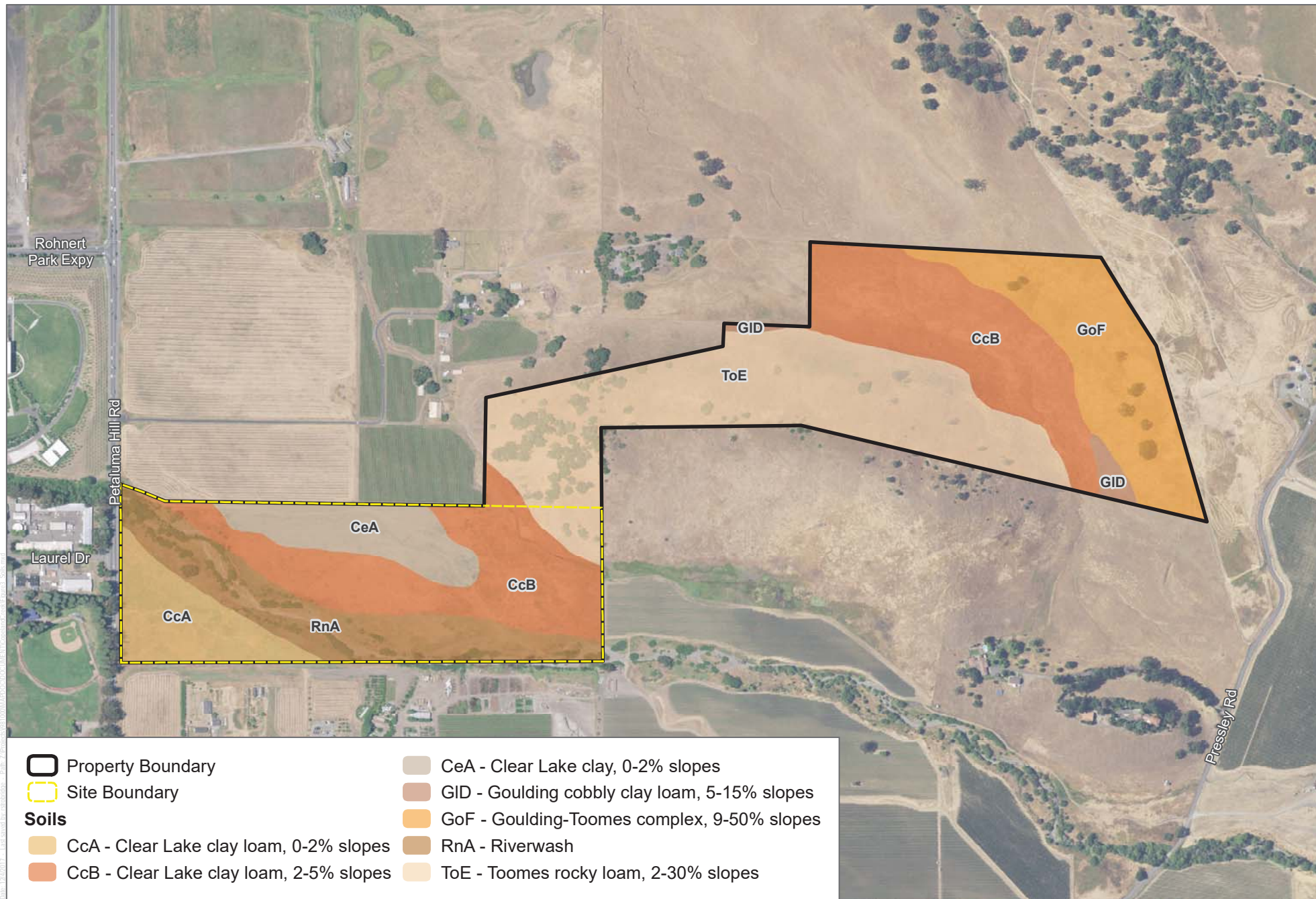
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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

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SOURCE: USDA NAIP Imagery (2016); USDA NRCS SSURGO Soils Data; Sonoma County GIS

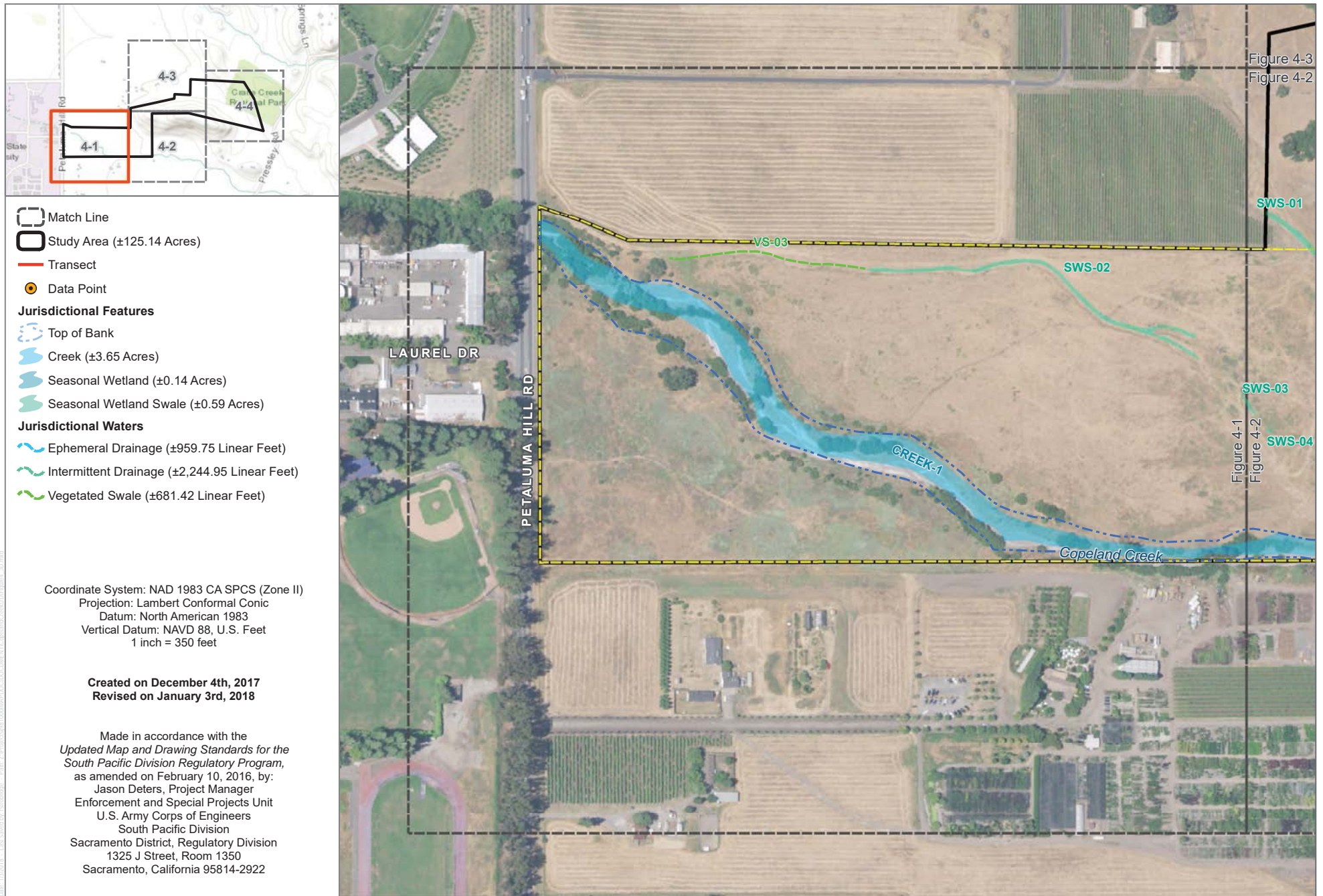
FIGURE 3

Soils

Copeland Creek Regional Detention Basin and Trail Project

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

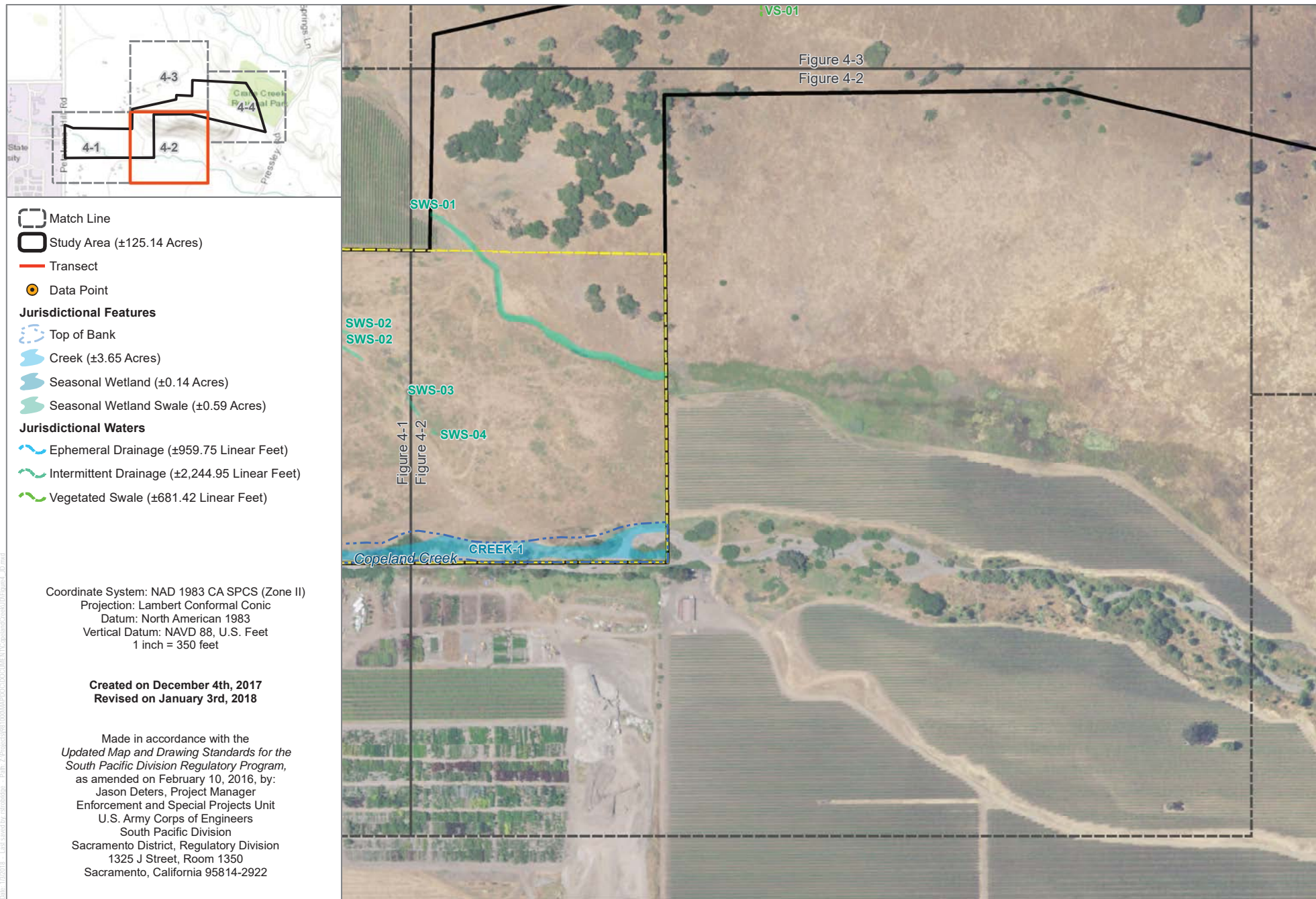
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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

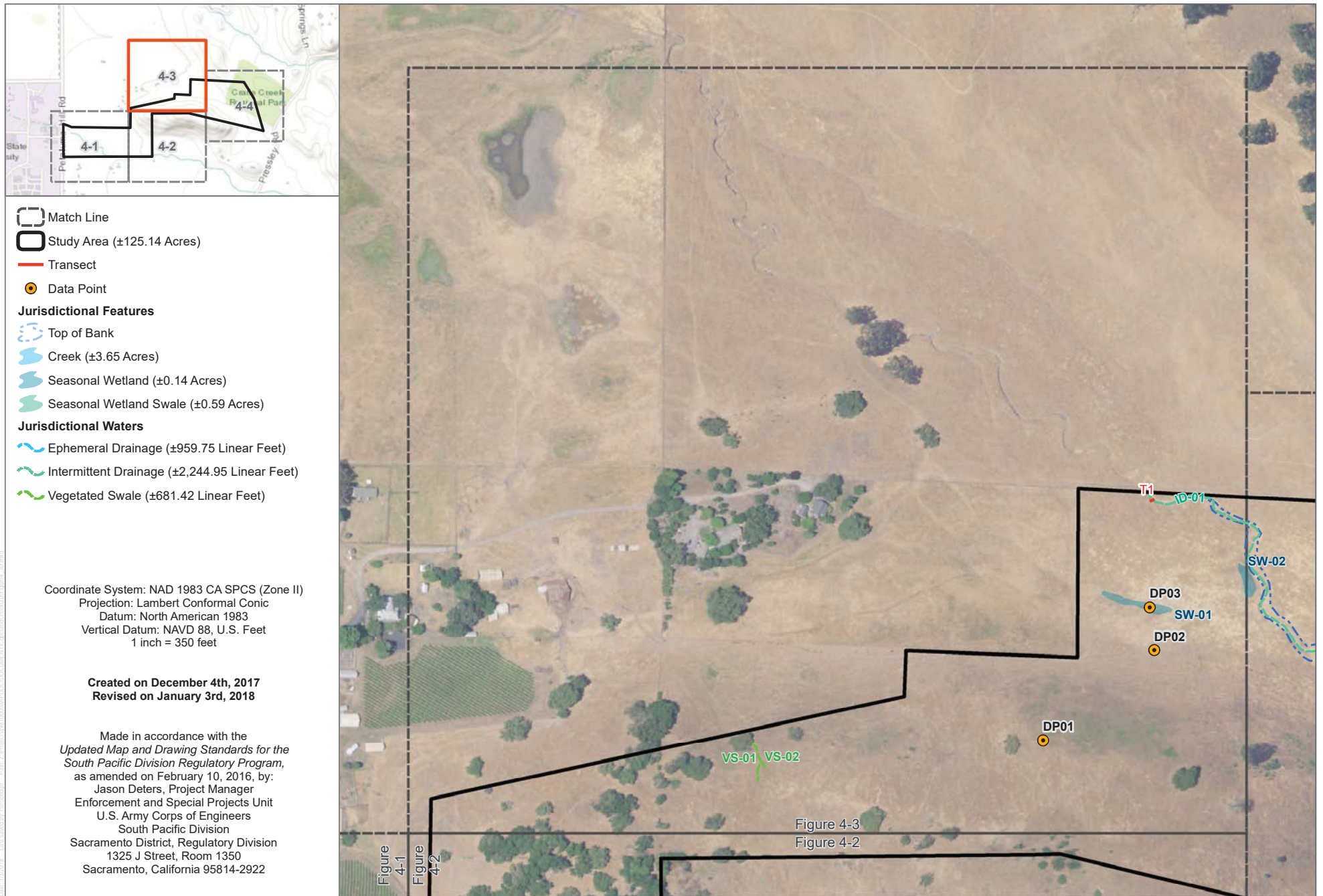
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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

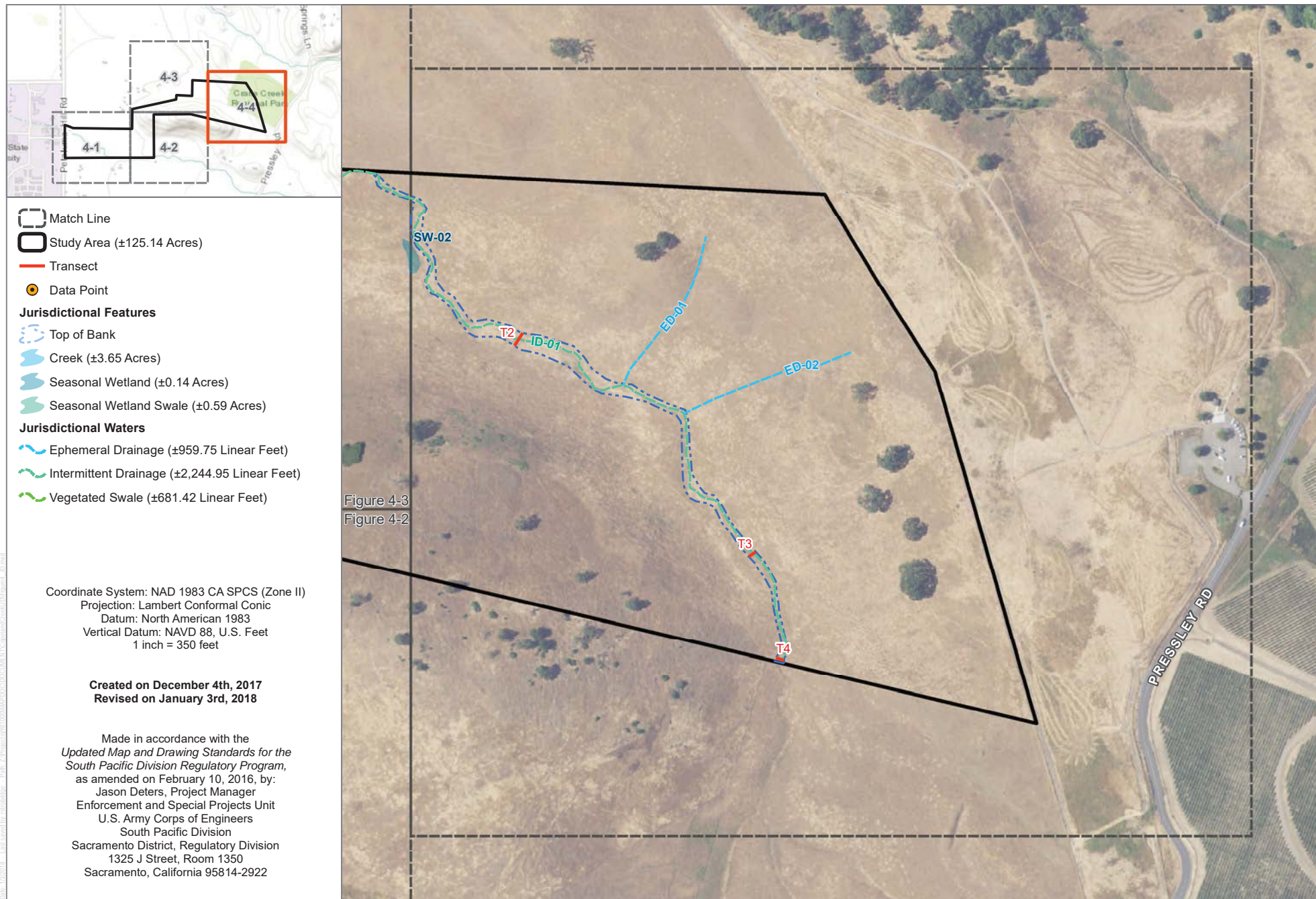
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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

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SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

Preliminary Jurisdictional Delineation of Wetlands and Waters of the United States Copeland Creek Detention Basin and Trail Project

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APPENDIX A

Representative Site Photographs

APPENDIX A

Representative Site Photographs



Photo 1: View of California annual grassland upslope of DP-01, facing south. November 9, 2017.



Photo 2: View of DP-01, facing southeast. November 9, 2017.

APPENDIX A (Continued)



Photo 3: View of SP-03 and SW-01, facing southeast. November 9, 2017.



Photo 4: View of ID-01 at T-1, facing south. November 9, 2017.

APPENDIX A (Continued)



Photo 5: View of ID-01 at T-4, facing south. November 9, 2017.



Photo 6: View of SWS-0XX, facing north. November 9, 2017.

APPENDIX A (Continued)



Photo 7: View of Copeland Creek, facing northwest. November 9, 2017.



Photo 8: View of SWS-0XX and California annual grassland, facing southwest. November 9, 2017.

APPENDIX B

Plant Species Observed

APPENDIX B

Plant Species Observed

VASCULAR SPECIES

FERNS AND FERN ALLIES

PTERIDACEAE—BRAKE FAMILY

Pentagramma triangularis—goldback fern

MONOCOTS

POACEAE—GRASS FAMILY

- * *Avena fatua*—wild oat
- * *Bromus hordeaceus*—soft brome
- * *Cynosurus echinatus*—annual dogtails
- * *Festuca perennis*—perennial rye grass

EUDICOTS

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Toxicodendron diversilobum—poison oak

APIACEAE—CARROT FAMILY

- * *Foeniculum vulgare*—fennel

ASTERACEAE—SUNFLOWER FAMILY

- * *Carduus pycnocephalus*—Italian plumeless thistle
- * *Lactuca serriola*—prickly lettuce
- Artemisia californica*—California sagebrush
- Baccharis pilularis*—coyote brush

BRASSICACEAE—MUSTARD FAMILY

- * *Brassica nigra*—black mustard

EUPHORBIACEAE—SPURGE FAMILY

Croton setiger—dove weed

FABACEAE—LEGUME FAMILY

- * *Trifolium hirtum*—rose clover

FAGACEAE—OAK FAMILY

Quercus garryana—Oregon white oak
Quercus agrifolia—coast live oak

APPENDIX B (Continued)

GENTIANACEAE—GENTIAN FAMILY

- * *Centaurium tenuiflorum*—slender centaury

GERANIACEAE—GERANIUM FAMILY

- * *Erodium botrys*—longbeak stork's bill

LYTHRACEAE—LOOSESTRIFE FAMILY

- * *Lythrum hyssopifolia*—hyssop loosestrife

MYRTACEAE—MYRTLE FAMILY

- * *Eucalyptus globulus*—Tasmanian bluegum

POLYGONACEAE—BUCKWHEAT FAMILY

- * *Rumex crispus*—curly dock

ROSACEAE—ROSE FAMILY

- * *Rubus armeniacus*—Himalayan black berry

SALICACEAE—WILLOW FAMILY

Salix lasiolepis—arroyo willow

Salix exigua—sandbar willow

SAPINDACEAE—SOAPBERRY FAMILY

Aesculus californica—California buckeye

* signifies introduced (non-native) species

APPENDIX C

Data Sheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Copeland Creek Detention Basin and Trail Project City/County: Rohnert Park/Sonoma Sampling Date: 11/9/2017
 Applicant/Owner: City of Rohnert Park State: CA Sampling Point: SP-01
 Investigator(s): L. Burris Section, Township, Range: Sec. 20, T6N, R7W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 5
 Subregion (LRR): C - Mediterranean California Lat: 38.344570 Long: -122.652866 Datum: UTM Zone 16
 Soil Map Unit Name: Toomes rocky loam, 2-30% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland?	Yes <input type="radio"/>	No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>			
Wetland Hydrology Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>			
Remarks: Sample point taken towards base of slope. Slight change in vegetation and topography warranted investigation.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 % (A/B)
4.					
Total Cover:			%		
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiply by:
2.				OBL species	x 1 = 0
3.				FACW species	x 2 = 0
4.				FAC species	x 3 = 0
5.				FACU species	85 x 4 = 340
Total Cover:			%	UPL species	10 x 5 = 50
				Column Totals:	95 (A) 390 (B)
				Prevalence Index = B/A = 4.11	
Herb Stratum				Hydrophytic Vegetation Indicators:	
1. <i>Pteridium aquilinum</i>	65	Yes	FACU	<input checked="" type="checkbox"/> Dominance Test is >50%	
2. <i>Bromus hordeaceus</i>	20	Yes	FACU	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹	
3. <i>Avena fatua</i>	10	No	Not Listed	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4.				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
5.				¹ Indicators of hydric soil and wetland hydrology must be present.	
6.				Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
7.					
8.					
Total Cover:			95 %		
Woody Vine Stratum					
1.					
2.					
Total Cover:			%		
% Bare Ground in Herb Stratum		5 %	% Cover of Biotic Crust		

Remarks:

SOIL

Sampling Point: SP-01**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-12	7.5YR 3/4	100					clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- | | |
|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.**Restrictive Layer (if present):**Type: None

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
☐ Sediment Deposits (B2) (**Riverine**)
☐ Drift Deposits (B3) (**Riverine**)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes ☐ No ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☐ No ☒
(includes capillary fringe)

Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Copeland Creek Detention Basin and Trail Project City/County: Rohnert Park/Sonoma Sampling Date: 11/9/2017
 Applicant/Owner: City of Rohnert Park State: CA Sampling Point: DP-02
 Investigator(s): L. Burris Section, Township, Range: Sec. 20, T6N, R7W
 Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 38.345156 Long: -122.652604 Datum: UTM Zone 10
 Soil Map Unit Name: Clear Lake clay loam, 2 to 5% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland?	Yes <input type="radio"/>	No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>			
Wetland Hydrology Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>			
Remarks: Base of hillslope.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1.				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)			
2.				Total Number of Dominant Species Across All Strata: <u>1</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)			
4.							
Total Cover: <u> </u> %							
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1.				Total % Cover of: <u> </u> Multiply by: <u> </u>			
2.				OBL species	<u> </u>	x 1 =	<u>0</u>
3.				FACW species	<u> </u>	x 2 =	<u>0</u>
4.				FAC species	<u>10</u>	x 3 =	<u>30</u>
5.				FACU species	<u> </u>	x 4 =	<u>0</u>
Total Cover: <u> </u> %				UPL species	<u>70</u>	x 5 =	<u>350</u>
				Column Totals:	<u>80</u>	(A)	<u>380</u> (B)
Herb Stratum				Prevalence Index = B/A = <u>4.75</u>			
1. <i>Avena fatua</i>	<u>60</u>	<u>Yes</u>	<u>Not Listed</u>	Hydrophytic Vegetation Indicators:			
2. <i>Rumex crispus</i>	<u>10</u>	<u>No</u>	<u>FAC</u>	<input checked="" type="checkbox"/> Dominance Test is >50%			
3. <i>Croton setiger</i>	<u>10</u>	<u>No</u>	<u>Not Listed</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹			
4.				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
5.				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
6.				¹ Indicators of hydric soil and wetland hydrology must be present.			
7.							
8.							
Total Cover: <u>80</u> %				Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>			
Woody Vine Stratum							
1.							
2.							
Total Cover: <u> </u> %							
% Bare Ground in Herb Stratum <u>0</u> %			% Cover of Biotic Crust <u> </u> %				

Remarks: Thick thatch layer - 20% cover.

SOIL

Sampling Point: DP-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-14	10YR 3/2	100					clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☐ No ☒
(includes capillary fringe)

Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Copeland Creek Detention Basin and Trail Project City/County: Rohnert Park/Sonoma Sampling Date: 11/9/2017
 Applicant/Owner: City of Rohnert Park State: CA Sampling Point: DP-03
 Investigator(s): L. Burris Section, Township, Range: Sec. 20, T6N, R7W
 Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR): C - Mediterranean California Lat: 38.345156 Long: -122.652604 Datum: UTM Zone 10
 Soil Map Unit Name: Clear Lake clay loam, 2 to 5% slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/>	No <input type="radio"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/>	No <input type="radio"/>		
Wetland Hydrology Present?	Yes <input checked="" type="radio"/>	No <input type="radio"/>		
Remarks: Sample point taken in depression - change in vegetation from surrounding upland areas.				

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:			
1.				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)			
2.				Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0 %</u> (A/B)			
4.							
Total Cover: <u> </u> %							
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:			
1.				Total % Cover of: <u> </u> Multiply by:			
2.				OBL species	<u> </u>	x 1 =	<u>0</u>
3.				FACW species	<u> </u>	x 2 =	<u>0</u>
4.				FAC species	<u>70</u>	x 3 =	<u>210</u>
5.				FACU species	<u> </u>	x 4 =	<u>0</u>
Total Cover: <u> </u> %				UPL species	<u>10</u>	x 5 =	<u>50</u>
				Column Totals:	<u>80</u>	(A)	<u>260</u> (B)
				Prevalence Index = B/A = <u>3.25</u>			
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators:			
1. <i>Rumex crispus</i>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<input checked="" type="checkbox"/> Dominance Test is >50%			
2. <i>Festuca perennis</i>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹			
3. <i>Croton setiger</i>	<u>10</u>	<u>No</u>	<u>Not Listed</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4.				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
5.							
6.							
7.							
8.							
Total Cover: <u>80 %</u>							
<u>Woody Vine Stratum</u>				¹ Indicators of hydric soil and wetland hydrology must be present.			
1.				Hydrophytic Vegetation Present?			
2.				Yes <input checked="" type="radio"/> No <input type="radio"/>			
Total Cover: <u> </u> %							
% Bare Ground in Herb Stratum <u>20 %</u>		% Cover of Biotic Crust <u> </u> %					

Remarks:

SOIL

Sampling Point: DP-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture ³	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-14	10YR 3/1	94	7.5YR 4/6	6	C	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.³Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:⁴

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

⁴Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☒ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒

Depth (inches): _____

Water Table Present? Yes ☐ No ☒

Depth (inches): _____

Saturation Present? Yes ☐ No ☒
(includes capillary fringe)

Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX D
Aquatic Resources Spreadsheet

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
SW-01	CALIFORNIA	PEM		Area	0.0859	ACRE	NRPWW	38.34531397	-122.65314370	
SW-02	CALIFORNIA	PEM		Area	0.0553	ACRE	NRPWW	38.34549044	-122.65211140	
SWS-01	CALIFORNIA	PEM		Area	0.3359	ACRE	NRPWW	38.34171999	-122.65874840	
SWS-02	CALIFORNIA	PEM		Area	0.244	ACRE	NRPWW	38.34183466	-122.66180950	
SWS-03	CALIFORNIA	PEM		Area	0.0102	ACRE	NRPWW	38.34103450	-122.66000200	
SWS-04	CALIFORNIA	PEM		Area	0.0034	ACRE	NRPWW	38.34084477	-122.65980150	
Creek-01	CALIFORNIA	R4		Linear	3,076.73	FOOT	NRPW	38.34079266	-122.66297970	
ID-01	CALIFORNIA	R4		Linear	2,244.95	FOOT	NRPW	38.34458907	-122.65057530	
ED-01	CALIFORNIA	R6		Linear	471.541	FOOT	NRPW	38.34508119	-122.64966920	
ED-02	CALIFORNIA	R6		Linear	488.209	FOOT	NRPW	38.34458916	-122.64874550	
VS-01	CALIFORNIA	U		Linear	121.841	FOOT	UPLAND	38.34412703	-122.65671850	
VS-02	CALIFORNIA	U		Linear	19.755	FOOT	UPLAND	38.34408973	-122.65669010	
VS-03	CALIFORNIA	U		Linear	539.827	FOOT	UPLAND	38.34214456	-122.66457910	

APPENDIX C

Special-Status Plant Species with Known or Potential Occurrence

APPENDIX C

Special-Status Plant Species with Known or Potential Occurrence in the Vicinity of the Copeland Creek Detention Basin and Trail Project in Sonoma County, California

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion	None/None, 1B.2	Perennial bulbiferous herb. Cismontane woodland, valley and foothill grassland. Elevation 170–1,000 feet. Blooms May–Jun.	Moderate potential to occur. The oak woodland and grassland onsite provide potentially suitable habitat for this species. The nearest documented occurrence is located approximately 5.5 miles north of the project site (CDFW 2017).
<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Sonoma alopecurus	Endangered/None, 1B.1	Perennial herb. Marshes and swamps (freshwater), riparian scrub. Elevation 15–1,200 feet. Blooms May–Jul.	Moderate potential to occur. The riparian scrub onsite provides potentially suitable habitat for this species. The nearest documented occurrence is located approximately 4.7 miles west of the project site (CDFW 2017).
<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	None/None, 1B.2	Perennial deciduous shrub. Broadleaved upland forest (openings), chaparral, cismontane woodland. Elevation 390–6,560 feet. Blooms Apr–Jul.	Low potential to occur. The oak woodland provides marginally suitable habitat for this species. The nearest documented occurrence for this species is located approximately 8 miles northeast of the project site (CDFW 2017).
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	None/None, 1B.2	Annual herb. Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation 5–1,640 feet. Blooms Mar–Jun.	Moderate potential to occur. The oak woodland and grassland onsite provide potentially suitable habitat for this species. The nearest documented occurrence for this species is located approximately 5.5 miles north of the project site (CDFW 2017).
<i>Arctostaphylos densiflora</i>	Vine Hill manzanita	None/Endangered, 1B.1	Perennial evergreen shrub. Chaparral (acid marine sand). Elevation 160–395 feet. Blooms Mar–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Arctostaphylos stanfordiana</i> ssp. <i>decumbens</i>	Rincon Ridge manzanita	None/None, 1B.1	Perennial evergreen shrub. Chaparral (rhyolitic), cismontane woodland. Elevation 245–1,215 feet. Blooms Feb–Apr.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Astragalus claranus</i>	Clara Hunt's milk-vetch	Endangered/Threatened, 1B.1	Annual herb. Chaparral (openings), cismontane woodland, valley and foothill grassland. Elevation 245–900 feet. Blooms Mar–May.	Not expected to occur. Although the oak woodland and grassland onsite may provide suitable habitat for this species, it has not been documented within 10 miles of the project site (CDFW 2017).

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	None/None, 1B.2	Annual herb. Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation 0–195 feet. Blooms Mar–Jun.	Not expected to occur. The site lacks suitable adobe clay soils for this species. The nearest documented occurrence for this species is located approximately 6.4 miles south of the project site (CDFW 2017).
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	None/None, 1B.2	Perennial herb. Chaparral, cismontane woodland, valley and foothill grassland. Elevation 145–5,100 feet. Blooms Mar–Jun.	Low potential to occur. Although the grassland onsite may provide suitable habitat for this species, the nearest documented occurrence is located approximately 10 miles east of the project site (CDFW 2017).
<i>Blennosperma bakeri</i>	Sonoma sunshine	Endangered/Endangered, 1B.1	Annual herb. Valley and foothill grassland (mesic), vernal pools. Elevation 30–360 feet. Blooms Mar–May.	Low potential to occur. There is marginally suitable habitat for this species in mesic areas of the grassland onsite; however, the site does not contain vernal pool habitat preferred by this species. The nearest documented occurrence for this species is located approximately 2.6 miles northwest of the project site (CDFW 2017).
<i>Brodiaea leptandra</i>	narrow-anthered brodiaea	None/None, 1B.2	Perennial bulbiferous herb. Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation 360–3,000 feet. Blooms May–Jul.	Low potential to occur. Although the grassland on site may provide suitable habitat for this species, the nearest documented occurrence is located approximately 9.5 miles east of the project site (CDFW 2017).
<i>Calamagrostis crassiglumis</i>	Thurber's reed grass	None/None, 2B.1	Perennial rhizomatous herb. Coastal scrub (mesic), marshes and swamps (freshwater). Elevation 30–195 feet. Blooms May–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>California macrophylla</i>	round-leaved filaree	None/None, 1B.2	Annual herb. Cismontane woodland, valley and foothill grassland. Elevation 45–3,935 feet. Blooms Mar–May.	Low potential to occur. Although the grassland on site may provide suitable habitat for this species, the nearest documented occurrence is located approximately 7.5 miles south of the project site (CDFW 2017).

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Campanula californica</i>	swamp harebell	None/None, 1B.2	Perennial rhizomatous herb. Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (freshwater), North Coast coniferous forest. Elevation 0–1,330 feet. Blooms Jun–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Castilleja uliginosa</i>	Pitkin Marsh paintbrush	None/Endangered, 1A	Perennial herb (hemiparasitic). Marshes and swamps (freshwater). Elevation 785 feet. Blooms Jun–Jul.	Not expected to occur. The site lacks suitable habitat and outside the elevation range for this species.
<i>Ceanothus confusus</i>	Rincon Ridge ceanothus	None/None, 1B.1	Perennial evergreen shrub. Closed-cone coniferous forest, chaparral, cismontane woodland. Elevation 245–3,495 feet. Blooms Feb–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus divergens</i>	Calistoga ceanothus	None/None, 1B.2	Perennial evergreen shrub. Chaparral (serpentinite or volcanic, rocky). Elevation 555–3,115 feet. Blooms Feb–Apr.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus foliosus</i> var. <i>vineatus</i>	Vine Hill ceanothus	None/None, 1B.1	Perennial evergreen shrub. Chaparral. Elevation 145–1,000 feet. Blooms Mar–May.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus masonii</i>	Mason's ceanothus	None/Rare, 1B.2	Perennial evergreen shrub. Chaparral (openings, rocky, serpentinite). Elevation 750–1,640 feet. Blooms Mar–Apr.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus purpureus</i>	holly-leaved ceanothus	None/None, 1B.2	Perennial evergreen shrub. Chaparral, cismontane woodland. Elevation 390–2,100 feet. Blooms Feb–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Ceanothus sonomensis</i>	Sonoma ceanothus	None/None, 1B.2	Perennial evergreen shrub. Chaparral (sandy, serpentinite or volcanic). Elevation 705–2,625 feet. Blooms Feb–Apr.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	None/None, 1B.2	Annual herb. Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). Elevation 0–1,380 feet. Blooms May–Nov.	High potential to occur. Seasonally mesic areas of the grassland on site provide potentially suitable habitat for this species. The nearest documented occurrence for this species is located approximately 2 miles south of the project site (CDFW 2017).

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Point Reyes bird's-beak	None/None, 1B.2	Annual herb (hemiparasitic). Marshes and swamps (coastal salt). Elevation 0–35 feet. Blooms Jun–Oct.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Chloropyron molle</i> ssp. <i>molle</i>	soft bird's-beak	Endangered/Rare, 1B.2	Annual herb (hemiparasitic). Marshes and swamps (coastal salt). Elevation 0–10 feet. Blooms Jun–Nov.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Chorizanthe valida</i>	Sonoma spineflower	Endangered/Endangered, 1B.1	Annual herb. Coastal prairie (sandy). Elevation 30–1,000 feet. Blooms Jun–Aug.	Not expected to occur. The site lacks suitable sandy soils and coastal habitat for this species.
<i>Cirsium andrewsii</i>	Franciscan thistle	None/None, 1B.2	Perennial herb. Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation 0–490 feet. Blooms Mar–Jul.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Clarkia imbricata</i>	Vine Hill clarkia	Endangered/Endangered, 1B.1	Annual herb. Chaparral, valley and foothill grassland. Elevation 160–245 feet. Blooms Jun–Aug.	Not expected to occur. This species occurs in a defined geographic region at Vine Hill, more than 10 miles northeast of the project site (CDFW 2017).
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	None/None, 2B.2	Annual vine (parasitic). Marshes and swamps (freshwater). Elevation 45–920 feet. Blooms Jul–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Delphinium bakeri</i>	Baker's larkspur	Endangered/Endangered, 1B.1	Perennial herb. Broadleaved upland forest, coastal scrub, valley and foothill grassland. Elevation 260–1,000 feet. Blooms Mar–May.	Not expected to occur. While the grassland on site may provide marginally suitable habitat for this species, it is known from environs closer to the coast. The nearest documented occurrence is located approximately 9.7 miles southwest of the project site (CDFW 2017).
<i>Delphinium luteum</i>	golden larkspur	Endangered/Rare, 1B.1	Perennial herb. Chaparral, coastal prairie, coastal scrub. Elevation 0–330 feet. Blooms Mar–May.	Not expected to occur. The site lacks suitable chaparral or coastal habitat for this species.
<i>Downingia pusilla</i>	dwarf downingia	None/None, 2B.2	Annual herb. Valley and foothill grassland (mesic), vernal pools. Elevation 0–1,460 feet. Blooms Mar–May.	Low potential to occur. There is marginally suitable habitat for this species in mesic areas of the grassland onsite; however, the site does not contain vernal pool habitat preferred by this species. The nearest documented occurrence for this species is located approximately 4.9 miles northwest of the project site (CDFW 2017).

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Eriogonum luteolum</i> <i>var. caninum</i>	Tiburon buckwheat	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation 0–2,295 feet. Blooms May–Sep.	Not expected to occur. Although there is potentially suitable habitat in the grassland on site, this species has not been previously documented within 10 miles of the project site (CDFW 2017).
<i>Fritillaria lanceolata</i> <i>var. tristulis</i>	Marin checker lily	None/None, 1B.1	Perennial bulbiferous herb. Coastal bluff scrub, coastal prairie, coastal scrub. Elevation 45–490 feet. Blooms Feb–May.	Not expected to occur. The site lacks suitable coastal habitat for this species.
<i>Fritillaria liliacea</i>	fragrant fritillary	None/None, 1B.2	Perennial bulbiferous herb. Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation 5–1,345 feet. Blooms Feb–Apr.	High potential to occur. The oak woodland and grassland on site provide suitable habitat for this species. The nearest documented occurrence for this species is located approximately 3.9 miles east of the project site (CDFW 2017).
<i>Gilia capitata</i> ssp. <i>tomentosa</i>	woolly-headed gilia	None/None, 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland. Elevation 30–720 feet. Blooms May–Jul.	Not expected to occur. Although there is potentially suitable habitat in the grassland on site, this species appears to prefer more coastal environments and has not been previously documented within 10 miles of the project site (CDFW 2017).
<i>Hemizonia congesta</i> ssp. <i>congesta</i>	congested-headed hayfield tarplant	None/None, 1B.2	Annual herb. Valley and foothill grassland. Elevation 65–1,835 feet. Blooms Apr–Nov.	High potential to occur. The grassland on site provides suitable habitat for this species. The nearest documented occurrence for this species is located approximately 2.3 miles southwest of the project site (CDFW 2017).
<i>Hesperolinon</i> <i>congestum</i>	Marin western flax	Threatened/Threatened, 1B.1	Annual herb. Chaparral, valley and foothill grassland. Elevation 15–1,215 feet. Blooms Apr–Jul.	Not expected to occur. Although there is potentially suitable habitat in the grassland on site, this species has not been previously documented within 10 miles of the project site (CDFW 2017).
<i>Horkelia tenuiloba</i>	thin-lobed horkelia	None/None, 1B.2	Perennial herb. Broadleaved upland forest, chaparral, valley and foothill grassland. Elevation 160–1,640 feet. Blooms May–Jul.	Low potential to occur. The grassland on site may provide suitable habitat for this species; however, the nearest documented occurrence for this species is approximately 7.5 miles northwest of the project site (CDFW 2017).

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Lasthenia burkei</i>	Burke's goldfields	Endangered/Endangered, 1B.1	Annual herb. Meadows and seeps (mesic), Vernal pools. Elevation 45–1,970 feet. Blooms Apr–Jun.	Low potential to occur. There is marginally suitable habitat for this species in mesic areas of the grassland onsite; however, the site does not contain vernal pool habitat preferred by this species. The nearest documented occurrence for this species is located approximately 1.9 miles northwest of the project site (CDFW 2017).
<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	None/None, 1B.2	Perennial herb. Closed-cone coniferous forest (openings), coastal scrub, meadows and seeps, marshes and swamps. Elevation 195–1,705 feet. Blooms Apr–Oct.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	Endangered/None, 1B.1	Annual herb. Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation 0–1,540 feet. Blooms Mar–Jun.	Not expected to occur. The site lacks suitable alkaline habitat for this species, and it has not been previously documented within 10 miles of the project site (CDFW 2017).
<i>Layia septentrionalis</i>	Colusa layia	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Elevation 325–3,595 feet. Blooms Apr–May.	Low potential to occur. The grassland on may provide suitable habitat for this species. The nearest documented occurrence for this species is located approximately 4.8 miles north of the project site (CDFW 2017).
<i>Legenere limosa</i>	legenere	None/None, 1B.1	Annual herb. Vernal pools. Elevation 0–2,885 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Elevation 325–1,640 feet. Blooms Mar–May.	High potential to occur. Oak woodland and grassland on site provide suitable habitat for this species. The nearest documented occurrence is located approximately 2.3 miles southeast of the project site (CDFW 2017).
<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	Pitkin Marsh lily	Endangered/Endangered, 1B.1	Perennial bulbiferous herb. Cismontane woodland, meadows and seeps, marshes and swamps (freshwater). Elevation 110–215 feet. Blooms Jun–Jul.	Not expected to occur. This species occurs at one isolated geographic location at the Pitkin Marsh, greater than 5 miles southwest of the project site.
<i>Limnanthes vinculans</i>	Sebastopol meadowfoam	Endangered/Endangered, 1B.1	Annual herb. Meadows and seeps, valley and foothill grassland, Vernal pools. Elevation 45–1,000 feet. Blooms Apr–May.	Not expected to occur. The site lacks suitable habitat for this species.

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Microseris paludosa</i>	marsh microseris	None/None, 1B.2	Perennial herb. Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation 15–1,165 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	None/None, 1B.1	Annual herb. Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Elevation 15–5,710 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>	many-flowered navarretia	Endangered/Endangered, 1B.2	Annual herb. Vernal pools (volcanic ash flow). Elevation 95–3,115 feet. Blooms May–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Penstemon newberryi</i> var. <i>sonomensis</i>	Sonoma beardtongue	None/None, 1B.3	Perennial herb. Chaparral (rocky). Elevation 2,295–4,495 feet. Blooms Apr–Aug.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.
<i>Plagiobothrys mollis</i> var. <i>vestitus</i>	Petaluma popcornflower	None/None, 1A	Perennial herb. Marshes and swamps (coastal salt), valley and foothill grassland (mesic). Elevation 30–165 feet. Blooms Jun–Jul.	Not expected to occur. Although mesic areas in the grassland onsite may provide marginally suitable habitat, the nearest documented occurrence for this species is located approximately 6.9 miles south of the project site (CDFW 2017).
<i>Pleuropogon hooverianus</i>	North Coast semaphore grass	None/Threatened, 1B.1	Perennial rhizomatous herb. Broadleaved upland forest, meadows and seeps, North Coast coniferous forest. Elevation 30–2,200 feet. Blooms Apr–Jun.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Potentilla uliginosa</i>	Cunningham Marsh cinquefoil	None/None, 1A	Perennial herb. Marshes and swamps. Elevation 95–130 feet. Blooms May–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Rhynchospora alba</i>	white beaked-rush	None/None, 2B.2	Perennial rhizomatous herb. Bogs and fens, meadows and seeps, marshes and swamps (freshwater). Elevation 195–6,695 feet. Blooms Jun–Aug.	Not expected to occur. The site lacks suitable habitat for this species.

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Rhynchospora californica</i>	California beaked-rush	None/None, 1B.1	Perennial rhizomatous herb. Bogs and fens, lower montane coniferous forest, meadows and seeps (seeps), marshes and swamps (freshwater). Elevation 145–3,315 feet. Blooms May–Jul.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Rhynchospora capitellata</i>	brownish beaked-rush	None/None, 2B.2	Perennial herb. Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. Elevation 145–6,560 feet. Blooms Jul–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Rhynchospora globularis</i>	round-headed beaked-rush	None/None, 2B.1	Perennial rhizomatous herb. Marshes and swamps (freshwater). Elevation 145–195 feet. Blooms Jul–Aug.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i>	Point Reyes checkerbloom	None/None, 1B.2	Perennial rhizomatous herb. Marshes and swamps (freshwater, near coast). Elevation 5–245 feet. Blooms Apr–Sep.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Sidalcea oregana</i> ssp. <i>valida</i>	Kenwood Marsh checkerbloom	Endangered/Endangered, 1B.1	Perennial rhizomatous herb. Marshes and swamps (freshwater). Elevation 375–490 feet. Blooms Jun–Sep.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Trifolium amoenum</i>	two-fork clover	Endangered/None, 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland (sometimes serpentinite). Elevation 15–1,360 feet. Blooms Apr–Jun.	Moderate potential to occur. The grassland onsite may provide suitable habitat for this species. The nearest documented occurrence for this species is located approximately 2.5 miles west of the project site (CDFW 2017).
<i>Trifolium buckwestiorum</i>	Santa Cruz clover	None/None, 1B.1	Annual herb. Broadleaved upland forest, cismontane woodland, coastal prairie. Elevation 340–2,000 feet. Blooms Apr–Oct.	Not expected to occur. Although the oak woodland onsite provides marginally suitable habitat, this species is not known from the same geographic region as the project site and has not been documented within 10 miles (CDFW 2017).
<i>Trifolium hydrophilum</i>	saline clover	None/None, 1B.2	Annual herb. Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation 0–985 feet. Blooms Apr–Jun.	Low potential to occur. Although the grassland onsite provides potentially suitable habitat for this species, there are no alkaline soils present. The nearest documented occurrence for this species is located approximately 1.2 miles west of the project site (CDFW 2017).

APPENDIX C (Continued)

Scientific Name	Common Name	Status (Federal/State, CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
<i>Triphysaria floribunda</i>	San Francisco owl's-clover	None/None, 1B.2	Annual herb. Coastal prairie, coastal scrub, valley and foothill grassland. Elevation 30–525 feet. Blooms Apr–Jun.	Not expected to occur. Although the grassland on site may provide suitable habitat for this species, it is restricted to coastal environs and has not been documented within 10 miles of the project site (CDFW 2017).
<i>Triquetrella californica</i>	coastal triquetrella	None/None, 1B.2	Moss. Coastal bluff scrub, coastal scrub. Elevation 30–330 feet.	Not expected to occur. The site lacks suitable habitat for this species.
<i>Viburnum ellipticum</i>	oval-leaved viburnum	None/None, 2B.3	Perennial deciduous shrub. Chaparral, cismontane woodland, lower montane coniferous forest. Elevation 705–4,595 feet. Blooms May–Jun.	Not expected to occur. The site lacks suitable habitat and is outside the elevation range for this species.

Status Legend:

FE: Federally listed as endangered

FT: Federally listed as threatened

FC: Federal Candidate for listing

DL: Delisted

SE: State listed as endangered

ST: State listed as threatened

SR: State Rare

CRPR 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere

CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere

CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

2 Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)

3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Sources:

California Native Plant Society (CNPS). 2017. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. Accessed December 2017.

APPENDIX C (Continued)

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APPENDIX D

Special-Status Wildlife Species with Known or Potential Occurrence

APPENDIX D

Special-Status Wildlife Species with Known or Potential Occurrence in the Vicinity of the Copeland Creek Detention Basin and Trail Project in Sonoma County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
<i>Invertebrates</i>				
California freshwater shrimp	<i>Syncaris pacifica</i>	Endangered/ Endangered	California freshwater shrimp is found in low to moderate gradient perennial creeks and streams where there is some emergent vegetation, high water quality, low levels of pollution and good oxygen levels. Some salinity is tolerated, although they are not found in any tidally influenced or brackish waters. Oviposition occurs in late spring and eggs hatch in June.	Not expected to occur. Copeland Creek is an intermittent stream and therefore does not provide suitable habitat for this species.
San Bruno elfin butterfly	<i>Callophrys mossii bayensis</i>	Endangered/None	The San Bruno Elfin Butterfly inhabits rocky outcrops and cliffs in coastal scrub in the coastal mountains near San Francisco Bay, in the fog-belt of steep north facing slopes that receive little direct sunlight. Elfin butterflies feed on other flowers in addition to their host plant, stonecrop (<i>Sedum spathulifolium</i>), which is associated with rocky outcrops. Adult food plants have not been fully determined. All known locations are restricted to San Mateo County.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
<i>Fish</i>				
coho salmon - central California coast ESU	<i>Oncorhynchus kisutch</i>	Endangered/ Endangered	Coho spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries. Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean. They feed on plankton and insects in freshwater and switch to a diet of small fishes while in the ocean.	High potential to occur. Suitable habitat for this species is present within Copeland Creek and they are known to occur in Copeland Creek.
longfin smelt	<i>Spirinchus thaleichthys</i>	Candidate Threatened/ Threatened, SSC	The longfin smelt is a pelagic estuarine fish. Longfin smelt generally spawn in freshwater and then move downstream to brackish water to mature. The life cycle of most longfin smelt generally requires estuarine conditions. Juvenile and adult longfin smelt have been found throughout the year in salinities ranging from pure freshwater to pure seawater, although once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 parts per thousand. Longfin smelt are thought to be restricted by high water temperatures, generally greater than 22 degrees °C. Most longfin smelt in the San Francisco Bay are believed to breed in the lower reaches of the Sacramento and San Joaquin Rivers.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	None/SSC	Splittail are endemic to the Central Valley of California and depend on both brackish-water rearing habitats in the San Francisco estuary and on floodplain and river-edge spawning habitats immediately above the estuary. Most migrate between these two habitat types on a near annual basis. They are adapted to a wide range of salinities. From November through February, adults migrate upstream in pulses in response to flow events. Adults spawn on floodplains or flooded edge habitats in March and April and then migrate back downstream. Embryos and larvae remain in flooded vegetation for 3-6 weeks during March and April.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
steelhead – central California coast DPS (NMFS)	<i>Oncorhynchus mykiss irideus</i>	Threatened/None	Central California coast steelhead (and their progeny) spawns in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). They also occur in drainages of San Francisco and San Pablo Bays. Regardless of life history strategy, for the first year or two of life rainbow trout and steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant.	High potential to occur. Suitable habitat for this species is present within Copeland Creek and they are known to occur in Copeland Creek.
<i>Amphibians and Reptiles</i>				
California giant salamander	<i>Dicamptodon ensatus</i>	None/SSC	California giant salamander occurs in wet coastal forests in or near clear, cold permanent and semi-permanent streams and seepages. Aquatic larvae transform into four-legged salamanders that live on the ground and breathe air with lungs. Neotenic adults which retain their gills and continue to live in water are found in many populations. This salamander is nocturnal, but also active in daylight in wet conditions. They can be found walking across roads on rainy nights, especially with the first heavy rains of the fall, usually in November. Adults are also found under cover objects such as rocks, logs and artificial cover.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
California red-legged frog	<i>Rana draytonii</i>	Threatened/None, SSC	California red-legged frogs occur in different habitats depending on their life stage, the season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. These frogs also breed in artificial	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area. Copeland Creek does not provide a

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
			impoundments including stock ponds, irrigation ponds, and siltation ponds. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (<i>Salix</i> spp.) are preferred, although the absence of vegetation at an aquatic site does not rule out the possibility of occupancy. Adult frogs prefer dense, shrubby or emergent riparian vegetation near deep (≥ 2 to 3 feet), still or slow moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail occur adjacent to open water.	permanent water source for this species, and the nearest occurrence record is located approximately four miles east of the site
California tiger salamander	<i>Ambystoma californiense</i>	Threatened/Threatened	California tiger salamander (CTS) may be found in riparian and wet meadow habitats, but is more common in grasslands. CTS spend most of its life cycle underground in adjacent valley oak woodland or grassland habitat, primarily in rodent burrows. Breeding takes place following the first heavy winter rains. Temporary or permanent freshwater pools or slowly flowing streams are required for egg-laying and larval development. They appear to be absent in waters containing predatory game fish.	Not expected to occur. Multiple sampling efforts for larvae and adults from 1994-2003 in the vicinity of the site resulted in negative findings, and the nearest historical documented occurrence is approximately 1.80 miles south of the site. The site is outside of the planning area for the CTS Recovery Plan.
foothill yellow-legged frog	<i>Rana boylei</i>	None/Candidate Threatened, SSC	Frequents rocky streams and rivers with rocky substrate and open, sunny banks, in forests, chaparral, and woodlands. Sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	Low potential to occur. Suitable habitat for this species occurs intermittently throughout the year within Copeland Creek. Because the creek only provides water temporarily for this species in the winter and spring, it is unlikely to occur within the project area during most of the year. This species likely moves through the site sporadically when there is water in the creek to access adjacent habitat; however, the dense nature of the vegetation along the creek within the project area likely precludes this species from staying on the site.

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
red-bellied newt	<i>Taricha rivularis</i>	None/SSC	Red-bellied newt is a stream or river dweller found in coastal woodlands and redwood forest along the coast of northern California from near Bodega, Sonoma county, to near Honeydew, Humboldt county, and inland to Lower lake and Kelsey Creek, Lake County. Adults are terrestrial, becoming aquatic when breeding. Terrestrial animals spend the dry summer in moist habitats under woody debris, rocks, in animal burrows. Juveniles apparently spend most of their time underground and are not active on the surface until near sexual maturity. Ponds, lakes, and other standing waters are avoided.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
western pond turtle	<i>Emys marmorata</i>	None/SSC	Western pond turtles use both aquatic and terrestrial habitats. They are found in rivers, lakes, streams, ponds, wetlands, ephemeral creeks, reservoirs, agricultural ditches, estuaries, and brackish waters. Western pond turtles prefer areas that provide cover from predators, such as vegetation and algae, as well as basking sites for thermoregulation. Adults tend to favor deeper, slow moving water, whereas hatchlings search for slow and shallow water that is slightly warmer. Terrestrial habitats are used for wintering and usually consist of burrows in leaves and soil. Western pond turtles also lay their eggs in terrestrial habitats. They are rarely found at altitudes above 1,500 meters.	Low potential to occur. Although Copeland Creek provides suitable habitat for this species, the nearest documented occurrence is approximately 3 miles west of the site.
<i>Birds</i>				
bank swallow	<i>Riparia riparia</i>	None/Threatened	Restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils, into which it digs nesting holes. Feeds predominantly over open riparian areas, but also over brushland, grassland, wetlands, water, and cropland.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
burrowing owl	<i>Athene cunicularia</i>	None/SSC	The burrowing owl utilizes abandoned ground squirrel burrows in open habitats and grasslands, also disturbed areas. Diet consists of insects, small mammals, reptiles and amphibians. Commonly uses burrows on levees or mounds where there are unobstructed views of possible predators such as raptors or foxes.	Present. Two burrowing owls were observed at active burrows on the site during the November 9, 2017 survey.

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
California black rail	<i>Laterallus jamaicensis coturniculus</i>	None/Threatened, FP	California black rail occurs near freshwater marshes along the margins of ponds, lakes, and water impoundments; also herb dominated wetlands on sloped ground associated with springs, canal leaks, seepage from impoundments and agricultural irrigation. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
California Ridgway's rail	<i>Rallus obsoletus obsoletus</i>	Endangered/ Endangered, FP	Populations of the California Ridgway's rail now live almost exclusively in the marshes of the San Francisco estuary. They inhabit a range of salt and brackish water marshes and tidal sloughs. They typically utilize salt marshes dominated by both pickleweed (<i>Salicornia virginica</i>) and Pacific cordgrass (<i>Spartina foliosa</i>).	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
golden eagle	<i>Aquila chrysaetos</i>	None/None, FP, BGEPA	Golden eagle is found in open country including mountains, foothills, and plains. In the west, they are found over prairie, rangeland, or desert. They are very wide-ranging in winter, and more restricted to areas with good nest sites in summer, which consist of cliff ledges or often large trees.	Moderate potential to occur. Suitable foraging habitat is present within the site, and there are recent occurrence records from the Sonoma Mountain area approximately 3 miles east of the site.
grasshopper sparrow	<i>Ammodramus savannarum</i>	None/SSC	Grasshopper sparrow is found in grasslands, hayfields and prairies. Breeds in dry fields and prairies, especially those with fairly tall grass and weeds and a few scattered shrubs. Also nests in overgrown pastures and hayfields, and sometimes in fields of other crops. May nest in small colonies. Forages for mostly insects and seeds.	Low potential to occur. Suitable habitat for this species is present within project site; however, the nearest documented occurrence is 5.5 miles east of the site.
northern spotted owl	<i>Strix occidentalis caurina</i>	Threatened/ Threatened, SSC	Northern spotted owls generally inhabit older stands of forested habitats that contain the necessary habitat characteristics for nesting and foraging, including multi-layered, multi-species canopy with moderate to high canopy closure. These stands typically contain a high number of trees with large cavities and other types of deformities; large snags (standing dead trees); an abundance of large, dead wood on the ground; and open space within and below the upper canopy for spotted owls to fly.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	None/SSC	The saltmarsh common yellowthroat remains locally numerous in areas where extensive wetlands with adjacent riparian thickets remain. In brackish and saline tidal marsh habitat around San Francisco Bay, yellowthroats prefer habitats consisting of rushes (<i>Scirpus</i> spp.), peppergrass (<i>Leipidium latifolium</i>), and <i>Juncus</i> .	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	None/SSC	San Pablo song sparrow inhabits salt marshes along the northern edge of the San Francisco and San Pablo bays, and on the south side of San Pablo Bay southwest to San Pablo Point on the Richmond headland.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
short-eared owl	<i>Asio flammeus</i>	None/SSC	Short-eared owl lives in open terrain throughout California, such as prairies and marshes. Nests on the ground and eats small mammals.	Low potential to occur. Although suitable habitat exists for this species on site, there are no documented occurrences in the vicinity of the site.
Swainson's hawk	<i>Buteo swainsoni</i>	None/Threatened	Swainson's hawk spends the breeding season in the Central Valley of California and is commonly found in agricultural areas or open grasslands containing solitary trees for nesting. Diet consists of small mammals and reptiles.	Not expected to occur. The site is outside of the known breeding range for this species.
tricolored blackbird	<i>Agelaius tricolor</i>	None/Candidate Endangered, SSC	Tricolored blackbird is a colonial species found almost exclusively in California. It utilizes wetlands, marshes and agricultural grain fields for foraging and nesting. The tricolored blackbird population has declined significantly in the past 6 years due to habitat loss and harvest of grain fields before young have fledged.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Threatened/Endangered	Western yellow-billed cuckoo inhabits woodlands, thickets, orchards, streamside groves. Breeds mostly in dense deciduous stands, including forest edges, tall thickets, dense second growth, overgrown orchards, scrubby oak woods. Often in willow groves around marshes. In the west, mostly in streamside trees, including cottonwood-willow groves in arid country. Forages by scaling through shrubs and trees, gleaning insects from foliage and branches.	Low potential to occur. Suitable riparian habitat occurs within the site; however, the nearest documented occurrence is approximately 2 miles east of the site and is from 1975.
yellow rail	<i>Coturnicops noveboracensis</i>	None/SSC	Yellow rail is highly secretive and range and abundance is incompletely known because of this. They prefer densely vegetated	Not expected to occur. Suitable habitat for this species

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
			marshes, and sedge marshes/meadows with moist soil or shallow standing water for breeding. They are very rare, but currently known to winter in a few coastal marshes and Suisun Marsh near Fairfield, California.	is not present within or adjacent to the project area.
<i>Mammals</i>				
American badger	<i>Taxidea taxus</i>	None/SSC	American badger is most abundant in drier open stages of most shrub, forest and herbaceous habitats with friable soils. Will dig burrows for cover. Will reuse burrows occasionally but also may dig new burrows each night in summer. Diet consists of rodents, small mammals, reptiles, insects, birds and carrion.	Low potential to occur. Although suitable habitat for this species is present within the site, no suitably sized burrows were observed during the November 9, 2017 survey, and the nearest documented occurrence is 4 miles SW of the project site.
pallid bat	<i>Antrozous pallidus</i>	None/SSC	Pallid bat occupies a variety of habitats including grassland, shrubland, woodland and forests from sea level up through mixed conifer forest. Roosts in caves, mines, crevices and occasionally hollow trees or buildings. Prefers open habitats for foraging.	Moderate potential to occur. Suitable foraging habitat exists within the project site, and structures and trees within and adjacent to the site could provide suitable roosting habitat.
salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	Endangered/ Endangered	The salt marsh harvest mouse occurs in tidal flats and on the shore in estuarine habitats, and in herbaceous wetlands. Occurs in salt and brackish marshes where plants provide a dense mat for cover, with a high percentage of pickleweed, along with a complex structure of other plant species. The salt marsh harvest mouse needs access to high ground for refuge/cover, especially during high tides in the winter. Diet is composed of green vegetation including salt grass and pickleweed, along with some seeds, but varies by available vegetation.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	None/SSC	Townsend's big-eared bat is found throughout most of western North America. Hibernates and roosts in caves and mines near entrances, or cave like structures such as buildings or under decks. Forages in forested habitats, along open edges.	Not expected to occur. Suitable foraging and roosting habitat for this species is not present within or adjacent to the project area.

APPENDIX D (Continued)

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Project Area
western red bat	<i>Lasiurus blossevillei</i>	None/SSC	Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Roosts primarily in trees. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas.	Not expected to occur. The oak woodland habitat on site is likely too small to provide suitable roosting habitat for this species and no suitable roosting habitat occurs in the vicinity of the site.

Status Legend:

SSC: Species of Special Concern (CDFW)

FP: Fully Protected (CDFW)

BGEPA: Bald and Golden Eagle Protection Act (CDFW)

Sources

CDFW (California Department of Fish and Wildlife). November 2017. California Natural Diversity Database (CNDDDB). Rarefind, Version 5 (Commercial Subscription). Sacramento, California. Accessed October 2017.

USFWS (U.S. Fish and Wildlife Service). 2017. Information, Planning and Conservation (IPaC). Accessed November 2017.

APPENDIX E

Habitat Assessment for California Red-legged Frog

DRAFT
California Red-Legged Frog (*Rana draytonii*)
Habitat Assessment
for the
Copeland Creek Detention Basin and Trail Project
Sonoma County, California

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FEBRUARY 2018

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

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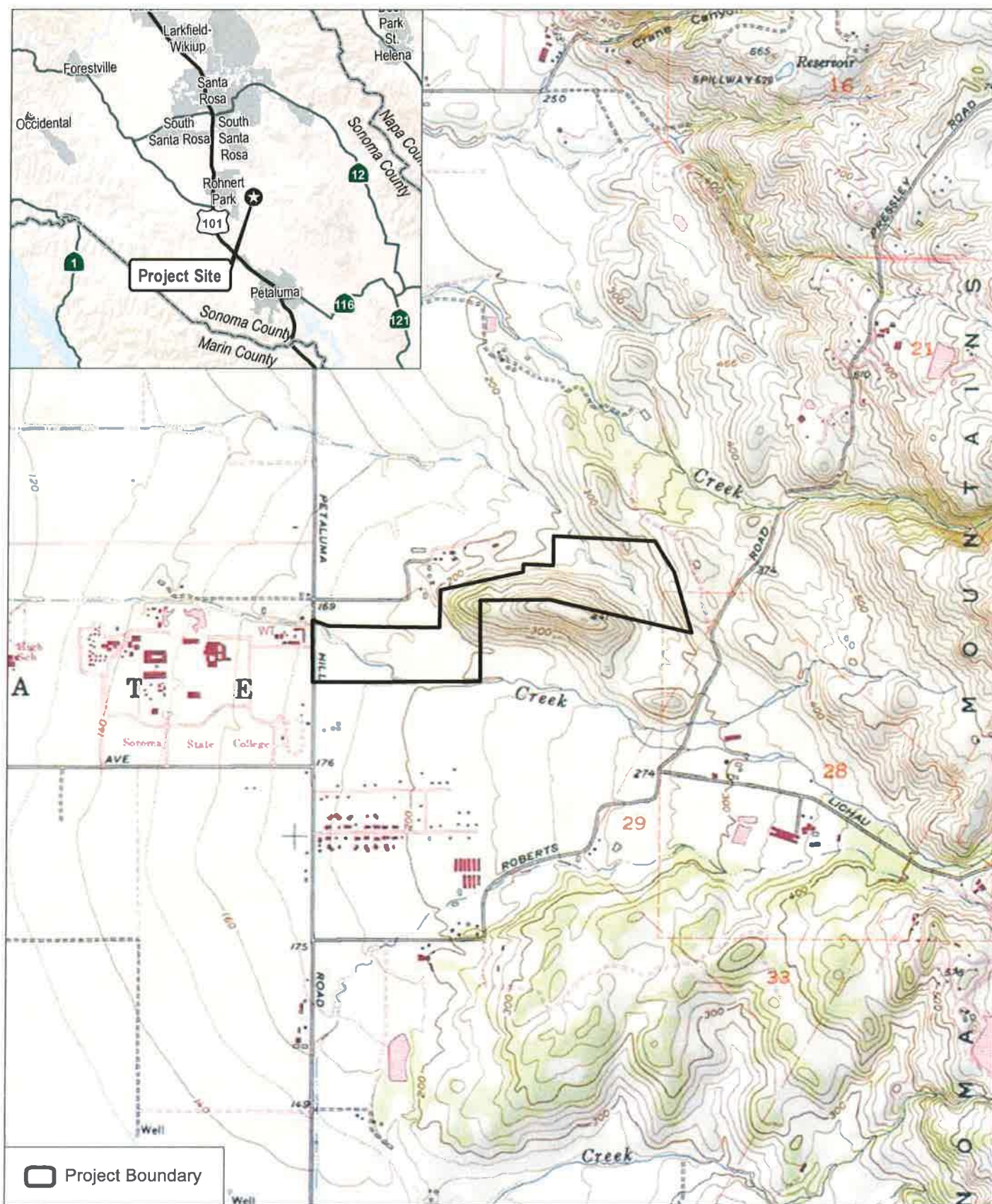
1 INTRODUCTION

Dudek conducted a habitat assessment for the Copeland Creek Detention Basin and Trail project area (Study Area) for the federally threatened California red-legged frog (*Rana draytonii*) (CRF). The project site is located east of the City of Rohnert Park near the eastern edge of the Santa Rosa Plain and just west of Sonoma Mountain in Sonoma County, California (Figure 1). The Study Area is situated immediately east of Petaluma Hill Road in Township 6 North, Range 7 West, and Sections 20, 21, 28, 29, and 30 in the 7.5-minute U.S. Geological Survey (USGS) Cotati quadrangle. Elevation within the Study Area varies from approximately 175 feet above mean sea level (AMSL) in the southwestern flatlands to 400 feet AMSL in the hills of the eastern portion of the site. The center of the site corresponds to 38°20'37" north latitude and 122°39'33" west longitude.

The 128-acre project site is characterized by relatively flat terrain in the western portion of the site, where the proposed detention basin will be located, and rolling hills in the eastern portion of the site (Figure 2). Copeland Creek flows from east to west along the southern boundary and through the southwestern corner of the site.

The proposed project involves construction of an off-channel detention basin in the southwestern portion of the site and a future recreational trail on undeveloped pastureland that will begin at Petaluma Hill Road and extend easterly to the eastern portion of the site. The detention basin would be designed for a 10-year storm event, and construction would include a diversion weir and discharge structures and associated maintenance north of Copeland Creek. The trail will connect to existing trails present in Crane Creek Regional Park immediately east of the Study Area.

These projects will be developed with collaboration from the Sonoma County Water Agency, Sonoma County Agricultural Preservation and Open Space District, Sonoma County Regional Parks, County of Sonoma, and City of Rohnert Park. The detention basin would improve flood protection for area residents, reduce sediment deposits downstream in Copeland Creek, assist groundwater recharge, improve salmonid habitat, provide salmonid refugia, conserve energy resulting from reduced pumping and importation of potable surface water, and create a site for public access and education about the hydrology, water cycle, fish habitat, and geomorphic processes in the upper Copeland Creek Watershed. The on-site trail project will complete the connection between the existing trail adjacent to Copeland Creek within the city and the Regional Park.

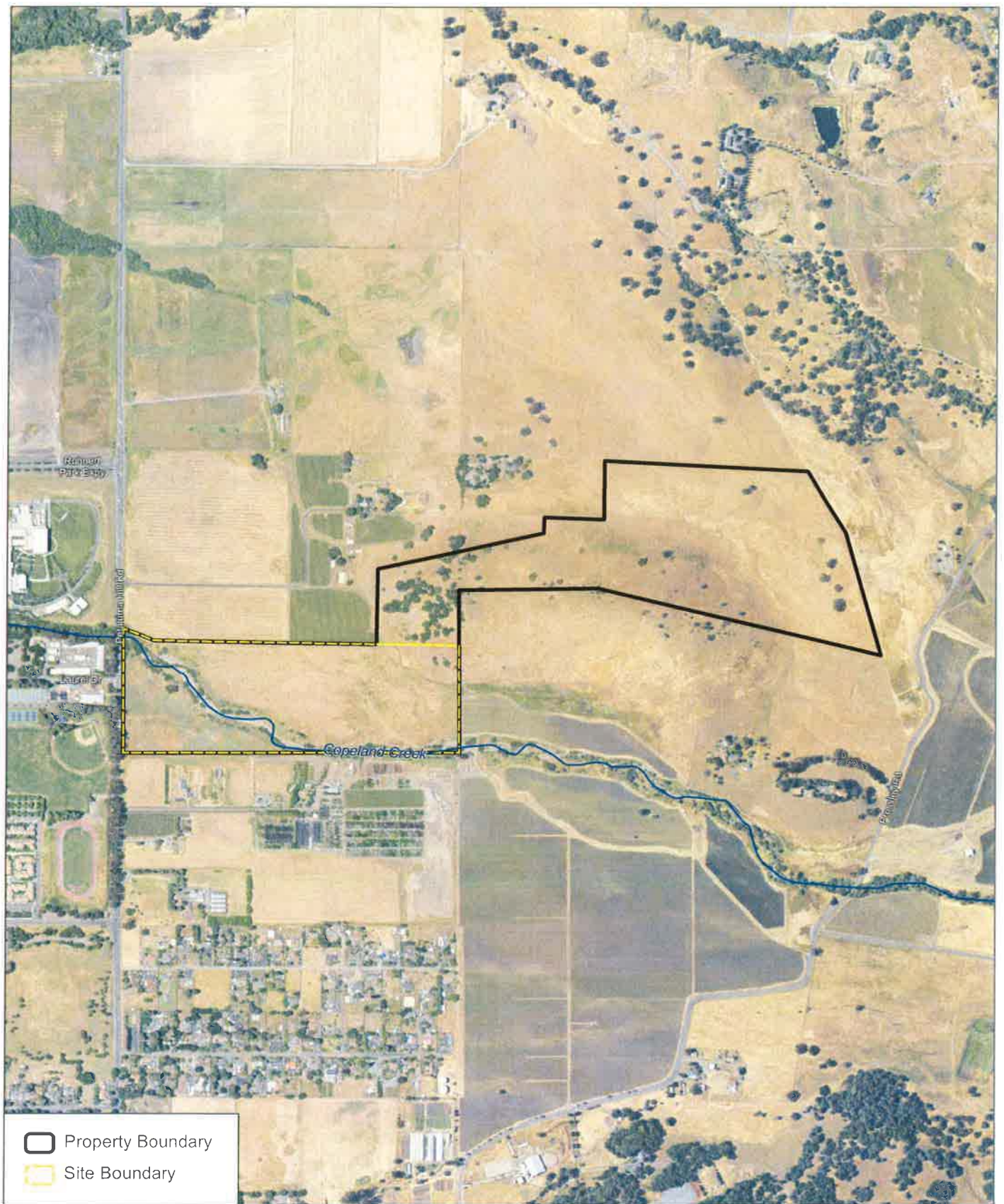


SOURCE: USGS 7.5-Minute Series Colati Quadrangle; Sonoma County GIS (2016)

FIGURE 1

Regional Map

Copeland Creek Stormwater Detention Basin



SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

DUDEK



0 500 1,000 Feet

FIGURE 2

Site and Vicinity

Copeland Creek Regional Detention Basin and Trail Project

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

1.1 Environmental Setting

Land cover types within the Study Area consist of a combination of terrestrial non-vegetative land covers and natural vegetation communities, as well as aquatic land cover types. The vegetation communities and land covers have been adapted from *A Manual of California Vegetation*, second edition (Sawyer et.al 2009), and the California Wildlife Habitat Relationships System (CDFW 2017), originally published by Mayer and Laudenslayer in 1988.

1.1.1 Vegetation Community Types

Vegetation communities and land cover types documented on site, including annual grassland, arroyo willow thicket, and coast live oak (*Quercus agrifolia*) woodland are described in detail as follows (Figure 3).

California Annual Grassland. California annual grassland is the dominant land cover within the Study Area. This vegetation community is dominated by non-native grasses such as slender oat (*Avena barbata*), soft brome (*Bromus hordeaceus*), and annual dogtails (*Cynosurus echinatus*). Also present in this vegetation community are non-native forbs such as bristly oxtongue (*Helminthotheca echioides*), Italian plumeless thistle (*Carduus pycnocephalus*), woolly distaff thistle (*Carthamus lanatus*), and rose clover (*Trifolium hirtum*). Native forbs such as rosinweed (*Calycadenia truncata*) are present in low density.

Arroyo Willow Thickets (Shrubland Alliance). Arroyo willow (*Salix lasiolepis*) is the dominant tree in this vegetation community. This vegetation community occurs along Copeland Creek in the southern portion of the Study Area. Other species observed with the arroyo willow thickets along Copeland Creek include non-native fennel (*Foeniculum vulgare*), Tasmanian blue gum (*Eucalyptus globulus*), and Himalayan black berry (*Rubus armeniacus*).

Coast Live Oak Woodland (Woodland Alliance). One stand of coast live oak woodland occurs within the central portion of the Study Area, and coast live oak is dominant in the canopy. This is a mature stand and co-occurs with other hardwood species such as Oregon white oak (*Quercus garryana*) and California buckeye (*Aesculus californica*). Annual grasses similar to those found in the California annual grassland dominate the understory of this habitat type.

1.1.2 Aquatic Features

Aquatic habitats present within the Study Area that could potentially be used by CRF and are evaluated as part of this assessment include Copeland Creek, an unnamed intermittent drainage, two seasonal wetlands, and a seasonal wetland swale.

Copeland Creek (Creek-01). Copeland Creek, which is classified as an intermittent stream, generally flows from east to west through the lower portion of the Study Area.

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Intermittent Drainage (ID). One intermittent drainage (ID-01) occurs in the northeastern portion of the Study Area. This drainage flows when rainwater runoff from surrounding hills channels into this drainage, flowing from southeast to northwest through the Study Area and eventually into Crane Creek.

Seasonal Wetlands (SW). Two seasonal wetlands (SW-01 and SW-02) occur in topographic depressions in the northern portion of the Study Area. They occur along a low area at the base of a north-aspect slope where water runoff from the hillside collects long enough to create wetland hydrology, soils, and vegetation.

Seasonal Wetland Swale (SWS). A seasonal wetland swale (SWS-01) occurs in the southern portion of the Study Area. This swale/drainage is located at the base of the hill in the middle of the site and is well defined.

1.1.3 Soils

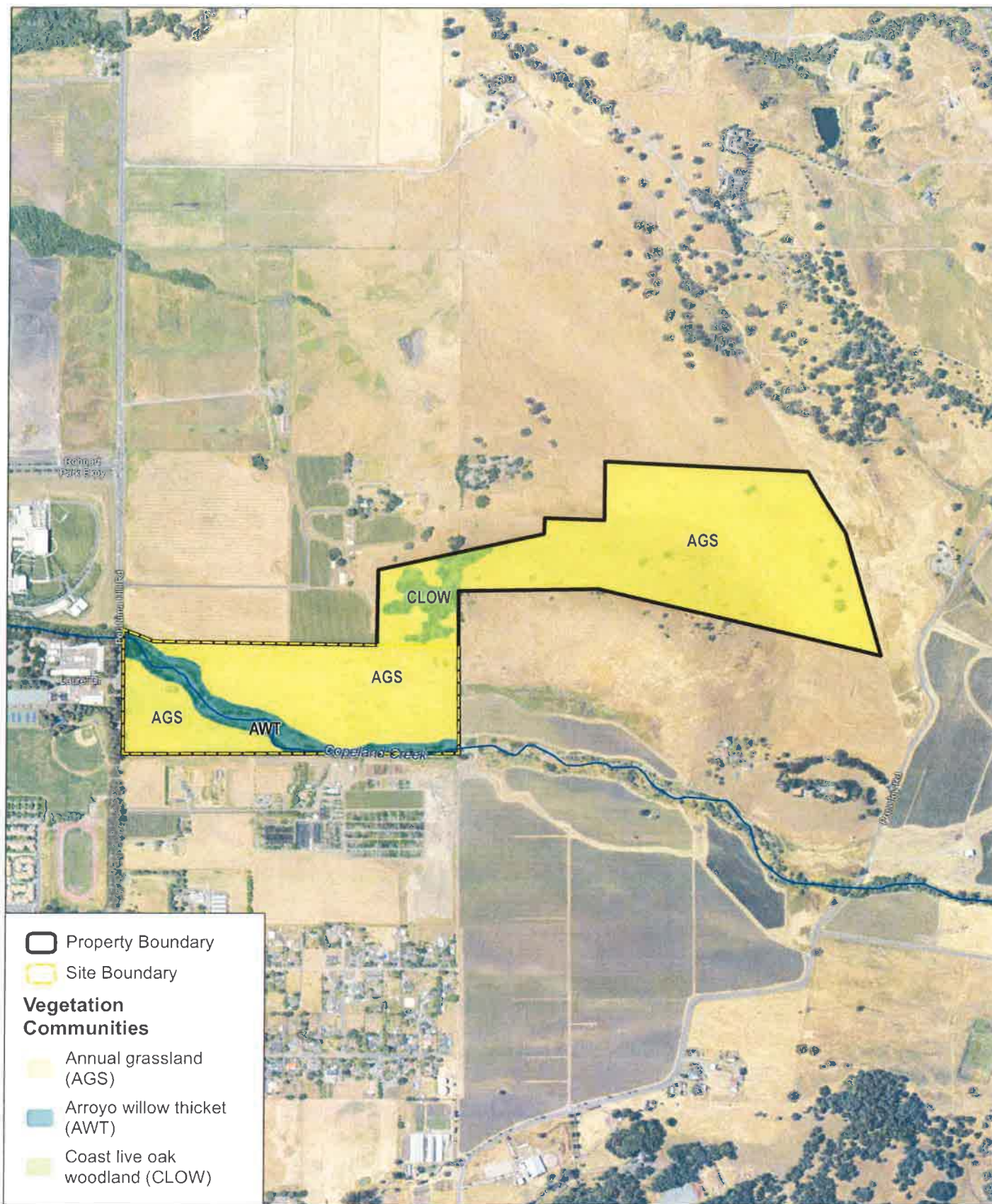
Soils information for the site was obtained from the Natural Resources Conservation Service Soil Survey of Sonoma County, California, Western Part (USDA 2018). Seven soil types occur in the Study Area (Figure 4). These soil types consist of Clear Lake clay loam, 0%–2% slopes (CcA); Clear Lake clay loam, 2%–5% slopes (CcB); Clear Lake clay, sandy substratum, drained, 0%–2% slopes (CeA); Goulding cobbly clay loam, 5%–15% slopes (GID); Goulding-Toomes complex, 9%–50% slopes (GoF); Riverwash (RnA); and Toomes rocky loam, 2%–30% slopes (ToE).

Riverwash is derived from alluvium and primarily associated with Copeland Creek. Clear Lake clay loams consist of alluvium derived from sedimentary rock. Goulding cobbly clay loam and the Goulding-Toomes complex are residuum weathered from metavolcanics. Toomes rocky loam is residuum weathered from igneous rock.

1.2 California Red-Legged Frog General Ecology

1.2.1 Status

The CRF was listed as a threatened species by the U.S. Fish and Wildlife Service (USFWS) on May 23, 1996 (USFWS 1996). In 2002, the USFWS published the *Recovery Plan for the California Red-Legged Frog* (*Rana aurora draytonii* [now *Rana draytonii*]) (USFWS 2002). The CRF was listed as a threatened species by the USFWS on May 23, 1996 (USFWS 1996), and in 2002, the USFWS published the *Recovery Plan for the California Red-Legged Frog* (*Rana aurora draytonii*) (USFWS 2002). On April 13, 2006, the USFWS designated critical habitat for the CRF (Federal Register Vol. 70, No. 71:19243–19346) pursuant to the Endangered Species Act of 1973, as amended.

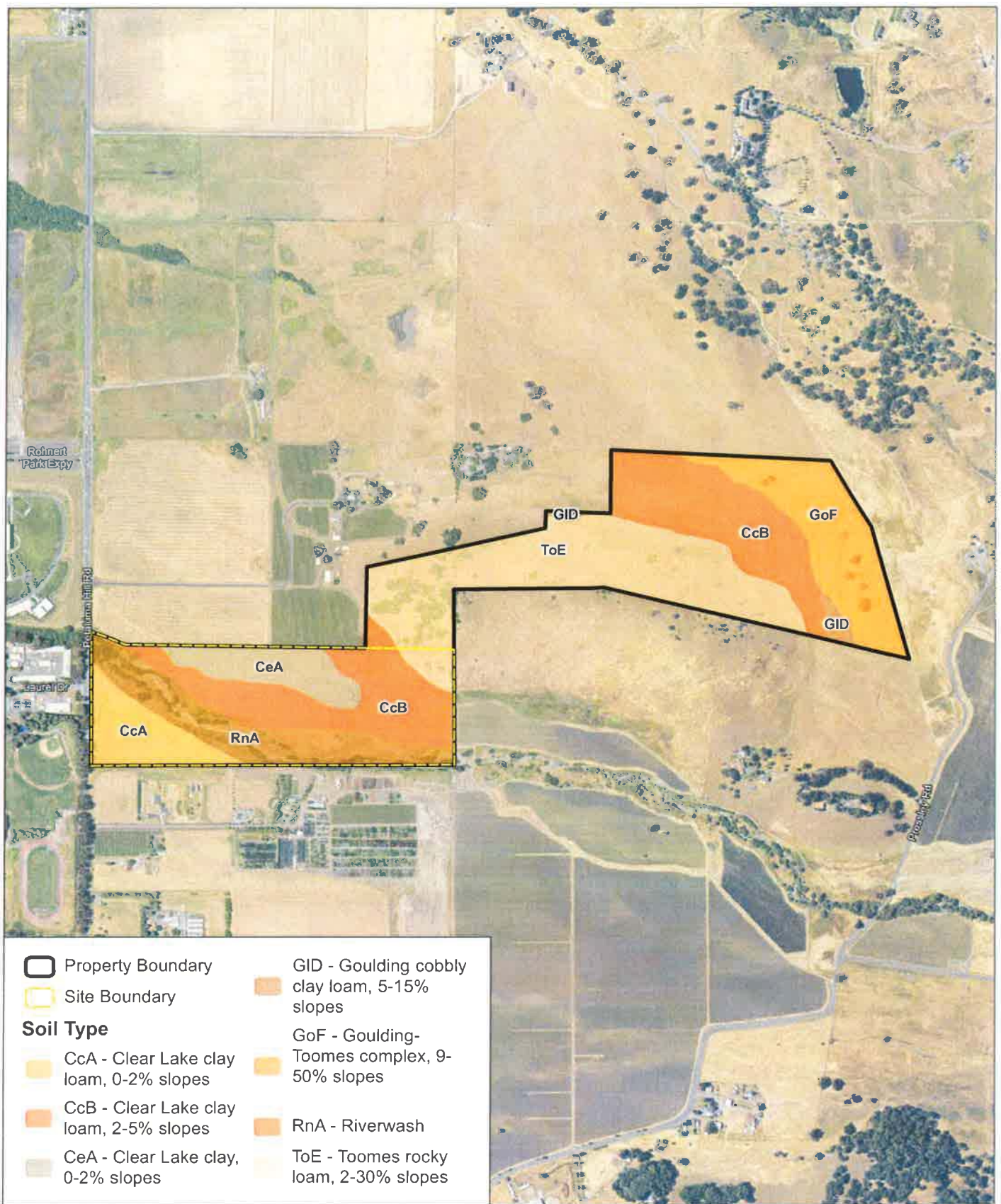


SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

FIGURE 3

Vegetation Communities

Copeland Creek Regional Detention Basin and Trail Project



SOURCE: USDA NAIP Imagery (2016), USDA NRCS SSURGO Soils Data, Sonoma County GIS

FIGURE 4

Natural Resources Conservation Service Soils Types

Copeland Creek Regional Detention Basin and Trail Project

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1.2.2 Distribution

The historic range of the CRF extended coastally from the vicinity of Elk Creek in Mendocino County, California, and inland from the vicinity of Redding in Shasta County, California, southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). CRF were historically documented in 46 counties; however, they are now restricted to 238 streams or drainages within 23 counties. This represents a loss of 70% of its former range (USFWS 2002). CRF are still locally abundant within portions of the San Francisco Bay Area and the Central Coast. Within the current distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern coast, and northern Transverse Ranges. CRF are believed to be extirpated from the southern Transverse and Peninsular Ranges but are still present in Baja California, Mexico.

1.2.3 Adults

Adult CRF prefer dense, shrubby, or emergent riparian vegetation closely associated with deep (i.e., more than 0.7 meters (2.3 feet)), still, or slow-moving water (Hayes and Jennings 1988). However, frogs have also been found breeding in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation, and depths less than 0.7 meters (2.3 feet) (Seltenrich and Pool, pers. obs. 2018). The largest densities of CRF are typically associated with deep pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of broadleaf cattail (*Typha latifolia*) (Jennings 1988). CRF disperse upstream and downstream of their breeding habitat, as well as across upland areas, to forage and seek sheltering habitat.

During the non-breeding season, habitat includes nearly any area within 1 to 2 miles of a breeding site that remains moist and cool through the summer (Fellers 2005), which can include vegetated areas with coyotebrush (*Baccharis pilularis*), California blackberry (*Rubus ursinus*) thickets, and root masses associated with willow and California bay trees (*Umbellularia californica*). Non-breeding habitat used by CRF can be extremely limited in size (e.g., non-breeding CRF have been found in a 2-meter (6-foot)-wide coyotebrush thicket growing along a tiny intermittent creek surrounded by heavily grazed grassland (Fellers 2005)). Sheltering habitat for CRF potentially includes all aquatic, riparian, and upland areas within the range of the species. In addition, any landscape features that provide cover (e.g., existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris) or agricultural features (e.g., drains, watering troughs, spring boxes, abandoned sheds, or hay stacks) may also be used by CRF. Incised stream channels with portions narrower and depths greater than 0.45 meters (1.5 feet) may also provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of CRF within a watershed and can be a factor limiting population numbers and survival.

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The diet of adult and sub-adult CRFs is highly variable; although studies have shown that invertebrates were the most common food items, vertebrates, such as Sierran tree frog (*Pseudacris sierra*) and California deermouse (*Peromyscus californicus*), represent over half the prey mass eaten by larger frogs (Hayes and Tennant 1985). CRF have also been documented feeding on species that are known predators such as garter snakes (Stitt and Seltenrich 2010). Juvenile frogs were generally active diurnally and nocturnally, whereas adult frogs were largely nocturnal. Feeding activity probably occurs primarily along the shoreline and on the surface of the water (Hayes and Tennant 1985).

1.2.4 Breeding

Sexual maturity normally is reached at 3 to 4 years of age (Storer 1925; Jennings and Hayes 1985), and frogs may live 8 to 10 years (Jennings et al. 1992). Populations of CRF fluctuate from year to year, and when conditions are favorable, this species can experience extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. When conditions are stressful (e.g., drought), CRF may temporarily disappear from an area.

CRF do not have a distinct breeding migration (Fellers 2005). Adults are often associated with permanent bodies of water with some frogs remaining at breeding habitat all year while others disperse. Dispersal distances are typically less than 0.8 kilometers (0.5 miles), with a few individual moving up to 1.6 to 3.2 kilometers (1 to 2 miles) (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, may move directly from one site to another through normally inhospitable habitats such as heavily grazed pastures or oak-grassland savannas (Fellers 2005). Dispersing frogs in northern Santa Cruz County were documented to travel distances from 0.4 kilometers (0.25 miles) to more than 3.2 kilometers (2 miles) without apparent regard to topography, vegetation type, or riparian corridors (Bulger et al. 2003). Fellers and Kleeman (2007) and Bulger et al. (2003) found that CRF migration corridors can be less “pristine” (e.g., closely grazed fields, plowed agricultural lands) than breeding or non-breeding habitats. Bulger et al. (2003) observed that CRF did not appear to avoid or prefer any landscape feature or vegetation type. Tagged frogs were documented crossing agricultural land, including recently tilled fields and areas with mature crops. Threats facing migrating CRF include being run over by vehicles on roads (Gibbs 1998; Vos and Chardon 1998), degradation of habitat (Vos and Stumpel 1995; Findlay and Houlahan 1997; Gibbs 1998), predation (Gibbs 1998), and desiccation (Rothermel and Semlitsch 2002).

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

1.2.5 Eggs

Egg masses contain about 2,000 to 6,000 moderately sized (measuring between 2 and 3 millimeters in diameter), dark reddish brown eggs and are typically attached to vertical emergent vegetation such as bulrushes (*Scirpus* spp.) or cattails (Jennings et al. 1992). However, egg masses have also been found laying in depressions along the margins of ponds (C. Seltenrich and A. Pool, personal observations). CRF are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). The egg mass is well defined and about the size of a softball. Eggs hatch in 6 to 14 days (Jennings 1988). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings et al. 1992). Eggs exposed to salinities greater than 4.5 parts per thousand results in 100% mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae.

1.2.6 Larvae

CRF larvae (i.e., tadpoles) range from 14 to 80 millimeters (0.5 to 3.5 inches) in length and undergo metamorphosis in 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1990).

Of all CRF life stages, larvae probably experience the highest mortality rates, with less than 1% of eggs laid reaching metamorphosis (Jennings et al. 1992). The diet of CRF larvae has not been well studied, but their diet is likely similar to other ranid larvae that feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b).

1.2.7 Reasons for Decline

In California, the decline and eventual local disappearance of California and northern red-legged frogs has been observed in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish (*Procambarus clarkia*), signal crayfish (*Pacifastacus leniusculus*), and several species of warm water fish, including sunfish (*Lepomis* spp.), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*). These declines and disappearances have been attributed to predation, competition, and reproduction interference. Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the CRF throughout its range.

Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs and indicated that bullfrogs may also prey on subadult northern red-legged frogs as well. Bullfrogs may also have a competitive advantage over red-legged frogs, since bullfrogs are larger and possess more generalized food habitats (Bury and Whelan 1984), and bullfrog larvae are unpalatable to

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

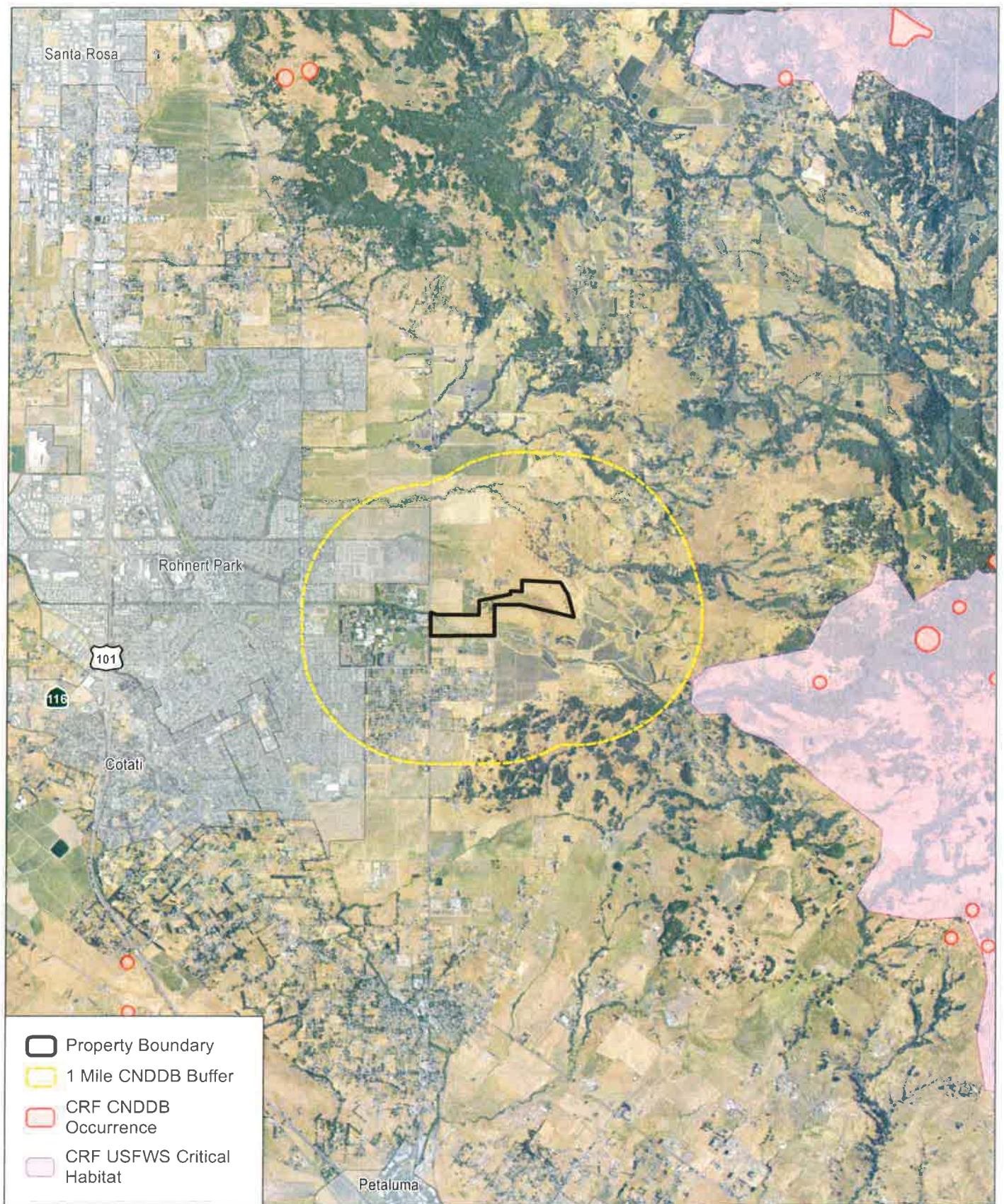
predatory fish (Kruse and Francis 1977). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Bullfrogs can also interfere with red-legged frog reproduction, since California and northern red-legged frogs have been observed in amplexus with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993). Thus, bullfrogs are able to prey upon and outcompete red-legged frogs, especially in suboptimal habitat.

The urbanization of land within and adjacent to CRF habitat has also adversely affected this species. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks CRF dispersal, and the introduction of predatory fishes and bullfrogs. The conversion and isolation of perennial pool habitats resulting from urbanization is an ongoing threat to CRF.

1.3 Occurrence Records within 1.6 Kilometers (1.0 Mile) of the Site, and Critical Habitat

The California Natural Diversity Data Base (CNDDDB) (CDFW 2018) was queried for CRF occurrences within 1.6 kilometers (1.0 mile) of the Study Area (Figure 5). Based on this search, no occurrence records were identified within 1.6 kilometers (1.0 mile) of the Study Area. The closest record (1437) is located approximately 3.5 kilometers (2 miles) east of the site and represents a 2016 observation of two adult CRF foraging near a large pond north of Copeland Creek. Three more occurrences (1411, 1413, and 897) are located further east, greater than 5 kilometers (3 miles) from the Study Area. Occurrence record 897 represents several adult and juvenile CRF observed at Turtle Pond and in an adjacent marsh from 1996 through 2016. Turtle pond and the marsh are located approximately 0.5 kilometers (0.25 miles) north of Copeland Creek within the Fairfield Osborn Preserve. Occurrence record 1413 documented the presence of 10 adult CRF in two sag ponds in 2003. Occurrence record 1411 represents the results of surveys conducted in the general vicinity of the headwaters of Copeland Creek. Surveys were conducted from 2010 to 2015 at Poplar Spring, Dolcini Pond, Turtle Pond, Pangea Pond, and along both Copeland and Rose Creeks. Multiple CRF individuals, all life stages (adults, juveniles, metamorphs, larvae, and egg masses) were detected during these surveys. All four of these records (897, 1411, 1413, and 1437) are located within Critical Habitat Unit SON-2. Three additional occurrence records (779, 932, and 1344) occur approximately 5 kilometers (3 miles) to the southwest of the Study Area on the west side of Rohnert Park and Highway 101. Copies of the CNDDDB occurrence records are provided in Attachment A.

The project site is not located within designated critical habitat; however, Critical Habitat Unit SON-2 Sonoma Mountain is located 2 kilometers (1.25 miles) east-southeast of the Study Area (Figure 5).



SOURCE: USDA NAIP Imagery (2016), Sonoma County GIS, USFWS (2017), CDFW (2017)

FIGURE 5

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

1.4 Aquatic Habitats within 1.6 Kilometers (1.0 Miles) of the Site

Aquatic habitats located outside the Study Area on private property were not evaluated as part of the field assessment; however, USFWS guidelines require a cursory assessment of potential aquatic habitats within 1.6 kilometers (1.0 mile) of project boundaries. Information on aquatic habitats in the vicinity of the Study Area was obtained from aerial photographs and from the “Cotati” USGS 7.5-minute topographic quad. Based on available information and a thorough review of the topographic map and aerial photographs (Google Earth 2018), several aquatic features were identified within 1.6 kilometers of the site.

A total of 1,520 pools (most of which appear to be manmade) are present within grassland habitat 0.5 kilometers (0.3 miles) north of the Study Area. Based on historical aerial photography, the majority of these pools appear to dry by March or April in most years with only a few remaining inundated through June or July. Based on the relatively short hydroperiod for these pools, it is unlikely that any of them provide suitable breeding habitat for CRF. Three perennial ponds associated with rural residences are located further to the north–northeast of the Study Area and north of Crane Creek. Piers and boats are visible on these ponds. An additional pond with a pier is located approximately 0.6 kilometers (1.0 mile) east of the site. Two additional perennial ponds are present 0.6 kilometers (1.0 mile) south and 1 kilometer (0.6 miles) southeast of the Study Area associated with agriculture and grazing practices. Approximately 0.5 kilometers (0.3 miles) west of the Study Area, the Holocaust and Genocide Memorial Lake, another perennial feature, is present within Sonoma State University. It is possible that some of these perennial features contain suitable breeding habitat for CRF; however, those ponds with docks may contain predatory game fish.

1.5 Adjacent Land Use

Surrounding land use includes rural residential lots to the north that are dominated by annual grassland habitat, Crane Creek Regional Park and vineyards to the east, Sonoma State University and residential development to the west, and a nursery located on the south side of Copeland Creek.

2 METHODS

On November 9, 2017, Dudek Senior Aquatic Ecologist Craig Seltenrich conducted a site assessment to evaluate the potential for CRF to utilize habitats within the Study Area. Qualifications for conducting the habitat assessment are provided in Attachment B. Aquatic habitats within the Study Area that were evaluated as part of the habitat assessment included Copeland Creek, an intermittent drainage, two seasonal wetlands, and a seasonal wetland swale.

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

Initially, the CNDDB was queried for CRF occurrences within the USGS “Cotati, California” USGS 7.5-minute topographic quadrangle. Habitat evaluations were conducted by walking around the perimeter of all potential aquatic habitats and through adjacent upland areas. At each site, general and specific habitat conditions (e.g., type and location, physical parameters, upland habitat information) were recorded for both aquatic and adjacent terrestrial environments. Additionally, photographs were taken to document existing habitat conditions.

The CRF habitat assessment was based on habitat requirements and survey protocols as described in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (USFWS 2005). Existing and potential aquatic habitats and adjacent uplands were evaluated by assessing their potential to support breeding, support foraging activities, provide refuge and/or aestivation habitat, and act as dispersal corridors for adult and juvenile frogs. In addition, habitats were also evaluated based on personal knowledge and experience with CRF in Northern and Central California. Information collected during the site survey and from environmental documents included data on the following site characteristics:

- Terrain – elevation and topography
- Land use – historic and current for the Study Area and adjacent lands
- Plant communities
- Upland habitat
- Upland habitat
- Aquatic habitat types and aquatic features – vegetation present, water surface area and depth, approximate drying date of water body
- Potential underground refugia
- Potential foraging habitat
- Potential breeding habitat

3 RESULTS

Site and habitat characteristics (both aquatic and terrestrial) are described as follows. Copies of habitat assessment data sheets completed for Copeland Creek and the unnamed intermittent drainage are provided in Attachment C. Photographs of the aquatic habitats and representative upland areas within the site are provided in Attachment D.

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

3.1 AQUATIC HABITAT DESCRIPTIONS

During the site assessment conducted in November 2017, Copeland Creek, an intermittent drainage, two seasonal wetlands, and a seasonal wetland swale were evaluated as potential CRF habitat (Figure 6). Descriptions of ephemeral drainages and swales are not provided due to the limited suitability of these habitats for CRF.

In addition to the aquatic habitat characteristics at each site, a description of the surrounding uplands and presence of terrestrial cover in the vicinity of aquatic features is also provided.

3.1.1 Copeland Creek

Copeland Creek (Creek-01) is an intermittent stream that typically only flows during the winter and spring in most years. At the time of the November 2017 site assessment, the entire channel was dry. Copeland Creek, which receives most of its flow via runoff from the surrounding hills (Sonoma Mountains) and tributaries east of the Study Area, flows in a westerly direction to the Laguna de Santa Rosa and eventually to the Russian River. Based on available information, Copeland Creek (in the vicinity of the Study Area) only flows during the winter through spring period and is typically dry from early summer through late fall/early winter. During the summer, no residual water remains within the channel to support aquatic life.

The Copeland Creek channel, within the Study Area, is low gradient (1%–2% slope), although increased gradient occurred in a few isolated locations (e.g., the eastern end of the reach in the vicinity of the proposed diversion weir). The creek channel is slightly to moderately incised and is split in a few locations. Vegetation is sparse or absent in the bed of the creek, and the banks (in some locations) are dominated by arroyo willow thickets. The riparian corridor is patchy within the proposed project reach, ranging from no riparian habitat in some locations to relatively well-developed habitat in other areas (especially the lower portion of the reach upstream of Petaluma Hill Road). Other species observed in the arroyo willow thickets included non-native fennel, Tasmanian blue gum, and Himalayan black berry. Additionally, in some areas the riparian corridor is only present along one of the banks and is absent from the opposite bank. Where present, the riparian corridor varies in width from approximately 6 to 45 meters (20 to 150 feet). In general, this vegetation, along with various grasses, dominates the bankfull channel within much of the Study Area.

The creek channel within the Study Area is 2,870 feet in length and ranges in width from about 25 to 105 feet, with an average width of about 40–60 feet. The majority of the reach (greater than 75%) appeared to consist of run and glide habitat, although several low-gradient riffles, and a few small, shallow pools (2 feet deep or less) were also present. The only instream cover

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observed (other than boulders) were a few undercut banks in several locations along the banks. The substrate consisted primarily of cobble (55%) and gravel (30%) with pockets of sand (10%) and a few boulders (5%). Fines were not observed within the reach (even in isolated locations). The banks consist primarily of unconsolidated alluvium (mixture of soil and cobble/gravel) and are actively eroding in several locations within the reach. Bank height was variable along the reach and typically ranged from 1 to 3 feet, although the banks in several areas were up to 6 feet or greater in height (south bank along nursery).

3.1.2 Unnamed Intermittent Drainage

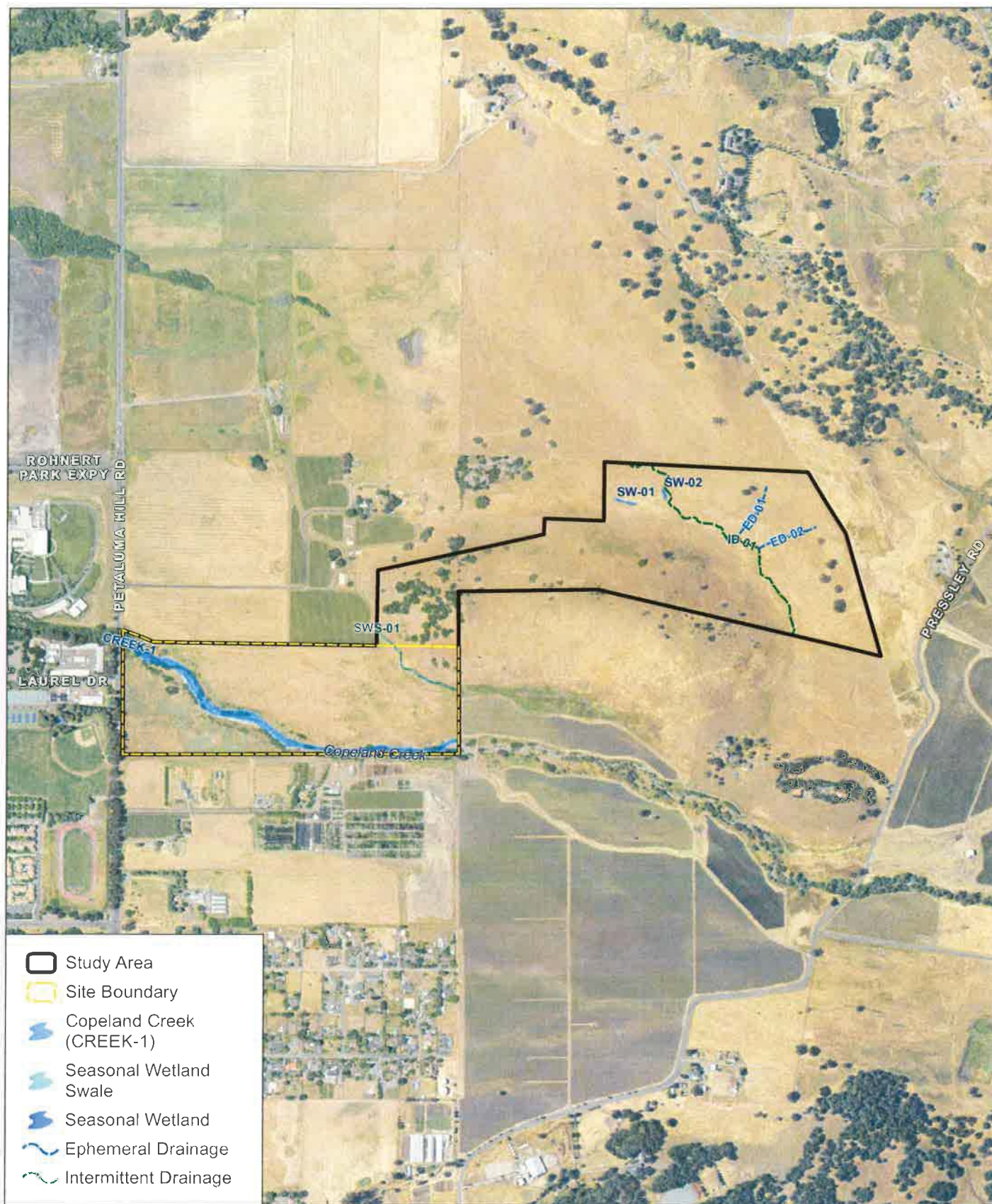
A single intermittent drainage (ID-01) occurs in the northeastern portion of the Study Area. The intermittent drainage is of relatively low gradient within the Study Area, varying in width from 1 to 3 feet, with an average width of 1.5 feet. Bank height was relatively low except at several bends in the channel where some incision has occurred. At the time of the 2017 site assessment, a few small shallow (1–2 inches in depth, 1–2 feet in length) pockets of water were present within this drainage as a result of recent rainfall. These depressions have a maximum depth of about 4 to 6 inches, when water is flowing through the drainage. Cobble substrate was present through much of the length of the drainage (50%–70%) along with a mixture of fines and sand (30%–50%). Vegetation, similar to that observed in the adjacent annual grasslands, was present along 90%–100% of the drainage. Cover in the immediate vicinity was limited to grasses with occasional small mammal burrows.

3.1.3 Seasonal Wetlands

Two seasonal wetlands (SW-01 and SW-02) occur in topographic depressions in the northern portion of the Study Area. They occur along a low area at the base of a north-aspect slope where water runoff from the hillside collects long enough to create wetland hydrology, soils, and vegetation consisting primarily of perennial rye grass (*Festuca perennis*) and curly dock (*Rumex crispus*). However, the wetland does not appear to pond water even during wet years.

3.1.4 Seasonal Wetland Swale

A seasonal wetland swale (SWS-01) occurs in the southern portion of the Study Area. This swale/drainage is located at the western base of the hill in the middle of the site and is well defined. The drainage varies in width from 8 to 20 feet with a depth from 16 inches to 3 feet below the banks where the drainage is defined. The deeper areas are depressional, hold water longer, and are ponded throughout the winter rainy season and into the summer, depending on seasonal rainfall. The drainage is dominated by tall flatsedge (*Cyperus eragrostis*), curvepod yellowcress (*Rorippa curvisiliqua*), annual rabbitsfoot grass (*Polypogon monspeliensis*),



SOURCE: USDA NAIP Imagery (2016); Sonoma County GIS

FIGURE 6

Aquatic Habitats Evaluated within the Study Area

Copeland Creek Regional Detention Basin and Trail Project

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

pennyroyal (*Mentha pulegium*), and common spikerush (*Eleocharis palustris*). Subdominant species include Italian ryegrass (*Lolium perenne multiflorum*), Bermudagrass (*Cynodon dactylon*), fiddle dock (*Rumex pulcher*), purple loosestrife (*Lythrum salicaria*), and cocklebur (*Xanthium* sp.). The wetland margin quickly transitions into annual grassland habitat dominated by those species found throughout the remainder of the site.

3.2 Upland Habitat Description

Several upland habitats occur within the Study Area, including California annual grassland, arroyo willow thickets, and coast live oak woodland.

The majority of the Study Area consists of California annual grassland habitat, which has been historically used for grazing. The arroyo willow community occurs exclusively along the length of Copeland Creek. The coast live oak woodland vegetation is centrally located within the Study Area and is not associated with any of the aquatic habitats.

Most of the grasslands within the Study Area contain small mammal burrows, primarily Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Spermophilus beecheyi*). Additional cover is provided by riparian vegetation along Copeland Creek and by shrubs along and adjacent to the drainages.

4 DISCUSSION

4.1 Aquatic Habitat

During the site assessment conducted on November 9, 2018, several aquatic habitats were evaluated as potential CRF breeding, foraging, and summer refugia habitat, including Copeland Creek, an unnamed intermittent drainage, two seasonal wetlands, and a seasonal wetland swale. Based on habitat characteristics for each of the features, only Copeland Creek, the unnamed intermittent drainage, and the seasonal wetland swale provide potentially suitable habitat for CRF during the winter and spring. However, potential breeding habitat is not present within the Study Area. Due to the hydrology of Copeland Creek and the relatively short hydroperiod of the drainages and wetlands within the Study Area, none of these features remain inundated for a sufficient period to provide summer refugia for CRF. However, small residual pools in the intermittent drainage and seasonal wetland swale could be used as temporary refugia and foraging habitat by dispersing frogs during the winter and early spring. Additionally, Copeland Creek may also provide aquatic habitat, cover, and foraging opportunities during the winter and early spring.

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

The lack of perennial water sources or seasonal features that retain water into the late summer within or adjacent to the Study Area, substantially reduces the potential for CRF to utilize the site, except possibly during dispersal periods.

4.2 Upland Habitat

Suitable upland habitat for CRF is present in the vicinity Copeland Creek and adjacent to all of the drainages within the Study Area. Upland habitat for CRF consists primarily of vegetative cover (riparian and scrub communities) and small mammal burrows (Botta's pocket gopher and California ground squirrel).

5 CONCLUSIONS

Based on the results of the habitat assessment, none of the aquatic features present within the Study Area provide suitable breeding habitat for CRF; however, some of the seasonal features (Copeland Creek, the unnamed intermittent drainage, and the seasonal wetland swale) may provide temporary refugia and foraging opportunities for frogs during dispersal periods.

Copeland Creek within the Study Area does not provide suitable habitat for CRF other than as a migration corridor for dispersing frogs. The creek does provide refugia, cover, and foraging opportunities for dispersing CRF during the winter and spring; however, the creek typically dries by late spring or early summer and does not contain permanent or temporary pools. CRF have been documented in the headwaters area of Copeland Creek and could potentially use the creek as a migration corridor during dispersal periods. Even through the nearest documented occurrences are approximately 3.5 kilometers (2 miles) east of the Study Area, they are located along Copeland Creek. As a result, CRF could disperse downstream along Copeland Creek and utilize other perennial ponds in downstream locations in the vicinity of the creek. However, even if CRF were to move downstream into the Study Area, there is no summer refugia habitat to sustain frogs through the summer and fall.

The intermittent drainage appears to contain shallow pools in a few locations during and for short periods following rainfall events but is typically dry by spring. Most of the seasonal wetland swale contains water during and for short periods following winter and spring rainfall events; however, a few depressional areas in the channel remain inundated throughout the winter rainy season and into the summer depending on seasonal rainfall patterns.

As a result, the features evaluated in this report provide aquatic habitat within the Study Area primarily during the winter and spring but water may persist in a few pools in the seasonal wetland swale depending on rainfall. However, based on the lack of breeding habitat and summer refugia within or adjacent to the Project Area, and the distance to occupied habitat, the

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

potential for CRF to occur on the site is low. Furthermore, in the unlikely event that CRF were to occur on the site, utilization of the evaluated habitats would be temporary.

Suitable upland habitat is present throughout much of the Study Area in association with riparian corridors and scrub communities and within annual grassland habitat containing small mammal burrows.

Critical Habitat Unit SON-2 Sonoma Mountain is located 2 kilometers (1.25 miles) east-southeast of the Study Area, and Copeland Creek provides an aquatic connection between this headwater area and the Study Area. Additionally, CRF may already be present at one or more of the potentially suitable perennial ponds present within 1 mile of the Study Area.

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the Copeland Creek Detention Basin and Trail Project

6 REFERENCES

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ATTACHMENT A

*California Natural Diversity Database Summary
Data Sheets for
California Red-Legged Frog Occurrences*



Occurrence Report
California Department of Fish and Wildlife
California Natural Diversity Database



Map Index Number:	A1644	EO Index:	103234
Key Quad:	Glen Ellen (3812235)	Element Code:	AAABH01022
Occurrence Number:	1437	Occurrence Last Updated:	2016-08-29

Scientific Name:	<i>Rana draytonii</i>	Common Name:	California red-legged frog
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G2G3 State: S2S3	Other Lists:	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable

General Habitat:	Micro Habitat:
LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.	REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT

Last Date Observed:	2016-04-17	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2016-04-17	Occurrence Rank:	Good
Owner/Manager:	PVT	Trend:	Unknown

Presence: Presumed Extant

Location:

POND N OF COPELAND CREEK ABOUT 0.6 MI SSE OF LICHAU RD AT EAGLE RIDGE RD AND 1.1 MI NE OF STONY BUTTE, SW OF GLEN ELLEN.

Detailed Location:

MAPPED TO PROVIDED COORDINATES

Ecological:

LARGE POND FILLING IN WITH SEDIMENT AND TULE. IN PASTURE LAND.

Threats:

CONVERSION TO VINEYARDS.

General:

2 ADULTS OBSERVED FORAGING ON 17 APR 2016.

PLSS: T06N, R07W, Sec. 26, SW (M)	Accuracy: 80 meters	Area (acres): 5
UTM: Zone-10 N4243037 E534012	Latitude/Longitude: 38.33482 / -122.61083	Elevation (feet): 1,069

County Summary:	Quad Summary:
Sonoma	Glen Ellen (3812235)

Sources:

TAT16F0002 TATARIAN, T. - FIELD SURVEY FORM FOR RANA DRAYTONII 2016-04-17



Occurrence Report
California Department of Fish and Wildlife
California Natural Diversity Database



Map Index Number: 96965 Key Quad: Glen Ellen (3812235) Occurrence Number: 1413	EO Index: 98201 Element Code: AAABH01022 Occurrence Last Updated: 2015-07-23
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Scientific Name: <i>Rana draytonii</i> Listing Status: <table border="0" style="width: 100%;"><tr><td style="width: 33%;">Federal:</td><td>Threatened</td></tr><tr><td>State:</td><td>None</td></tr></table> CNDDDB Element Ranks: <table border="0" style="width: 100%;"><tr><td style="width: 33%;">Global:</td><td>G2G3</td></tr><tr><td>State:</td><td>S2S3</td></tr></table>	Federal:	Threatened	State:	None	Global:	G2G3	State:	S2S3	Common Name: California red-legged frog Rare Plant Rank: Other Lists: CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable
Federal:	Threatened								
State:	None								
Global:	G2G3								
State:	S2S3								

General Habitat: LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.	Micro Habitat: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT
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Last Date Observed: 2013-04-11 Last Survey Date: 2013-04-11 Owner/Manager: CSU-SONOMA Presence: Presumed Extant	Occurrence Type: Natural/Native occurrence Occurrence Rank: Good Trend: Unknown
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Location:
ABOUT 2.2 MI NE OF STONY BUTTE, 3.2 MI NNW OF PETALUMA RESERVOIR, 3.3 MI W OF FERN LAKE.

Detailed Location:
MAPPED TO PROVIDED COORDINATES

Ecological:
2 SAG PONDS SPACED APPROXIMATELY 100 YARDS APART.

Threats:
BULLFROGS. POSSIBLY THREATENED BY PG&E CLEARCUTTING ACTIVITIES UNDER HIGH VOLTAGE LINE JUST TO THE WEST.

General:
1 ADULT SEEN DURING A DAYLIGHT SURVEY, AND 9 ADULTS DETECTED DURING A NIGHT SURVEY ON 11 APR 2013.

PLSS: T06N, R07W, Sec. 24, SW (M)	Accuracy: 80 meters	Area (acres): 0
UTM: Zone-10 N4243991 E535753	Latitude/Longitude: 38.34335 / -122.59085	Elevation (feet): 1,850

County Summary: Sonoma	Quad Summary: Glen Ellen (3812235)
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Sources:
WIL13F0003 WILCOX, J. - FIELD SURVEY FORM FOR RANA DRAYTONII 2013-04-11



Occurrence Report
California Department of Fish and Wildlife
California Natural Diversity Database



Map Index Number: 59068
Key Quad: Cotati (3812236)
Occurrence Number: 779

EO Index: 59104
Element Code: AAABH01022
Occurrence Last Updated: 2005-01-03

Scientific Name: *Rana draytonii*

Common Name: California red-legged frog

Listing Status: **Federal:** Threatened
 State: None
CNDDDB Element Ranks: **Global:** G2G3
 State: S2S3

Rare Plant Rank:
Other Lists: CDFW_SSC-Species of Special Concern
IUCN_VU-Vulnerable

General Habitat:

LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro Habitat:

REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Last Date Observed: 2004-12-07
Last Survey Date: 2004-12-07
Owner/Manager: UNKNOWN
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Good
Trend: Unknown

Location:

ALONG STONY POINT ROAD, 0.2 MILE SE OF MEACHAM ROAD, SW OF COTATI.

Detailed Location:

ONLY KNOWN SITE IN SONOMA COUNTY THAT SUPPORTS BOTH CRLF AND CTS.

Ecological:

HABITAT SURROUNDING STONY POINT ROAD CONSISTS OF GRAZED GRASSLAND AND A SMALL CONSTRUCTED POND.

Threats:

THREATENED BY HABITAT LOSS AND PROXIMITY TO THE ROAD (VEHICLE COLLISIONS).

General:

1 ROADKILL ADULT OBSERVED ON 11 NOV 2002. 2 ADULTS OBSERVED ON 8 NOV 2002. 1 LIVE MALE (SVL = 88 MM) OBSERVED ON 7 DEC 2004.

PLSS: T05N, R08W, Sec. 03 (M)
UTM: Zone-10 N4240152 E523460

Accuracy: 80 meters
Latitude/Longitude: 38.30916 / -122.73166

Area (acres): 0
Elevation (feet): 220

County Summary:

Sonoma

Quad Summary:

Cotati (3812236)

Sources:

COO04F0014 COOK, D. & A. WOLF (SCWA ENVIRONMENTAL CONSULTANTS) - FIELD SURVEY FORM FOR RANA DRAYTONII 2004-11-08



Occurrence Report
California Department of Fish and Wildlife
California Natural Diversity Database



Map Index Number:	66096	EO Index:	66175
Key Quad:	Glen Ellen (3812235)	Element Code:	AAABH01022
Occurrence Number:	897	Occurrence Last Updated:	2017-06-15

Scientific Name:	<i>Rana draytonii</i>	Common Name:	California red-legged frog
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G2G3 State: S2S3	Other Lists:	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable

General Habitat:	Micro Habitat:
LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.	REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Last Date Observed:	2016-11-19	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2016-11-19	Occurrence Rank:	Good
Owner/Manager:	CSU-SONOMA	Trend:	Unknown
Presence:	Presumed Exlant		

Location:

TURTLE POND, AT FAIRFIELD OSBORN PRESERVE, EAST OF COTATI.

Detailed Location:

FAIRFIELD OSBORN PRESERVE IS LOCATED IN THE OAK WOODLAND FOOTHILLS OF SONOMA MOUNTAIN.

Ecological:

HABITAT CONSISTS OF A SMALL, CONSTRUCTED POND NEAR COPELAND CREEK AND MARSH AREA DOWNHILL FROM POND.

Threats:

THREATENED BY THE PRESENCE OF BULLFROGS (2002)

General:

SEVERAL ADULTS OBSERVED IN TURTLE POND BETWEEN 1996 & 1999. JUVENILE CRLF OBSERVED IN THE MARSH AND COPELAND CREEK AREA, 2000-2002. 1 ADULT OBS ALONG EDGE OF MARSH & 1 JUVENILE AT TURTLE POND, 19 NOV 2016.

PLSS: T06N, R07W, Sec. 26, NE (M)	Accuracy: 1/10 mile	Area (acres): 0
UTM: Zone-10 N4243588 E535359	Latitude/Longitude: 38.33973 / -122.59538	Elevation (feet): 1,636

County Summary:

Sonoma

Quad Summary:

Glen Ellen (3812235)

Sources:

COO02F0021	COOK, D. (SONOMA COUNTY WATER AGENCY) - FIELD SURVEY FORM FOR RANA DRAYTONII 2002-XX-XX
COO16F0007	COOK, D. - FIELD SURVEY FORM FOR RANA DRAYTONII 2016-11-19



Occurrence Report
California Department of Fish and Wildlife
California Natural Diversity Database



Map Index Number: 68159
Key Quad: Cotati (3812236)
Occurrence Number: 932

EO Index: 68313
Element Code: AAABH01022
Occurrence Last Updated: 2009-04-20

Scientific Name: *Rana draytonii*

Common Name: California red-legged frog

Listing Status: Federal: Threatened
State: None

Rare Plant Rank:
Other Lists: CDFW_SSC-Species of Special Concern
IUCN_VU-Vulnerable

CNDDDB Element Ranks: Global: G2G3
State: S2S3

General Habitat:

LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro Habitat:

REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Last Date Observed: 2007-11-10

Occurrence Type: Natural/Native occurrence

Last Survey Date: 2007-11-10

Occurrence Rank: Unknown

Owner/Manager: UNKNOWN

Trend: Unknown

Presence: Presumed Extant

Location:

JUST SSE OF THE INTERSECTION OF STONY POINT ROAD AND JEWETTE ROAD, ABOUT 2 MILES WEST OF PENNGROVE.

Detailed Location:

ADULT CRLF FOUND DEAD ON JEWETTE ROAD; POND WAS LOCATED ABOUT 100 FT AWAY AND IS THE PRESUMED BREEDING SITE.

Ecological:

HABITAT CONSISTS OF A SMALL, CONSTRUCTED POND VEGETATED BY CATTAILS; POND WAS CONSTRUCTED SOMETIME AROUND 2001. SURROUNDING LAND USE: HORSE CORRAL AND RANGELAND.

Threats:

VEHICLE MORTALITY. 1 DEAD CRLF FOUND ON RAILROAD AVE ABOUT 0.40 AIR MI NORTH OF POND ON 10 NOV 2007.

General:

1 ADULT MALE (SVL=94 MM) FOUND DEAD ON JEWETTE ROAD ON 26 DEC 2006 DURING AN EVENING ROAD SURVEY. 11 LIVE JUVENILES, 1 DEAD ADULT & 26 DEAD JUVENILES OBSERVED ON JEWETTE RD & STONY POINT RD ON 10 NOV 2007.

PLSS: T05N, R08W, Sec. 02, SE (M)

Accuracy: 80 meters

Area (acres): 0

UTM: Zone-10 N4238806 E525406

Latitude/Longitude: 38.29698 / -122.70944

Elevation (feet): 155

County Summary:

Quad Summary:

Sonoma

Cotati (3812236)

Sources:

COO06F0014 COOK, D. (SONOMA COUNTY WATER AGENCY) - FIELD SURVEY FORM FOR RANA DRAYTONII 2006-12-26

COO07F0014 COOK, D. (SONOMA COUNTY WATER AGENCY) - FIELD SURVEY FORM FOR RANA DRAYTONII 2007-11-10



Occurrence Report
California Department of Fish and Wildlife
California Natural Diversity Database



Map Index Number:	77574	EO Index:	78493
Key Quad:	Cotati (3812236)	Element Code:	AAABH01022
Occurrence Number:	1344	Occurrence Last Updated:	2009-12-08

Scientific Name:	<i>Rana draytonii</i>	Common Name:	California red-legged frog
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G2G3 State: S2S3	Other Lists:	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable

General Habitat:	Micro Habitat:
LOWLANDS AND FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.	REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Last Date Observed:	2007-11-10	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2007-11-10	Occurrence Rank:	Unknown
Owner/Manager:	UNKNOWN	Trend:	Unknown
Presence:	Presumed Extant		

Location:

RAILROAD AVE, 0.27 MILE NE OF STONY POINT ROAD, ABOUT 2 MILES WNW OF PENNGROVE.

Detailed Location:

0.10 MILE SOUTH WEST OF US 101.

Ecological:

Threats:

VEHICLE MORTALITY

General:

1 DEAD CRLF FOUND ON RAILROAD AVE DURING EVENING ROAD SURVEY. FROG PROBABLY DISPERSED FROM POND AT STONY POINT ROAD AND JEWETTE ROAD (OCC #932)

PLSS: T05N, R08W, Sec. 02, SE (M)	Accuracy: 80 meters	Area (acres): 0
UTM: Zone-10 N4239422 E525387	Latitude/Longitude: 38.30253 / -122.70963	Elevation (feet): 215

County Summary:	Quad Summary:
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Sonoma	Cotati (3812236)
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Sources:

COO07F0014 COOK, D. (SONOMA COUNTY WATER AGENCY) - FIELD SURVEY FORM FOR RANA DRAYTONII 2007-11-10

ATTACHMENT B
Qualifications of Surveyor

APPENDIX B

Qualifications of Surveyor

CRAIG SELTENRICH, MS

Senior Aquatic Ecologist

Craig Seltenrich has 38 years of experience in the field of aquatic biology, including; amphibian ecology, aquatic toxicology, and freshwater and marine fisheries. Since 1999, he has specialized in amphibian ecology and has designed and conducted numerous studies for evaluating potential impacts on special-status amphibians throughout much of the western Sierras and in other areas of central and northern California. Mr. Seltenrich worked at Pacific Gas and Electric Company for 23 years and was the principle amphibian biologist for all Company projects. He has also written several survey protocols for native Ranids in California including the foothill yellow-legged frog, Sierra Nevada yellow-legged frog, Yosemite toad, Cascades frog, and northern leopard frog. Mr. Seltenrich currently possesses a 10(A)(1)(a) permit for both CRF and the California tiger salamander (CTS).

Mr. Seltenrich has extensive experience conducting habitat assessments and surveys for CTS throughout much of central and northern California, as well as collection and handling of larvae and adults. During these surveys Mr. Seltenrich has observed CTS breeding, eggs, larvae, juveniles, and adults; and has documented numerous new populations in the San Francisco Bay area while working for PG&E. Currently, Mr. Seltenrich is the manager and dedicated biologist for the 5-year Potrero Landfill Expansion Site CTS capture and relocation project in Suisun and for CRF and CTS capture and relocation efforts at the Altamont Landfill and Resource Recovery Facility near Livermore. Additionally, he has conducted larval surveys and drift fence surveys in several locations in the Central Valley and coastal hills. Mr. Seltenrich has participated in CTS workshops and training sessions regarding larval and upland survey techniques. Mr. Seltenrich has also prepared Biological Assessments for CTS and has designed innovative approaches for minimizing impacts and conserving this species.

Mr. Seltenrich also has extensive experience conducting habitat assessments and surveys for the California red-legged frog (CRF) throughout much of central and northern California, as well as collection and handling of larvae and adults. He has conducted extensive surveys in the Altamont Pass area, along the southern flanks of Mount Diablo, in the Monterey Bay area, in the Central Valley, and in several locations in the Sierra foothills, and has documented numerous new CRF breeding locations. During these surveys, Mr. Seltenrich has observed breeding, egg masses, larvae, juveniles, and adults; and has documented numerous new populations in the San Francisco Bay area. He also conducted several CRF population assessments/surveys at the Big Gun Conservation Bank in Michigan Bluff, which is the largest population in the Sierra foothills. In addition, he has participated in CRF workshops and training sessions and has conducted CRF training workshops at the Big Gun Conservation Bank in Michigan Bluff for the last three years.

APPENDIX B (Continued)

Mr. Seltenrich has also prepared Biological Assessments for CRF, and has designed innovative approaches for minimizing impacts and conserving this species.

Mr. Seltenrich also has extensive knowledge and experience with Sierra Nevada and foothill yellow-legged frogs, and has worked with both Yosemite and spadefoot toads. He is senior author of two publications (in gray literature) on survey methodologies and techniques for the foothill yellow-legged frog (Seltenrich and Pool 2002), and for Yosemite toad, mountain yellow-legged frog, northern leopard frog, and Cascades frog (PG&E 2001). He managed and led all of the amphibian surveys at PG&E associated with the relicensing of hydroelectric facilities throughout the Sierra Nevada Mountains. Mr. Seltenrich has also been an active member of the California/Nevada Amphibian Populations Task Force since 2002.

Publications

Pacific Gas & Electric Company. 2001. "Survey Protocols for Mountain Yellow-Legged Frog, Northern Leopard Frog, Cascades Frog, and Yosemite Toad: Standard Operating Procedures and Data Sheets for Amphibian Surveys and Habitat Assessments." Prepared by C. Seltenrich and A. Pool. May 2001.

Seltenrich, C.P., and A.C. Pool. 2002. "A Standardized Approach for Habitat Assessments and Visual Encounter Surveys for the Foothill Yellow-Legged Frog (*Rana boylei*)." Pacific Gas & Electric Company.

Stitt, E.W. and C.P. Seltenrich. 2010. "California Red-Legged Frog (*Rana draytonii*) Diet." *Herpetological Review*. 41(2):206.

ATTACHMENT C

Copies of Field Data Sheets

California Red-Legged Frog Habitat Assessment Form¹

General Information

Project Name / County: *Robert Retention Basin & Trail*

Observers: *C. Seltenrich*

Date: *11/9/2017*

Site Number: *Drainage 1*

Site Elevation:

Additional Info:

Aquatic Habitat

Pond Lake

☒ Natural / ☐ Man-made

Ephemeral / Perennial

☒ Stream

Ephemeral / ☒ Intermittent

Perennial

Pools No Pools

Size:

Depth:

% Riffles:

Stream Gradient: ☒ Low ☐ Moderate ☐ High

Pools (along stream)

Ephemeral / Intermittent

Size:

Depth:

Other (describe):

Aquatic Features

Water: ☒ Present ☐ Absent

If Present, % Inundation:

Turbidity: ☒ Low (clear) ☐ Moderate ☐ High

Size (meters)

Width:

Length:

Depth (meters)

Maximum: *1-2"*

Minimum:

Average: *1.5"*

Est. Flow (CuFt/sec):

Shade on water (mid-day)

0-10 %

Type: *Canopy Overhanging* *floating grasses*

Emergent Vegetation

% Cover: *NA*

Type:

Submerged Vegetation

% Cover: *NA*

Type:

Basking Sites

Present ☒ Absent

Type:

Abundance: L M H

Substrate (%)

Fines *30-50* Sand

Gravel

Cobble *50-70* Boulder

Bedrock

Comments:

Recent rain event, few small puddles/pools. Not plunge pools

Shoreline Features

Overhanging Vegetation

% Cover:

Type:

Earthen Banks

☒ Present ☐ Absent

Extent:

Undercut Banks

Present ☐ Absent

Extent:

Rootballs

Present ☒ Absent

Abundance: Low Moderate High

Bank Gradient

Range (degrees):

Low Moderate High

Evidence of Disturbance

Yes No

Low Moderate High

Type of Disturbance

Livestock Trampling Erosion Mining Other:

Comments:

Earthen banks of low gradient, grasses up to edge of bank for majority of length. Some incised banks around a few bends primarily

Terrestrial Habitat and Features

General Habitat Description:

grasslands

Barriers to Movement / Dispersal

☒ Present ☐ Absent

Type:

Location:

Cover (within 50 ft of site)

% Cover:

Type:

Burrows / Cover Objects:

☒ Present ☐ Absent

Type: *CA GS, bottles*

Abundance: *low-mod*

Project Site Land Use:

previous grazing

Adjacent Land Use:

Comments:

Wildlife Observed

Amphibians:

Fish:

Reptiles:

Other:

Comments:

Photo #

Description

Photo #

Description

¹ Based on habitat requirements in *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (USFWS 2005).

California Red-Legged Frog Habitat Assessment Form¹

General Information

Project Name / County: Rehbert Park Detention basin & Trail

Observers: C. Settenrich

Date: 11/9/2017

Site Number: Copeland Creek

Site Elevation:

Additional Info:

Aquatic Habitat

Pond	Lake	Natural / Man-made	Ephemeral / Perennial
<u>Stream</u>		Ephemeral / Intermittent	Perennial
		Pools No Pools	Size: Depth:
		% Riffles:	Stream Gradient: <u>Low</u> Moderate High
Pools (along stream)		Ephemeral / Intermittent	Size: Depth:
Other (describe): <u>80% run/glide</u>			

Aquatic Features

Water: Present <u>Absent</u>	If Present, % Inundation:	Turbidity: Low (clear) <u>NA</u> Moderate High
Size (meters)	Width: <u>25-105 Avg 40-60</u>	Length: <u>2500</u>
Depth (meters)	Maximum: <u>6</u>	Minimum: Average:
Est. Flow (CuFt/sec):		
Shade on water (mid-day)	%	Type: <u>Canopy</u> Floating
Emergent Vegetation	% Cover: <u>0</u>	Type:
Submerged Vegetation	% Cover: <u>0</u>	Type:
Basking Sites	Present Absent	Type: Abundance: L M H
Substrate (%)	Fines Sand <u>10</u> Gravel <u>30</u> Cobble <u>55</u> Boulder <u>5</u> Bedrock	
Comments:		

Shoreline Features

Overhanging Vegetation	% Cover: <u>50</u>	Type: <u>Vegetat Willow primarily Some Blackberry</u>
Earthen Banks	<u>Present</u> Absent	Extent:
Undercut Banks	<u>Present</u> Absent	Extent:
Rootballs	<u>Present</u> Absent	Abundance: Low Moderate High
Bank Gradient	Range (degrees):	<u>Low</u> Moderate <u>High</u> - few incised areas
Evidence of Disturbance	Yes <u>No</u>	Low Moderate High
Type of Disturbance	Livestock Trampling Erosion Mining Other:	
Comments: <u>Bambs 1-3', 68'</u>		

Terrestrial Habitat and Features

General Habitat Description:			
Barriers to Movement / Dispersal	Present <u>Absent</u>	Type:	Location:
Cover (within 50 ft of site)	% Cover: <u>Variable</u>	Type:	
Burrows / Cover Objects:	<u>Present</u> Absent	Type: <u>SMA CAGS, Batta</u>	Abundance: low-mod
Project Site Land Use:	<u>Prior grazing</u>		
Adjacent Land Use:			
Comments: <u>Salix, blackberry, eucalyptus. Riparian 20-150ft out</u>			

Wildlife Observed

Amphibians:	Fish:
Reptiles:	Other:
Comments:	

Photo #	Description	Photo #	Description

¹ Based on habitat requirements in *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (USFWS 2005).

ATTACHMENT D

Photographs of Aquatic and Upland Habitats

ATTACHMENT D
Representative Photographs of Aquatic and Upland Habitats



1. Representative photograph of Copeland Creek with Arroyo Willow



2. Representative photograph of Copeland Creek with incised banks

ATTACHMENT D (Continued)



3. Representative photograph of intermittent drainage



4. Representative photograph of upland habitat within Study Area

ATTACHMENT D (Continued)



5. Photograph of seasonal wetland swale (section without pools)

APPENDIX F

Wildlife Species Observed

APPENDIX E

Wildlife Species Observed on the Copeland Creek Detention Basin and Trail Project Site in Sonoma County, California

MAMMALS

Canis latrans – coyote (scat)
Urocyon cinereoargenteus – gray fox (scat)
Otospermophilus beecheyi – California ground squirrel
Thomomys bottae – Botta's pocket gopher (sign)
Lepus californicus – black-tailed jackrabbit

BIRDS

Cathartes aura – turkey vulture
Meleagris gallopavo – wild turkey
Buteo jamaicensis – red-tailed hawk
Melanerpes formicivorus – acorn woodpecker
Colaptes auratus – northern flicker
Sayornis saya – Say's phoebe
Sayornis nigricans – black phoebe
Sitta carolinensis – white-breasted nuthatch
Melospiza crissalis – California towhee
Junco hyemalis – dark-eyed junco
Sialia mexicana – western bluebird
Sturnella neglecta – western meadowlark
Zenaidura macroura – mourning dove
Passerculus sandwichensis – savannah sparrow
Athene cunicularia – burrowing owl

AMPHIBIANS

Pseudacris regilla – pacific chorus frog

APPENDIX E (Continued)

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APPENDIX C

Traffic Impact Study



Memorandum

Date: February 2, 2018

Project: RPA075

To: Christine Kronenberg
DUDEK
1102 R Street
Sacramento, CA 95811

From: Steve Fitzsimons
sfitzsimons@w-trans.com
Allison Jaromin
acjaromin@w-trans.com

Subject: Petaluma Hill Road and Laurel Drive Level of Service

As requested, W-Trans has prepared a traffic analysis relative to the proposed installation of a traffic signal at Petaluma Hill Road and Laurel Drive. The purpose of this memo is to summarize the LOS at the intersection of Petaluma Hill Road and Laurel Drive once a traffic signal is installed with the expected pedestrian traffic generated from the Crane Creek Trail.

Existing and Expected Conditions

Traffic counts were obtained at Rohnert Park Expressway and Petaluma Hill Road on January 25, 2018, indicate that the roadway is carrying about 1,800 vehicles in both the morning and evening peak hours. During these times there was a maximum of four bicyclists crossing Petaluma Hill Road and no pedestrians.

The intent of collecting bicycle and pedestrian volumes was to establish a source for estimating pedestrian and bicycle volumes at the proposed signalized crosswalk at Petaluma Hill Road and Laurel Drive. However, the low volumes indicate that potential exists for much higher volumes once the trail is extended to campus. For purposes of this study, based on other similar trail crossing studies completed by W-Trans on previous projects, it was assumed there would be 50 pedestrians an hour crossing Petaluma Hill Road at Laurel Drive

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersection was analyzed using methodologies published in the Highway Capacity Manual (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

Since the study intersection is the proposed location of a traffic signal, it was evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing. Table 1 describes how delay is used to determine LOS.

Table 1 – Signalized Intersection Level of Service Criteria

LOS A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
LOS B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
LOS C	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
LOS D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
LOS E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
LOS F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2000

Traffic counts of northbound and southbound traffic on Petaluma Hill Road, obtained at Rohnert Park Expressway and Petaluma Hill Road on January 25, 2018, indicate that the roadway is carrying about 1,800 vehicles in both the morning and evening peak hours. During these times there was a maximum of four bicyclists or pedestrians using the crosswalk. For purposes of this study it was assumed there would be 50 pedestrians an hour crossing both Petaluma Hill Road and Laurel Drive. Even with this conservative approach the traffic signal at Petaluma Hill Road is expected to operate at LOS A during both morning and evening peak hours.

Table 2 – Intersection Levels of Service

Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. Petaluma Hill Rd/ Laurel Dr	6.2	A	7.8	A

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Conclusions Conclusion

- The installation of a traffic signal at Petaluma Hill Road and Laurel Drive is expected to operate acceptably, even with 50 pedestrians an hour.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

SMF/acj/RPA075.M1

Attachments: Level of Service Calculations