CITY OF PINOLE
DEVELOPMENT SERVICES DEPARTMENT

Pinole Verizon Wireless Facility Project Site
2518 Pfeiffer Lane, Pinole, CA 94564

Public Review Draft Initial Study

October 2015

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List of Abbreviations and Acronyms

APN	Assessor's Parcel Number
ASR	Antenna Structure Registration
BAAQMD	Bay Area Air Quality Management District
BMPs	Best Management Practices
CDFW	California Department of Fish and Wildlife
CalEEMod	California Emissions Estimator Model
CNDDB	California Natural Diversity Database
CAP	Clean Air Plan
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CMU	concrete masonry unit
CUPA	Certified Unified Program Agency
dB	decibels
dBA	A-weighted decibels
DPS	Distinct Population Segment
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
g/kW-hr	grams per kW-hour
GHGs	greenhouse gases
in/sec	inches per second
kW	kilowatt
lbs/day	pounds per day

$MTCO_2e$	metric tons of CO_2 equivalents
mW/cm^2	milliwatt per square-centimeter
NAHC	Native American Heritage Commission
NO_X	nitrous oxides
NWIC	Northwest Information Center
$PM_{2.5}$	particulate matter 2.5 microns in diameter
PM_{10}	particulate matter 10 microns in diameter
ppv	peak-particle velocity
QSP	Qualified Stormwater Pollution Prevention Plan Practitioner
RF	radio frequency
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
sf	square feet / square-foot
SMAQMD	Sacramento Metropolitan Air Quality Management District
SR	Suburban Residential (General Plan Land Use Designation)
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
tons/yr	tons per year
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VELB	valley elderberry longhorn beetle

INITIAL STUDY

October 2015

A. BACKGROUND

1. Project Title: Pinole Verizon Wireless Facility

2. Lead Agency Name and Address: City of Pinole
Development Services Department
2131 Pear Street
Pinole, CA 94564

3. Contact Person and Phone Number: Winston Rhodes
Planning Manager
(510) 724-9832

4. Project Location: 2518 Pfeiffer Lane
Pinole, CA 94564
Assessor's Parcel Number (APN) 360-131-036

5. Project Sponsor's Name and Address: Pamela Nobel
Verizon Wireless
2010 Crow Canyon Place, Suite 355
San Ramon, CA 94583

6. Existing General Plan Designations: Suburban Residential (SR)

7. Existing Zoning Designation: Suburban Residential (R-1)

8. Project Description Summary: The proposed project would include the installation of nine panel antennas mounted within a new 34-foot tall faux water tank on a concrete pad foundation adjacent to an existing detached garage associated with the residence located at 2518 Pfeiffer Lane, Pinole, CA. An approximately 653-square-foot equipment area, located about the base of the faux water tank will be fenced with redwood fencing and contain outdoor equipment cabinets and a new stand-by 30 kilowatt (kW) diesel generator with a UL 142 fire-rated 132-gallon diesel fuel tank. Grapevine plantings would also be included for partial screening purposes. In addition, an approved Fire Department turnaround would also be incorporated within the site. The proposed project would install Verizon Wireless utility lines underground leading up to the proposed tower. The project requires a use permit (CUP 14-13) and design review (DR 14-26) approval by the City.

B. SOURCES

The following documents are referenced information sources utilized by this analysis:

1. Bay Area Air Quality Management District. BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans. Revised May 2011.
2. Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines*. Updated May 2012.
3. California Environmental Protection Agency, Cortese List, http://www.envirostor.dtsc.ca.gov, accessed July 2015.
4. Bay Area Air Quality Management District. *Bay Area 2010 Clean Air Plan*. Adopted September 15, 2010.
5. California Department of Conservation, Division of Land Resource Protection. *Contra Costa County Important Farmland 2010*. July 2011.
6. City of Pinole. *City of Pinole General Plan Update*. November 2010.
7. City of Pinole. *City of Pinole General Plan Update Draft Environmental Impact Report*. July 2010.
8. City of Pinole. *City of Pinole General Plan Update Final Environmental Impact Report*. September 2010.
9. City of Pinole. *Pinole, CA Municipal Code*. December 4, 2012.
10. Contra Costa Local Agency Formation Commission. *Municipal Service Review: Fire and Emergency Medical Service Providers*. Accepted by LAFCo August 12, 2009.
11. EBI Consulting, Inc. *Cultural Report.* 2014.
12. Federal Emergency Management Agency. *Flood Insurance Rate Map, City of Pinole, California, Contra Costa County, Community Panel Number 06013C0232F*.
13. Federal Transit Administration. *Transit Noise and Vibration Impact Assessment Guidelines.* May 2006.
14. Hammett & Edison, Inc. *Statement* (regarding radio frequency electromagnetic fields). January 27, 2015.
15. Hammett & Edison, Inc. *Statement* (regarding noise). January 27, 2015.
16. Live Oak Associates, Inc. *Pinole Verizon Wireless Facility Biological Evaluation*. August 20, 2015.
17. Mid Pacific Engineering, Inc. *Geotechnical Investigation Report, Proposed Telecommunications Facility*. February 4, 2015.
18. Timothy C. Ghirardelli. *Tree Survey*. April 24, 2012.
19. Verizon Wireless. *Photosimulations*. June 5, 2015.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Less Than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐ **Aesthetics**	☐ **Agriculture and Forest Resources**	☐ **Air Quality**
✖ **Biological Resources**	✖ **Cultural Resources**	✖ **Geology and Soils**
☐ **Greenhouse Gas Emissions**	☐ **Hazards and Hazardous Materials**	✖ **Hydrology and Water Quality**
☐ **Land Use and Planning**	☐ **Mineral Resources**	✖ **Noise**
☐ **Population and Housing**	☐ **Public Services**	☐ **Recreation**
☐ **Transportation and Circulation**	☐ **Utilities and Service Systems**	☐ **Mandatory Findings of Significance**

D. DETERMINATION

On the basis of this initial study:

☐ 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 applicant. 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" 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 EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Winston Rhodes, Planning Manager	City of Pinole
Printed Name	For

E. BACKGROUND AND INTRODUCTION

This Initial Study identifies and analyzes the potential environmental impacts of the Pinole Verizon Wireless Facility Project (proposed project). The information and analysis presented in this document is organized in accordance with the order of the California Environmental Quality Act (CEQA) checklist in Appendix G of the CEQA Guidelines.

The City of Pinole is the lead agency for the environmental review of the proposed project evaluated herein and has the principal responsibility for approving the project. As provided in the CEQA Guidelines Section 15021, public agencies are charged with the duty to avoid or minimize environmental damage where feasible. The public agency has an obligation to balance a variety of public objectives, including economic, environmental, and social issues. The Initial Study/Mitigated Negative Declaration is an informational document that apprises decision-makers and the general public of the potential environmental effects of a proposed project. As required by Section 15071 of the CEQA Guidelines, this Initial Study/Mitigated Negative Declaration includes a brief description of the project, a proposed finding that the project would not have a significant effect on the environment, and mitigation measures necessary to avoid potentially adverse effects. The City of Pinole, as lead agency, is required to consider the information in the Initial Study/Mitigated Negative Declaration, along with any other available information, in deciding whether to approve the requested CUP and Design Review applications.

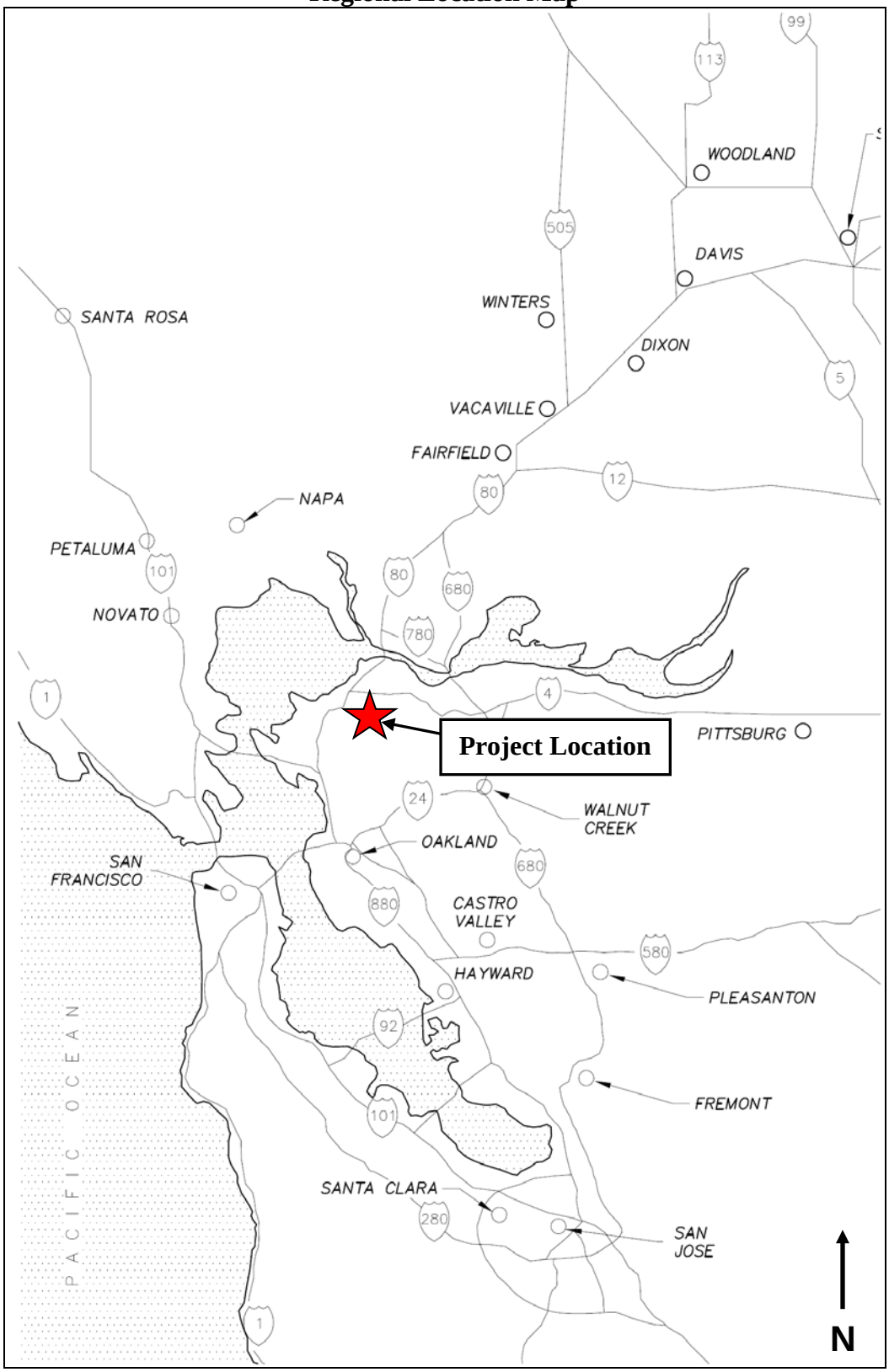
The City of Pinole's current General Plan and associated General Plan Environmental Impact Report (EIR) was adopted in 2010. The City of Pinole General Plan EIR was prepared as a program-level EIR, pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations, Sections 15000 *et seq*.). The City of Pinole General Plan EIR analyzed full implementation of the City of Pinole General Plan and identified measures to mitigate the significant adverse project and cumulative impacts associated with the General Plan.

The determinations made in this Initial Study, with respect to potential impacts resulting from the project, are primarily based upon site-specific technical reports listed in Section B, Sources, of this Initial Study. Other sources of information include the Pinole General Plan and Zoning Ordinance, and relevant documents from local agencies. Please refer to the Sources section of this Initial Study for a detailed list of technical reports and other sources used for the preparation of the analyses throughout this Initial Study.

F. PROJECT DESCRIPTION

The proposed project consists of a replacement site for the previous proposal along Adobe Road, in order to provide Verizon service coverage for the Pinole Valley and Pinole Valley Road areas. The proposed project is located at 2518 Pfeiffer Lane (APN 360-131-036) in the southeastern region of the City of Pinole, Contra Costa County, California (see Figure 1, Regional Location Map). The project site is adjacent to a private garage and residence atop a small hill at an elevation of approximately 265 feet. An existing shed is located between the proposed Verizon Wireless equipment area and the existing detached garage. This shed will be demolished as part of the project. Verizon Wireless will lease the proposed cellular site from the existing property owner.

Figure 1
Regional Location Map



The project site is bounded by undeveloped land to the east, owned by East Bay Municipal Utility District (EBMUD); Pfeiffer Lane and single-family residences to the north; undeveloped land and single-family residential to the west; and an undeveloped portion of the property, Pinole Creek, and single-family residences to the south (see Figure 2, Project Vicinity Map). The project site is accessed by Pfeiffer Lane to the north.

The proposed project requires approval of the following entitlements by the City of Pinole:

- Initial Study / Mitigated Negative Declaration;
- Conditional Use Permit for a wireless communication facility; and
- Design Review.

Prior to construction, the project applicant will also need to obtain a Grading Permit from the City of Pinole. In addition, construction of new wireless communication facilities requires notification of the Federal Aviation Administration (FAA) and Antenna Structure Registration (ASR) with the Federal Communications Commission (FCC).

Telecommunications Structure (Faux Water Tower)

The proposed project would include the installation of nine panel antennas within a new 34-foot tall faux water tank. The antennas would not be visible from the outside. The faux water tank would be mounted to a new concrete foundation via four concrete piers (see Figure 3). The concrete foundation would measure 27 feet, five inches, by 19 feet, five inches. The maximum height of the faux water tower would be approximately 34 feet above grade level. With respect to the component parts of the faux water tower, the mounting structure for the tank, which consists of four tower legs, is approximately 18 feet, 6 inches tall (above grade level), and the faux water tank, which is mounted on top of the legs, is approximately 15 feet, 6 inches tall, or 34 feet above grade level. For comparison purposes, the 18-foot, 6-inch tower legs are slightly higher than the roof line of the existing detached garage, which is located just over 17 feet from the proposed water tank (see Figure 4). The top of the water tank (i.e., 34 feet above grade level) is the same approximate height of the existing mature oak tree located to the southeast on the same residential property.

The faux water tank would have a reddish wood appearance, and the steel tower legs would be painted brown.

Figure 2
Project Vicinity Map

Figure 3
Project Site Plan

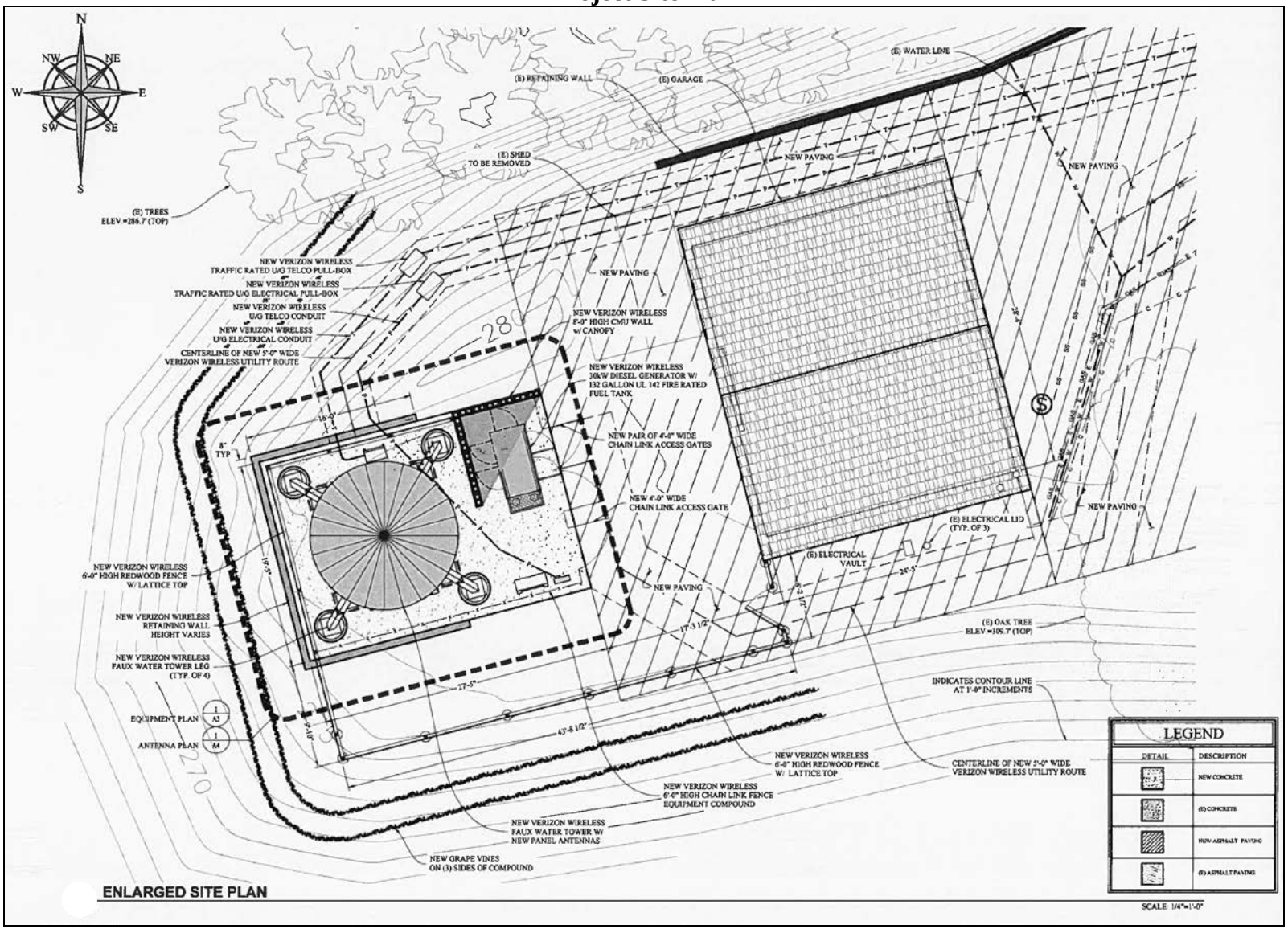
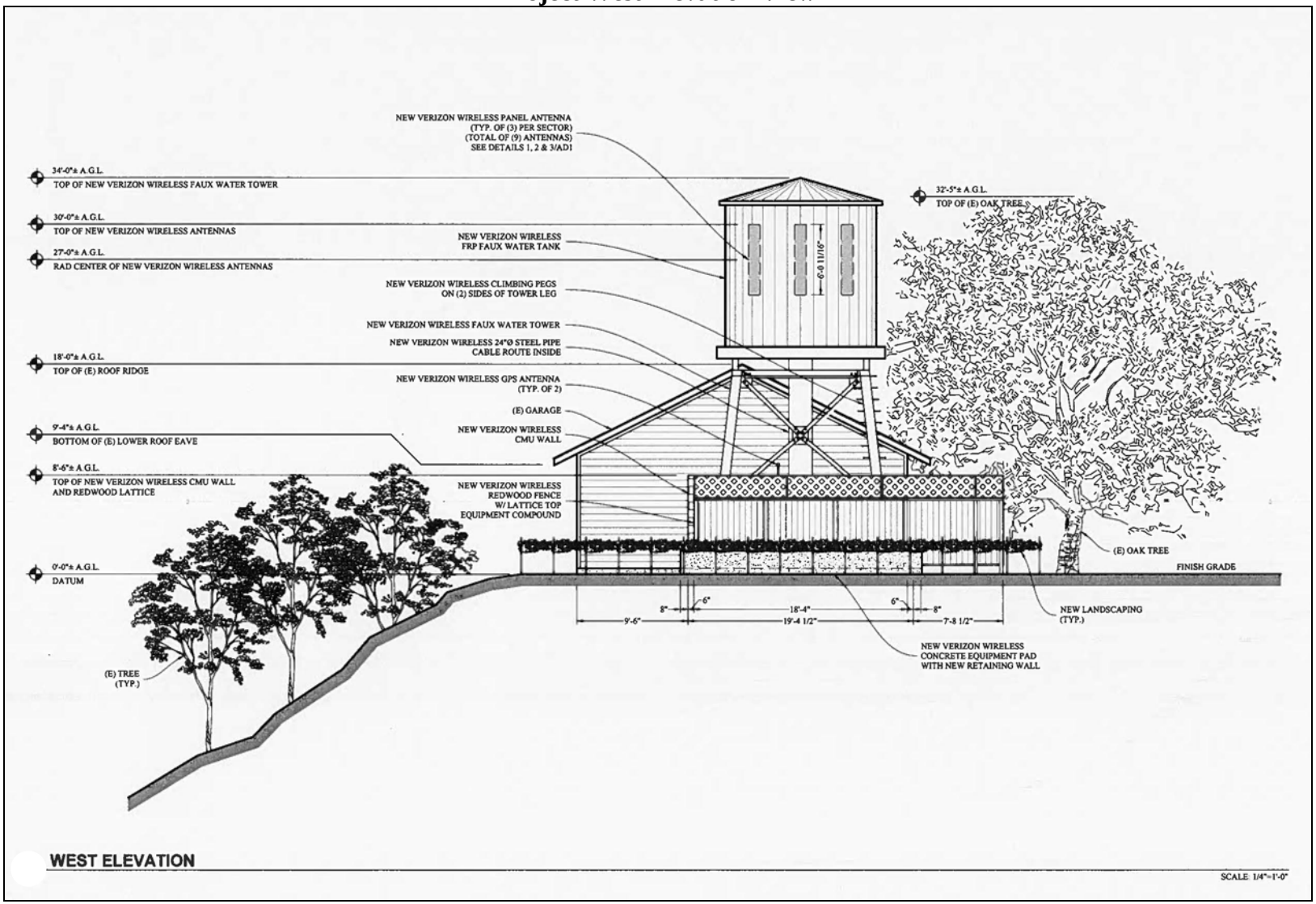


Figure 4
Project West Elevation View



Equipment Area

In addition to the water tank mounting structures, the concrete foundation will contain four equipment cabinets and a 30 kW diesel generator with a 132 gallon fuel tank. The diesel generator will be discussed in more detail below. The total impervious area for the Verizon Wireless equipment area is approximately 653 square feet (sf). The equipment area will be fenced for screening purposes. Fencing will consist primarily of an approximately 8 ½-foot tall redwood fence with lattice top. The northern side of the equipment area will be fenced with both a redwood lattice fence, approximately 18 feet in length, and a concrete masonry unit (CMU) block wall, approximately 8 feet in length and approximately 8 ½ feet tall. The purpose of the CMU wall is to attenuate noise from the proposed diesel generator.

For additional screening purposes, grape vines would be planted on the north, south, and west sides of the fenced equipment area (see Figure 4, Project West Elevation View, Figure 5, Project North Elevation View, and Figure 6, Project South Elevation View).

Concrete retaining walls will be constructed along the northern, western, and southern sides of the concrete foundation of the equipment area. More specifically, the northern side of the concrete foundation will be supported by a 2-foot high concrete retaining wall; the western side of the foundation will be supported by an approximately 8-foot tall concrete retaining wall; and the southern side of the foundation will be supported by a 1-foot high concrete retaining wall. The majority of these retaining walls would be constructed underground, with only a relatively small portion of the walls extending above-ground (i.e., approximately four to six inches).

Diesel Generator

In order for Verizon to maintain the site's operational capability in the event of an emergency or extended power outage, a 30 kW diesel generator will be installed. The diesel-fueled generator will run approximately 15 minutes once a week during daytime hours on a weekday and will be started remotely. The generator will be equipped with a muffler and enclosed within a sound attenuation enclosure, further buffered by an approximately 8 ½-foot tall CMU block wall along its northern and western sides. The generator will be supplied by a 132-gallon diesel fuel tank with several built-in safety mechanisms, including a secondary containment basin, a secondary containment leak detection switch and safety shut off valve. The generator fuel tank will be fueled once every 4 months under a regular maintenance cycle.

Security and Maintenance

For security purposes, six-foot chain link fencing will be installed along the southern and eastern sides of the equipment area, inside of the proposed redwood fence. In addition, the wireless facility will be entirely self-monitored 24-hours a day by computers, which connect directly to a central office and alert personnel to equipment malfunction or breach of security.

The facility will contain a sign identifying a 1-800 number to call in case of emergency. Other signage is not proposed. The facility will be unmanned and visited monthly for routine maintenance only.

Figure 5
Project North Elevation View

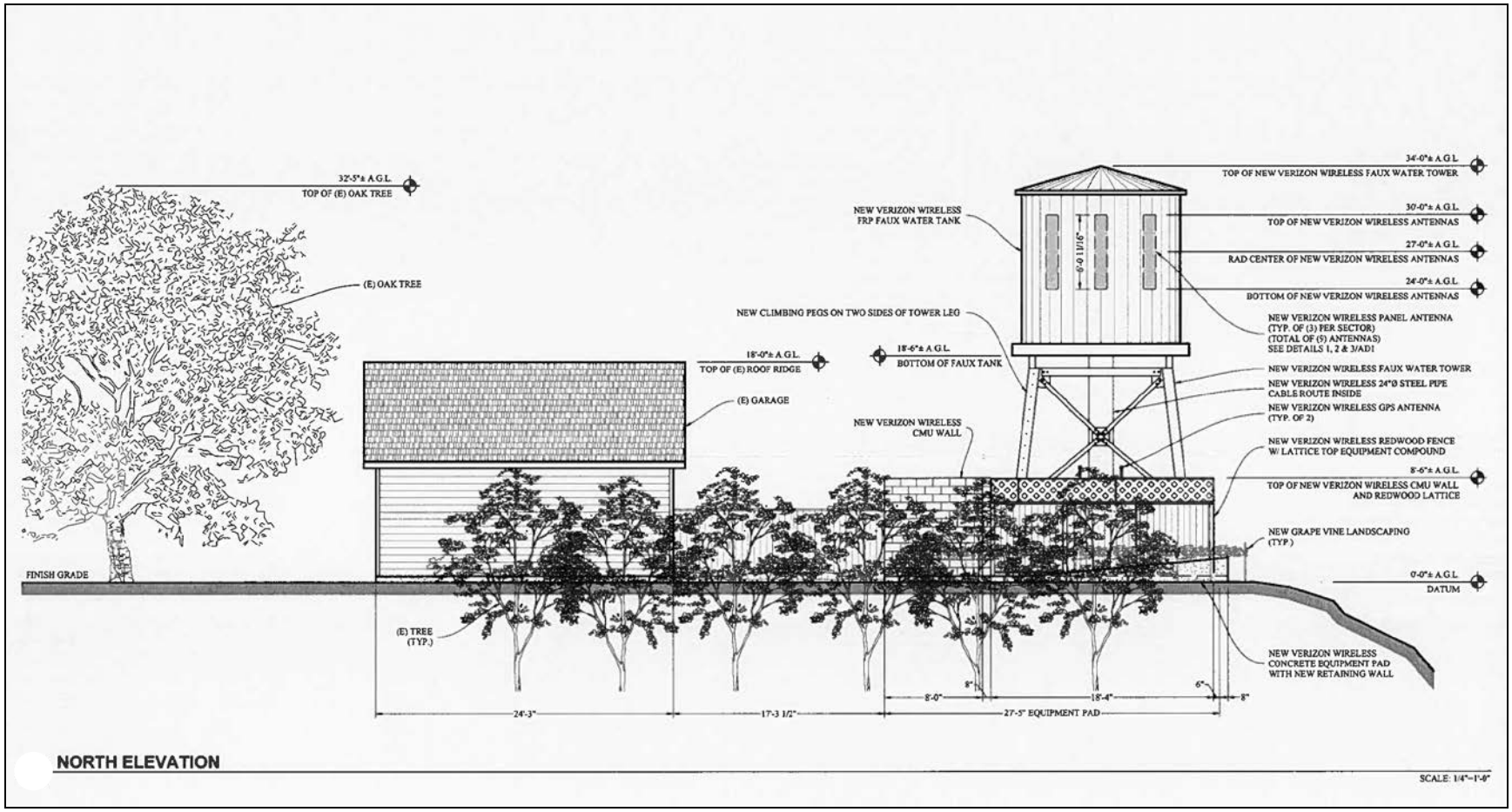
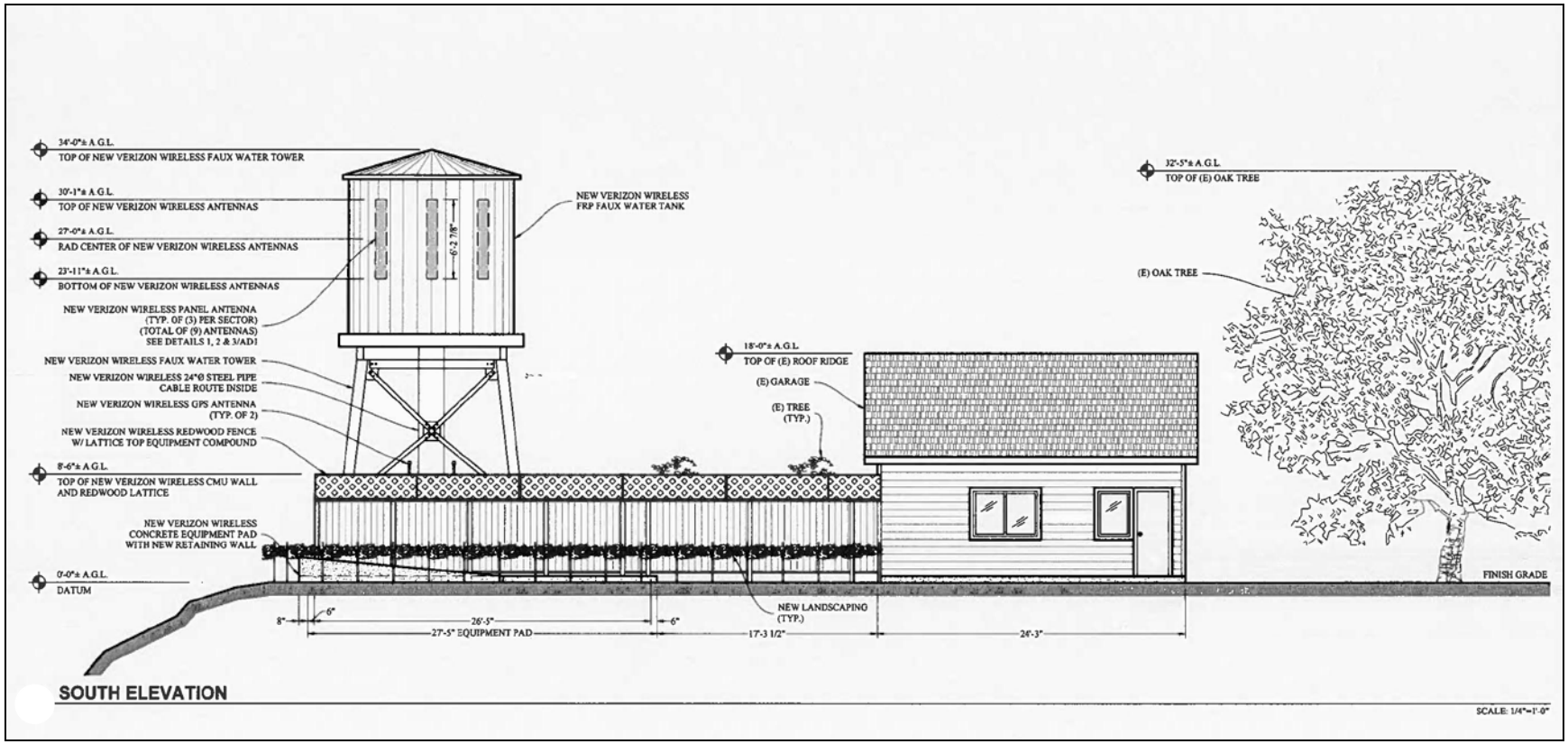


Figure 6
Project South Elevation View



Access and Utilities

Access to the project site will be gained via a six- to 12-foot wide access easement over an existing paved driveway and gravel parking lot, extending approximately 310 feet from the southern terminus of Pfeiffer Lane to the lease area. Based on Pinole Municipal Code requirements, a portion of the owners driveway bounded by the top edge of the existing asphalt paved driveway, the attached garage for the existing residence, the existing driveway retaining wall, the detached garage door, and top of slope on the southerly side, is required to be a paved surface capable of supporting vehicles and the load of a fire apparatus and other emergency equipment vehicles. The driveway area is approximately 3,020 sf. The applicant proposes to provide approximately 2,937 sf. of constrained permeable pervious pavers to comply with the Municipal Code requirements. The solid pavers are set in sand and spaced to allow runoff to infiltrate into the soil.

Utilities will be routed underground from the equipment in the leased area to the existing utility vaults approximately 310 feet east along Pfeiffer Lane. From the leased equipment area, utilities will be routed via a new 5-foot wide, 4-foot deep trench, which will run north of the equipment area and detached garage, along the existing slope, then below the existing paved driveway to the existing utility vaults (see Figure 7, Preliminary Grading Plan and Stormwater Control Plan). The utility trenches would encompass approximately 810 sf and would be restored to existing conditions once the lines are installed.

Drainage

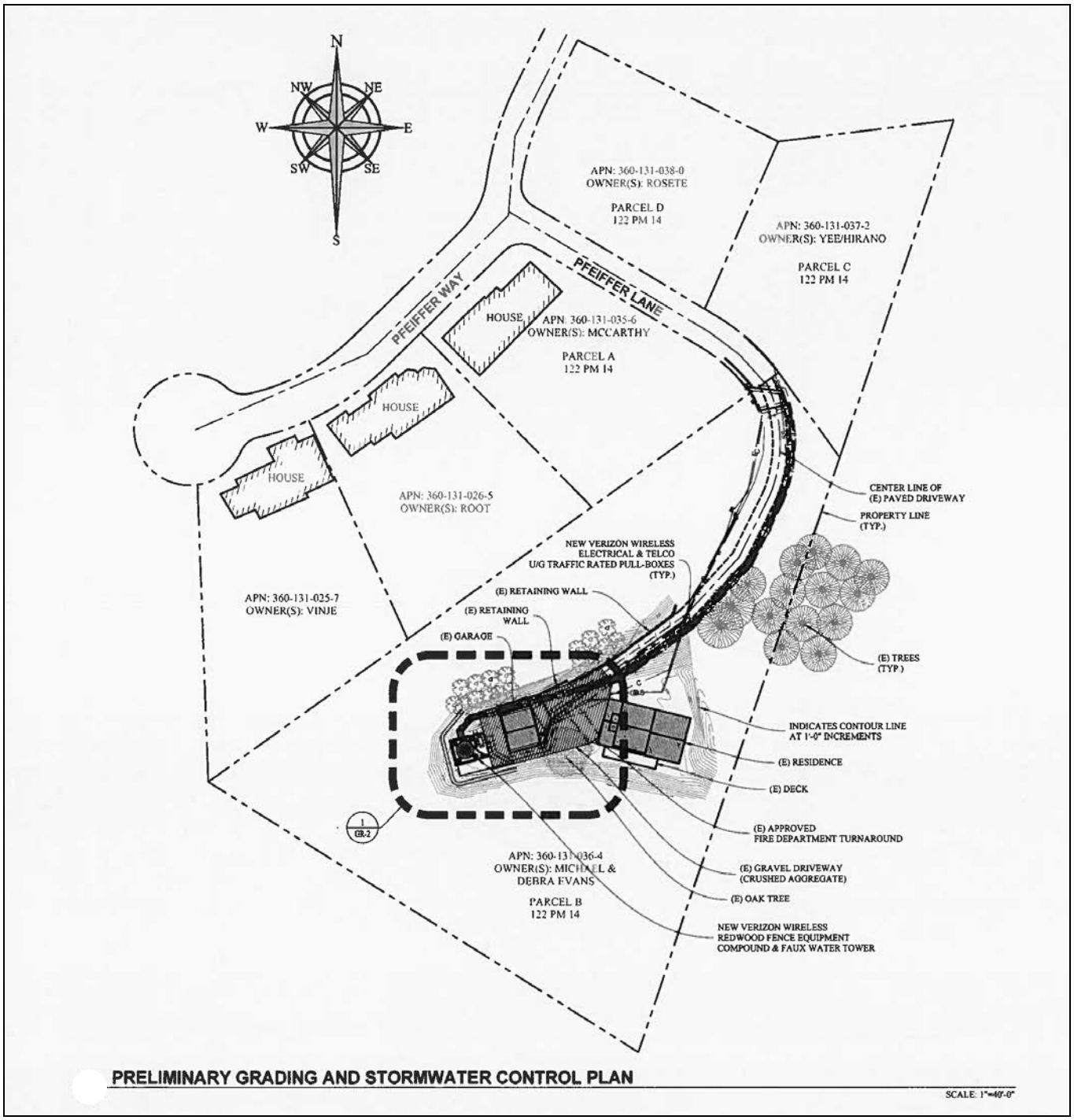
The impervious equipment area will include an 8-foot by 20-foot vegetated bioswale constructed with an approved soil mixture blend of 80 percent washed coarse sand and 20 percent sandy loam. The bioretention soil mixture will allow treated water to percolate into the soil. The treated drainage water is expected to infiltrate through the soil and eventually enter the ephemeral tributary to the north in a natural water cycle (i.e., through natural percolation via native soils).

The permeable pavers installed for the driveway area will have integral spacers, which will allow runoff to fully infiltrate into the new driveway substrate with no expected sheet flow from the on-site paved areas to off-site areas.

Erosion Control Best Management Practices

The total disturbed area for the proposed project would be approximately 4,483 sf (approximately 0.103 acres), which includes the driveway improvements, trenches, and equipment area. In order to ensure that these disturbed soils will not be subject to erosion during construction, the construction phase of the project includes the following best management practices.

Figure 7
Preliminary Grading Plan and Stormwater Control Plan



The new 5-foot wide electrical utility route along the north side of the existing garage is expected to be trenched or bored. The best management practices include placing two rows of fiber rolls (straw wattles) spaced 10 feet apart, aligned parallel with the contours, and extending 20 feet past the disturbed trench length. The fiber rolls will prevent downslope erosion of disturbed soils into the ephemeral tributary to Pinole Creek to the north.

For excavation work associated with construction of the concrete retaining walls, fiber rolls will be equally spaced along the adjacent slopes (to the northwest, west, southwest). The fiber rolls will prevent downslope erosion of disturbed soils into Pinole Creek to the west, and the ephemeral tributary of Pinole Creek to the north (see Figure 8, Erosion Control Plan).

G. ENVIRONMENTAL CHECKLIST

This Initial Study is structured in accordance with the environmental checklist form presented in Appendix G of the CEQA Guidelines. The environmental checklist is organized by environmental issue area and sets forth a series of questions relevant to each environmental issue area. The questions within Appendix G of the CEQA Guidelines are intended to inform decision-makers and practitioners about which topics are subject to CEQA review and which topics are not. A brief explanation with adequate supporting information sources is required for all answers. All answers must take into account the whole action involved, including off-site and on-site, indirect and direct, and construction and operational impacts. Based on the discussions provided for each question, the checklist answers must indicate whether the impact would be potentially significant, less than significant with mitigation, or less than significant, or whether the project would have no impact. Included in each discussion are project-specific mitigation measures recommended, as appropriate, as part of the proposed project.

The impact significance determination options for the environmental checklist are defined as follows:

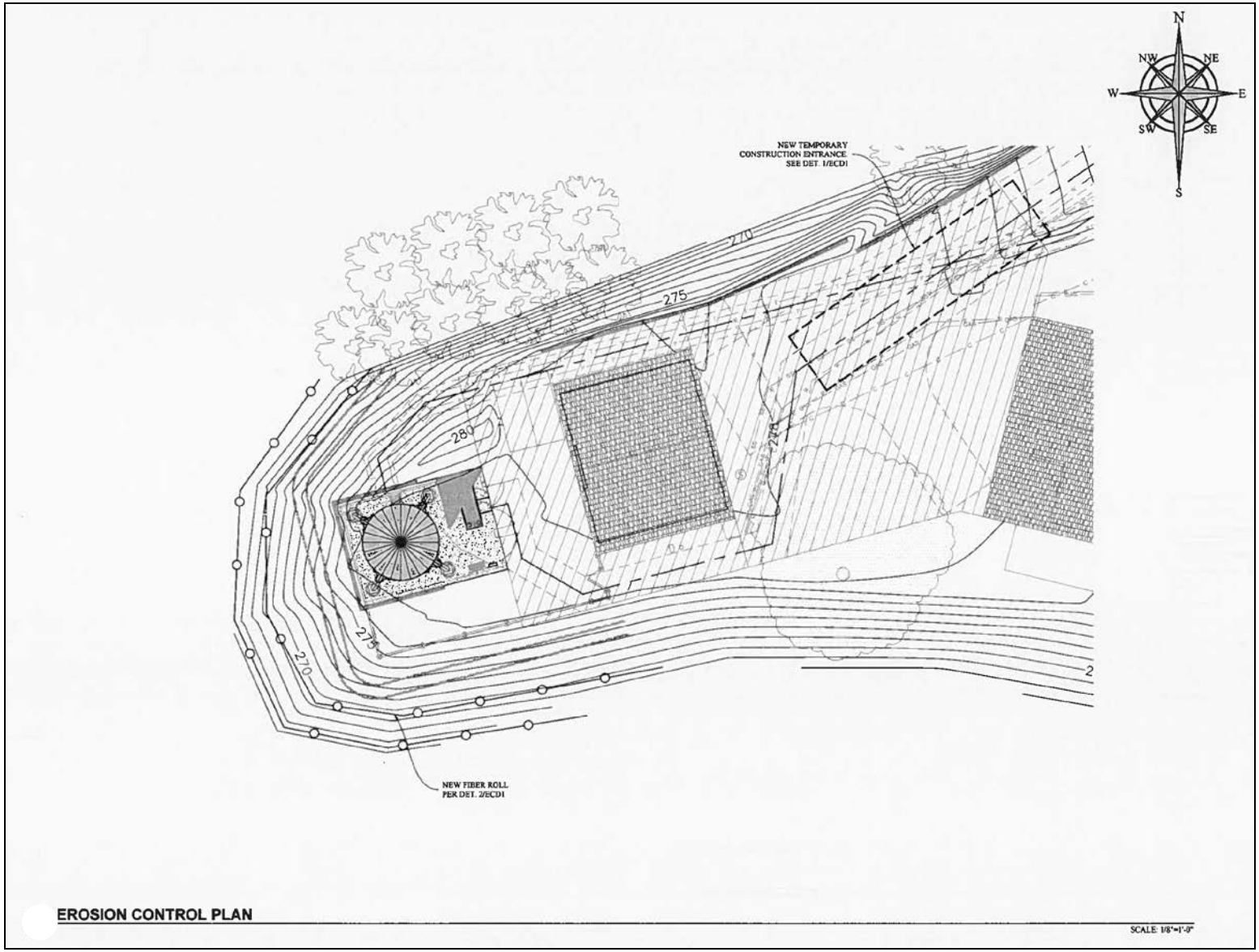
Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

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

No Impact: The project would not have any impact.

Figure 8
Erosion Control Plan



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

Discussion

a. According to the City of Pinole General Plan Update, officially designated scenic vistas do not exist within the City's planning area. The General Plan Update does consider scenic views of the bay and the surrounding City that can be seen from certain points along the City's ridgelines to be important. Figure 10.4, Pinole Visual Resources, of the City's General Plan Update shows the sensitive view protection corridors. Policies are included that would reduce impacts to such views through development requirements. The project site is not located in a view protection corridor or along the City's ridgelines, nor would the project block any views of the bay or surrounding City.

In addition, Chapter 17.76 of the Pinole Municipal Code outlines the following requirements for the placement of wireless telecommunication facilities:

> 1. No wireless telecommunication facility shall be located within four hundred (400) horizontal feet of a major ridgeline and one hundred (100) horizontal feet of a minor ridgeline (as shown on Figure 10.4 of the General Plan) and within one hundred (100) vertical feet for both. The distance shall be measured from the peak of the ridge. An exception may be granted by the designated approving authority only if any of the following findings can be made:
> a. Due to the specific location and design of the proposed facility, it will not be visible from surrounding properties or public view;
> b. Due to existing development or existing vegetation at the site, the proposed facility will be substantially screened from the view of surrounding properties and public view and will not result in an adverse visual impact; or
> c. The applicant can demonstrate that there is no feasible alternative.

The site is not located on a designated major or minor ridgeline. The nearest major and minor ridgelines to the proposed wireless telecommunication facility are located approximately 0.52 miles south and 0.44 miles north, respectively. Therefore, the placement of the proposed wireless telecommunication facility complies with the

requirements of Chapter 17.76 of the Pinole Municipal Code. Overall, the proposed project's impact associated with a scenic vista would be considered ***less than significant***.

b. According to the City of Pinole General Plan Update, officially designated State scenic highways or highways that are eligible for such designation by the California Department of Transportation Scenic Highways Program do not exist within the City's planning area. Therefore, the proposed project would result in ***no impact*** associated with damage of scenic resources within a State scenic highway.

c. The project site is adjacent to a private residence atop a small hill, and is bounded by undeveloped unincorporated County land to the east, which is zoned for agricultural uses and owned by EBMUD; a small wooded area, Pfeiffer Lane, and single-family residential to the north; undeveloped land and single-family residential to the west; and undeveloped land, Pinole Creek, and single-family residential to the south. The proposed antennas would be mounted within a faux water tank, and would not be visible to nearby residents. The associated ground-mounted equipment would be screened via eight-foot redwood fencing and grapevines.

The maximum height of the faux water tower would be approximately 34 feet above grade level. With respect to the component parts of the faux water tower, the mounting structure for the tank, which consists of four tower legs, is approximately 18 feet, 6 inches tall (above grade level), and the faux water tank, which is mounted on top of the legs, is approximately 15 feet, 6 inches tall, or 34 feet above grade level. For comparison purposes, the 18-foot, 6-inch tower legs are slightly higher than the roof line of the existing garage, which is located just over 17 feet from the proposed water tank. The top of the water tank (i.e., 34 feet above grade level) is the same approximate height of the existing mature oak tree located to the southeast on the same residential property.

The faux water tank would be painted a natural appearing reddish-brown in an attempt to blend in with the project's surroundings, as required by Chapter 17.76, Wireless Communication Facilities, of the Pinole Municipal Code. The project has been designed to appear as a structure appurtenant to the existing residence and detached garage. The project would resemble a faux water tower rather than a wireless communications facility.

In order to illustrate the potential views of the proposed project from the nearby areas, photosimulations were prepared. Figure 9 provides an overview of the four locations from which the project simulation photographs were taken. Figures 10 through 13 show the existing and proposed views of the project site from the four locations.

Figure 9
Photo Locations and View Directions

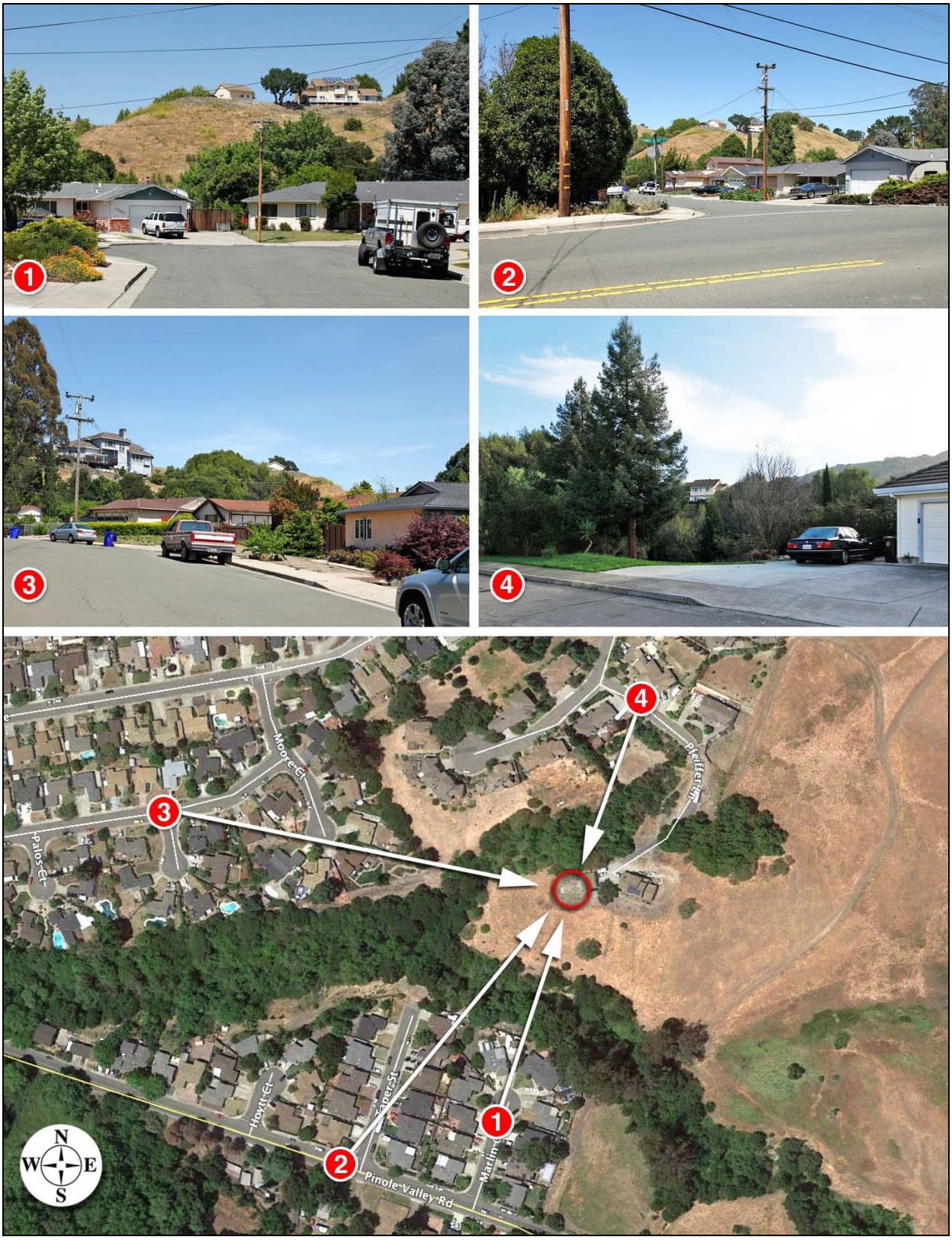


Figure 10
View of Project Site From Location #1 Looking Northeast From Martin Court

Figure 11
View of Project Site From Location #2 Looking Northeast From Pinole Valley Road

Figure 12
View of Project Site From Location #3 Looking Southeast From Stokes Avenue

Figure 13
View of Project Site From Location #4 Looking South From Pfeiffer Lane

North/Northeast from Martin Court

Figure 10 shows the existing and proposed views of the project site looking north/northeast from Martin Court. As shown in the figure, the proposed faux water tank and a portion of the supporting structure would be visible from this view. While a noticeable change in the character of the hilltop would occur, the hilltop is already partially developed and the faux water tower would contribute to the partially-developed nature of the hilltop. In addition, the water tower will be painted a natural appearing reddish-brown color to help the structure blend in with the surrounding vegetation and residential structures. From the Martin Court viewpoint, large amounts of existing power lines are currently within view looking northeast from Martin Court as well. Therefore, the addition of the project would not be considered to substantially degrade the visual character or quality of the existing view.

Northeast from Pinole Valley Road

Figure 11 shows the existing and proposed views of the project site looking northeast from Pinole Valley Road. As shown in the figure, the proposed faux water tank would be visible in the distance. The water tank and associated equipment would be partially screened by the proposed and existing vegetation. In addition, while the proposed water tower would project into the open skyline, the extent to which the water tower would project into the skyline would be less than the existing power poles from this viewpoint.

Southeast from Stokes Avenue

Figure 12 shows the existing and proposed views of the project site looking southeast from Stokes Avenue, where several residences are located. As shown in the figure, the proposed equipment area and mounting structure would be largely shielded from view from existing, nearby residences, due to the dense surrounding existing brush and proposed fencing. Although the faux water tank would be visible, its intrusion into the open skyline would not be considered a substantial degradation of the existing views afforded to residents along Stokes Avenue. In addition, as noted previously, the project has been designed to appear as an accessory structure to the existing residence rather than a community facility.

South from Pfeiffer Lane

Figure 13 shows the existing and proposed views of the project site looking south from Pfeiffer Lane. As shown in the figure, the proposed faux water tank would be partially visible in the distance. However, the water tank is largely shielded by the proposed and existing vegetation, as well as the ridgeline in the distance.

Conclusion

As demonstrated above, although the project would be visible from some of the surrounding areas, the project design includes efforts to blend in with the surrounding

visual character and semi-rural project property features including vegetation by using a faux water tower and screening to camouflage the wireless communication equipment. In addition, the proposed project has been designed consistent with the requirements of Chapter 17.76, Wireless Communication Facilities, of the Pinole Municipal Code. Furthermore, the proposed project is subject to Design Review approval, which would ensure that the project is designed to the satisfaction of the City. Therefore, the project would not substantially degrade the existing visual character or quality of the site and its surroundings, and impacts would be considered ***less than significant***.

d. The proposed project includes the installation of nine panel antennas mounted within a new 34-foot faux water tank, anchored to a concrete pad foundation, which will also contain screened outdoor equipment cabinets, fencing, and a new stand-by 30 (kW diesel generator with a UL 142 fire-rated 132-gallon diesel fuel tank. Chapter 17.76 of the Pinole Municipal Code restricts exterior lighting on commercial wireless telecommunication facilities and requires all associated equipment to have a non-reflective finish. As such, new sources of light or glare are not proposed as part of the proposed project. Therefore, the proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area, and ***no impact*** would occur.

II. AGRICULTURE AND FOREST RESOURCES. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	✖
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	✖
c. Conflict with existing zoning for, or cause rezoning of, 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))?	☐	☐	☐	✖
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	✖
e. Involve other changes in the existing environment which, due to their location or nature, could individually or cumulatively result in loss of Farmland to non-agricultural use?	☐	☐	☐	✖

Discussion

a,e. The project site is designated Grazing Land an Urban and Built-Up Land on the Contra Costa County Important Farmland 2010 map.[1] Therefore, the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or involve over changes in the existing environment which would result in a loss of Farmland to a non-agricultural use, and ***no impact*** would occur.

b. The project area is not under any Williamson Act contract and the area is zoned for Suburban Residential. The site is not zoned for agricultural uses. Therefore, because buildout of the proposed project would not conflict with a Williamson Act contract or existing zoning for agriculture, the project would result in ***no impact***.

c,d. The project site is also not considered forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), and is not zoned Timberland Production (as defined by Government Code section 51104[g]). Therefore, the proposed project would have ***no impact*** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

[1] California Department of Conservation, Division of Land Resource Protection. *Contra Costa County Important Farmland 2010*. July 2011.

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

Discussion

a. The proposed project site is located within the San Francisco Bay Area Air Basin, which consists of the entirety of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties; the western portion of Solano County; and the southern portion of Sonoma County. The Bay Area Air Basin, including Contra Costa County, has been designated nonattainment for the State one-hour ozone, State and federal eight-hour ozone, State PM_{10}, and State and federal (24-hour) $PM_{2.5}$ standard. The County is designated attainment or unclassified for all other pollutant standards.

The Bay Area Air Basin is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD adopted the final *Bay Area 2010 Clean Air Plan* (CAP) and certified the Final EIR for the CAP on September 15, 2010. The 2010 CAP serves to update the *Bay Area 2005 Ozone Strategy* in compliance with the requirements of the Chapter 10 of the California Health & Safety Code. The 2010 CAP provides an integrated, multi-pollutant strategy to improve air quality, protect public health, and protect the climate. Standards set forth in the CAP are carried forth through BAAQMD rules and regulations.

The BAAQMD has prepared their own CEQA Guidelines (Revised May 2011), which are guidelines to be utilized for assistance with CEQA review. According to the BAAQMD CEQA Guidelines, a project would not conflict with the adopted CAP if the project would accomplish the following: 1) support the primary goals of the CAP, which are improving air quality, protecting public health, and protecting the climate; 2) include applicable control measures from the CAP; and 3) not disrupt or hinder implementation of any CAP control measure.

The project would support the primary goals of the CAP, as the project would not violate any air quality standards or thresholds of significance (see detailed discussion below), which are set forth to improve air quality, protect public health, and protect the climate. Similarly, because the project would not violate any air quality standards or thresholds of significance, control measures from the CAP would not be required and the project would not hinder implementation of any CAP control measures. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable air quality plans, and a ***less-than-significant*** impact would result.

b-c. The City, as lead agency, determines on a case-by-case basis the thresholds to be used in order to determine a project's potential impacts. For this project, the City has chosen to utilize the BAAQMD's thresholds of significance, because the information and calculations supporting the updated BAAQMD CEQA Guidelines and thresholds provide the most up-to-date and reasonable information available for the region. In addition, assessing impacts in accordance with methodologies recommended by the BAAQMD and in comparison to the recommended BAAQMD significance thresholds is consistent with the methodology utilized in the City's General Plan Updated EIR. The BAAQMD's thresholds of significance for the ozone precursors nitrous oxides (NO_X) and reactive organic gases (ROG), as well as particulate matter 10 microns in diameter (PM_{10}) and particulate matter 2.5 microns in diameter ($PM_{2.5}$), are presented in Table 1 below. The significance thresholds are expressed in pounds per day (lbs/day) for construction and operational emissions and tons per year for cumulative emissions.

The proposed project would result in emissions of criteria air pollutants during construction and operation. The proposed project's construction-related and operational air pollutant emissions were quantified using the California Emissions Estimator Model (CalEEMod) computer program. The CalEEMod program estimates the emissions that result from various land use development projects and contains default values for much of the information needed to calculate emissions. However, where project-specific information was available, such information was utilized in the model. For example, inputs to the CalEEMod program included the proposed project's total square footage, as well as a daily trip rate based on the one trip per month required for routine maintenance (see Appendix A for further details). Results of the CalEEMod modeling are expressed in lbs/day for construction and operational emissions, and in tons per year for cumulative emissions, which allows for comparison between the model results and the BAAQMD significance thresholds.

Table 1
BAAQMD Thresholds of Significance

Pollutant	Construction (lbs/day)	Operational (lbs/day)	Cumulative (tons/year)
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82	82	15
$PM_{2.5}$	54	54	10

Source: BAAQMD, CEQA Air Quality Guidelines, June 2010.

It should be noted that the estimated emissions associated with operation of the diesel-fueled generator were calculated using the GENERAC Power Systems, Inc. "Statement of Exhaust Emissions Diesel Fuel Generator" specification sheet for the generator, which was provided by Verizon Wireless. Emissions due to operation of the generator were added to the emissions estimated using CalEEMod for the maintenance trips. All modeling results are provided in Appendix A.

Construction

Construction of the proposed project would generate air pollutants intermittently within the site, and the vicinity of the site, until all construction has been completed. Construction-related activities result in the generation of criteria air pollutants from sources such as on-road haul trucks, delivery trucks, worker commute motor vehicles, off-road heavy-duty equipment, soil disturbance, grading, material hauling, asphalt paving, and the application of architectural coatings. Although construction-related activities are short-term and temporary in duration, emissions related to construction vehicles and equipment could contribute to regional air quality. It should be noted that all projects are required to comply with BAAQMD rules and regulations.

The proposed project's short-term construction-related emissions were estimated using CalEEMod, as well as the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) Road Construction Emissions Model. BAAQMD does not have a linear construction model to quantify road construction emissions and recommends using SMAQMD's Road Construction Emissions Model.[2] The estimated daily construction-generated emissions attributable to the proposed project are presented in Table 2. As shown in the table, unmitigated construction emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ attributable to the proposed project would not exceed the BAAQMD significance thresholds.

Table 2
Unmitigated Maximum Project Construction-Related Emissions (lbs/day)

	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
TOTAL Project Construction Emissions	1.73	13.71	1.67	1.21
BAAQMD Significance Threshold	54	54	82	54
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod, August 2015 (see Appendix A).

Operation

Operation of the proposed project would occur remotely, with the exception of the use of a 30 kW diesel-fueled generator that would run approximately 15 minutes per week and vehicle trips associated with routine maintenance of the site approximately once a month. Emissions associated with the one trip per month for routine maintenance were calculated using CalEEMod.

[2] Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines [pg. B-12]*. Updated May 2012.

According to the Statement of Exhaust Emissions for the generator, the generator would be compliant with the U.S. Environmental Protection Agency's Interim Tier 4 emissions standards, and would result in emissions of ROG plus NO_X of 6.601 grams per kW-hour (g/kW-hr) and emissions of PM of 0.159 g/kW-hr. Thus, emissions associated with the operation of the 30 kW generator for a period of 15 minutes maximum per week would be approximately 0.01559 lbs/day of ROG and NO_X and 0.00038 lbs/day of PM.

The total operational emissions associated with the proposed project are presented in Table 3 below. As shown in the table, the proposed project's operational emissions would be well below the BAAQMD thresholds of significance.

Table 3
Project Operational Emissions (lbs/day)

	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
TOTAL Project Operational Emissions	0.02	0.00	0.00	0.00
BAAQMD Significance Threshold	54	54	82	54
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod, August 2015 (see Appendix A).

Cumulative

The long-term emissions associated with operation of the proposed project in conjunction with other existing or planned development in the area would incrementally contribute to the region's air quality. The BAAQMD has established cumulative thresholds for emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$. The proposed project's contribution to cumulative emissions of criteria air pollutants were calculated using the CalEEMod emission model, in addition to the annualized generator emissions, and are presented in Table 4.

As shown in the table, the proposed project's cumulative emissions would be well below the BAAQMD cumulative thresholds of significance.

Table 4
Cumulative Project Emissions (tons/yr)

	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
TOTAL Project Cumulative Emissions	**0.00**	**0.00**	**0.00**	**0.00**
BAAQMD Significance Threshold	10	10	15	10
Exceeds Threshold?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod, August 2015 (see Appendix A).

Conclusion

As presented above, the proposed project's operational, construction-related, and cumulative emissions would be well below the applicable BAAQMD thresholds of significance. Therefore, the project would not violate air quality standards or contribute

to the region's nonattainment status of ozone or PM, and impacts would be considered ***less than significant***.

d. Sensitive receptors are typically defined as facilities where sensitive receptor population groups (children, the elderly, the acutely ill, and the chronically ill) are likely to be located. Land uses associated with sensitive receptor groups, include: residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The proposed project is located adjacent to a private detached garage and residence atop a small hill. The project site is bounded by undeveloped land to the east; Pfeiffer Lane and single-family residences to the north; undeveloped land and single-family residential to the west; and an undeveloped portion of the property, Pinole Creek, and single-family residences to the south. The nearest property lines of receiving land uses, where residences are located, are to the northwest and southwest, approximately 86 and 116 feet from the near edges of the proposed enclosure, respectively. It should be noted that the nearest residence is located approximately 60 feet to the north of the nearest proposed disturbance area.

The typical pollutant of concern for sensitive receptors is carbon monoxide (CO), predominantly from motor vehicle emissions. However, the proposed project is not located near a roadway with heavy traffic, would not introduce new sensitive receptors to the area, and would not substantially increase overall vehicle trips or traffic along area roadways. As such, the project would not result in any permanent increases in CO and would not expose sensitive receptors to substantial concentrations of CO.

The California Air Resources Board (CARB) has identified particulate matter from diesel-fueled engines as a TAC. The CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines. High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic were identified as having the highest associated risks. The project is not located near any high volume freeways or facilities with heavy and constant diesel traffic. During the construction phase, various diesel-powered vehicles and equipment would be in use on the site. In addition, during operations, a diesel-fueled generator would run approximately 15 minutes once a week during daytime hours on a weekday.

Health risks from TACs are a function of both the concentration of emissions and the duration of exposure. The emissions resulting from construction are temporary, affecting a specific receptor for a period of days or perhaps weeks. Emissions from diesel-powered construction equipment on the site would be spread over the site and not affect any specific receptor for any length of time. The temporary nature of TACs is a result of the fact that project construction is limited in extent and would not be expected to occur more than one construction season (approximately six months). Furthermore, the federal government and BAAQMD have established regulations governing the emissions of off-road construction vehicles with the intent of reducing emissions over time. All construction vehicles would be required to comply with the applicable regulations.

As presented above, the emissions associated with operation of the on-site generator would be relatively low, as the generator would only operate for approximately 15 minutes per week. Due to the site's location relative to the nearest sensitive receptor and the duration of operation of the generator, emissions of diesel particulate matter would not be substantial enough to cause health effects.

It should be noted that the prevailing winds in the area occur from the west or southwest. Accordingly, the winds would help to disperse and carry emissions associated with the project site towards the east, where land is undeveloped and zoned for general agricultural uses.

For the aforementioned reasons, the project would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be ***less than significant***.

e. The proposed project may cause temporary odors from diesel exhaust during construction. However, these odors would cease after construction is completed. In addition, the project involves the use of a diesel-fueled generator, which is anticipated to run approximately 15 minutes per week. The project site is bounded by undeveloped land and an unpaved road to the east; a small wooded area, Pfeiffer Lane, and single-family residential to the north; undeveloped land and single-family residential to the west; and undeveloped land, Pinole Creek, and single-family residential to the south. The nearest property lines of receiving land uses, where residences are located, are to the northwest and southwest, approximately 86 and 116 feet from the near edges of the proposed enclosure, respectively. Consequently, any odors produced by the limited use of the diesel generator would not be expected to reach the nearest sensitive receptor. In addition, the prevailing winds in the area occur from the west or southwest. Accordingly, the winds would help to disperse and carry any odorous compounds associated with the project site towards the east, where land is vacant and undeveloped. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people, and impacts would be considered ***less than significant***.

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

Discussion

The following analysis is based on the Biological Evaluation prepared for the proposed project by Live Oak Associates, Inc. (see Appendix B) as well as the Tree Survey prepared by Timothy C. Ghirardelli, Consulting Arborist Services (see Appendix C).

a. The project site is located in a developed area adjacent to an existing residence atop a small hill. A field survey of the project site was conducted by Live Oak Associates on July 23 and August 2, 2015. One biotic, ruderal habitat was observed within the project site (see Figure 14, Habitat Map). The term "ruderal" refers to habitats that have been heavily disturbed by human factors and that support vegetation that is adapted to such disturbed conditions. Vegetation observed in the ruderal habitat included numerous non-native weed species such as oat (*Avena barbata*), yellow-star thistle (*Centaurea solstitialis*), and milk thistle (*Silybum marianum*). In addition, numerous native species

were located within or immediately adjacent to the ruderal habitat and included species such as poison oak (*Toxicodendron diversilobum*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), Canadian horsetail (*Conyza canadensis*), and California buckeye (*Aesculus californica*), among others. The blue elderberry shrub was observed adjacent (approximately 20 feet) to the north side of the utility route.

Animal species observed during the August 2015 site survey are common to ruderal habitats of the East Bay and included species such as western fence lizard (*Sceloporus occidentalis*), turkey vulture (*Cathartes aura*), and eastern fox squirrel (*Sciurus niger*), among others.

The special-status species associated with the project site and/or extended area are discussed in further detail below. The term special-status species, when it refers to wildlife, refers to animals that meet at least one of the following conditions:

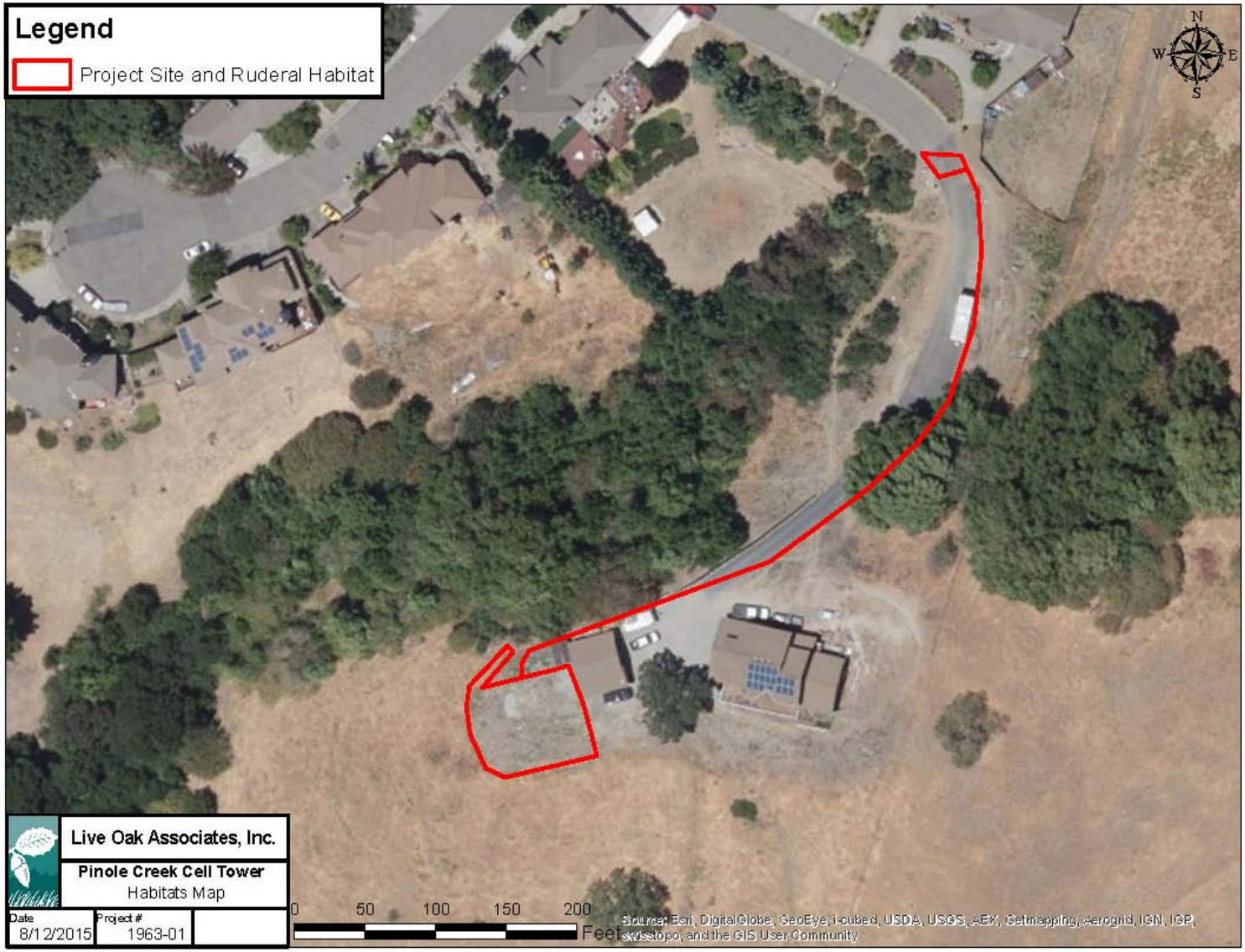
- Listed as or proposed for listing under the State and/or Federal Endangered Species Acts; or
- Considered by the CDFW to be a Fully Protected species or Species of Special Concern.

The special-status plants included in this analysis were based on the California Rare Plant Ranks (CRPR) species, which according to CNPS, meet the definitions of the California Endangered Species Act of the California Fish and Game Code, and either are listed, or are eligible for state listing (i.e. CRPR List 1A, 1B, 2, and 3). According to CNPS, these species must be analyzed during the preparation of environmental documents relating to CEQA because they meet the definition of rare or endangered under CEQA Guidelines §15125 (c) and/or §15380.

<u>Special-Status Plants</u>

Based on the habitat and elevation range of the project area, 23 special-status plants have at least some potential to be present within the project vicinity, defined as a 3-mile radius around the project site. (see Appendix B for details). A field survey of the project site was conducted on July 23 and August 2, 2015. Special-status plant species were not observed on the project site. The project site is immediately adjacent to a large outbuilding and consists of ruderal vegetation. As the project site does not represent suitable habitat (i.e., wetlands, marshes, chaparral or scrub, coastal dunes, woodland, etc.) for the special-status plant species recorded within a 3-mile vicinity, nor contain soil types to which the special-status plant species are endemic, Live Oak Associates has concluded that these special-status plant species are absent from the development footprint and proposed project activities would not impact the plant species.

Figure 14
Habitat Map



Special-Status Wildlife

Several special-status wildlife species have potential to occur within the 3-mile project vicinity, including one special-status fish, four special-status amphibians, one special-status reptile, eight special-status birds, and five special-status mammals (see Appendix B for details). However, due to the lack of observation and suitable habitat on the project site, these special-status species were presumed by Live Oak Associates to be absent from the development footprint. Notwithstanding this, two of these species are discussed below due to their known presence within nearby, off-site Pinole Creek – Steelhead and California red-legged frog.

Live Oak Associates also noted that possibility for migratory birds to nest within the existing vegetation in very close proximity to the proposed development footprint. Migratory birds are protected under the federal Migratory Bird Treaty Act. As a result, a discussion of the project's potential impact to migratory birds is included below.

It should be noted that a blue elderberry shrub was observed approximately 20 feet to the north (downslope) of the proposed utility route. Though a blue elderberry shrub occurs in close proximity to the construction footprint, the valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) was eliminated from Table 6 and this analysis because the VELB listing status was recently (September 17, 2014) reevaluated by the U.S. Fish and Wildlife Service (USFWS) (Federal Register Vol. 79, No. 180). The USFWS concluded that some of the historical species distribution in the proposed rule was incorrectly presented and the reevaluated distribution for the VELB does not include Contra Costa County, within which the project site is located. In addition, disturbance outside of the construction footprint would not occur.

Steelhead – Central California Coast Distinct Population Segment (DPS)

Steelhead – Central California Coast DPS are known to occur and appear to breed within Pinole Creek. Steelhead require cobble and boulder substrate for hiding in high velocity flows, and densities are reduced with increased small sediments (i.e. silt and sand). Spawning sites consist of gravel/cobble substrate with sufficient velocity to maintain circulation through the gravel and provide a clean, well-oxygenated environment to incubate the eggs. Steelhead enter freshwater to spawn when winter rains raise flows to high velocities which are enough to breach sandbars at the mouths of the streams. Juvenile steelhead travel downstream and migrate to sea in the spring and are subject to predation from birds and predatory fish.

Streams, drainages, or wetland features are not located on the project site; therefore, the potential for this species to occur on-site is highly unlikely. However, healthy populations of native fish are known to occur in Pinole Creek, including rainbow trout and steelhead. Steelhead, the anadromous variety of rainbow trout, have been reported in the lower reaches of Pinole Creek and in the upper watersheds of the East Bay Municipal Utility District (EBMUD) lands. Pinole Creek, while adjacent to the site, is approximately 200 feet to the southwest and 135 feet lower in elevation from the project site. Discharges of

pollutants, soil, or any other contaminant from the project site to Pinole Creek may adversely affect habitat and potentially impact individuals of these species. Implementation of below mitigation measures would minimize or eliminate potential impacts to Steelhead – Central California Coast DPS.

California Red-Legged Frog

The California red-legged frog has been observed less than one-mile from the site within Pinole Creek. The species requires ponds near humid forest, woodland, grassland, coastal scrub, and stream sides with plant cover and streams adjacent to woods. Breeding habitat includes lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Once these wetlands dry, the species requires animal burrows or other moist refuges for estivation through the summer.

Wetland or stream habitats preferred by this species are not located on the site; therefore, the potential for this species to occur on-site is highly unlikely. However, this species has been located in Pinole Creek, which is approximately 200 feet to the southwest and 135 feet lower in elevation from the project site. Discharges of pollutants, soil, or any other contaminant from the project site to Pinole Creek may adversely affect habitat and potentially impact individuals of these species. Implementation of mitigation measures would minimize or eliminate potential impacts to California red-legged frog.

Nesting Raptors and Migratory Birds

While trees are not expected to be removed during project construction, some of the adjacent vegetation may need to be limbed for access. If a raptor or other migratory bird nests on or adjacent to the site prior to or during proposed construction activities, such activities could result in the abandonment of active nests or direct mortality to these birds. Construction-related activities that adversely affect the nesting success of raptors or migratory birds or result in mortality of these birds would violate State and federal laws and would be considered a potentially significant impact.

<u>Conclusion</u>

In summary, due to the lack of suitable habitat for plant species, special-status plant species are not anticipated to be on the project site. Because the site is composed of ruderal habitat, all of the special-status wildlife species would be absent from or unlikely to occur on the site. Nesting birds, if present within vegetation adjacent to construction areas, could be disturbed during construction activities. Construction-related activities that adversely affect the nesting success of raptors or migratory birds or result in mortality of these birds would violate State and federal laws and would be considered a potentially significant impact. Discharges of pollutants, soil, or any other contaminant from the project site to Pinole Creek are not anticipated to occur due to the extensive erosion and sediment control measures included as part of the proposed project. However, mitigation would be required in order to ensure the proposed erosion and

sediment control measures are properly implemented and maintained throughout construction and the lifetime of the project.

With implementation of Mitigation Measures IV-1 through IV-3 below, the proposed project's impact related to having a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or USFWS would be considered ***less than significant with mitigation***.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the potential impacts to a *less-than-significant* level.

IV-1. *In order to avoid impacts to tree-nesting raptors and other tree- or ground-nesting migratory birds, a nesting survey shall be conducted by a qualified biologist no more than 14 days prior to the initiation of construction activities beginning during the breeding season (February through August). The nesting bird survey shall include examination of all trees or other areas of potential nesting habitat within the construction footprint and up to 250 feet from the footprint. If nesting raptor or migratory birds are detected during the nesting bird survey, Mitigation Measure IV-2 shall be implemented. The nesting bird survey shall be submitted to the City of Pinole Development Services Department for review and approval.*

IV-2. *Should a nesting raptor or migratory bird be detected during the nesting bird survey, a suitable construction-free nest buffer shall be established around all active nests. Buffers for nesting raptors shall be a minimum of 250 feet and buffers for other migratory birds shall be a minimum of 50 feet. Should a special-status species bird nest be located during the nesting bird survey, the buffer will be determined by consulting with the CDFW. Buffers shall remain in place for the duration of the breeding season or until it has been confirmed by a qualified biologist that all chicks have fledged and are independent of their parents.*

IV-3. *In order to avoid indirect impacts to special-status species potentially occurring in Pinole Creek, downslope of the project site, the following erosion-control measures shall be implemented:*

- *Construction Best Management Practices (BMPs): Prior to approval of construction drawings, the project applicant shall submit a design-level erosion control plan sheet to the City of Pinole Development Services Department for review and approval. The erosion control plan shall include, at a minimum, the following construction BMPs:*

- *Two fiber rolls, spaced 10 feet apart, along the northern edge of the proposed 5-foot wide utility trench, and extending another 20 feet past the end of the disturbed trench.*
- *Two fiber rolls, space 10 feet apart, beginning at the top of the slope surrounding the western, southern, and northwestern sides of the concrete foundation for the equipment area.*

All construction BMPs shall be installed prior to initiation of any construction activities.

- *Operational BMPs: Prior to approval of construction drawings, the project applicant shall submit a design-level stormwater control plan sheet to the City of Pinole Development Services Department for review and approval. The stormwater control plan shall include, at a minimum, the following operational BMPs:*

  - *An 8-foot by 20-foot vegetated bioswale shall be constructed adjacent to the concrete pad to catch sheet flow runoff coming off of the faux water tower, diesel generator, other equipment on the concrete pad, and the concrete pad.*
  - *Permeable pavers shall replace the existing gravel driveway to reduce sheet flow off the site.*

  All operational BMPs shall be installed prior to operation of the wireless facilities.

- *Construction Monitoring: After the fiber rolls are installed and prior to the start of construction, a Qualified Stormwater Pollution Prevention Plan (SWPPP) Practitioner (QSP) shall inspect the site to ensure the fiber rolls are installed properly. Additional BMPs are not required to prevent eroded soil and contaminants entering the Pinole Creek watershed during and after construction activities. Should the QSP recommend additional BMPs, the applicant shall install the recommended BMPs prior to the start of construction. Construction activities shall not initiate until a QSP has reported to the City of Pinole Development Services Department on the installed erosion and sediment control methods. Within 30 days after completion of the construction activities, the QSP shall complete a site visit and report for the City of Pinole Development Services Department to document the efficacy of the BMPs. The reports shall include photo documentation of the BMPs and before and after photos of the site.*

- *<u>Revegetation</u>: Immediately following completion of construction and prior to the final site visit by the QSP, disturbed soils of the site shall be revegetated with a seed mix recommended by a qualified biologist. The seed mix shall include a mix of native species and sterile non-native species.*

- *<u>Annual Bioswale Inspection and Maintenance</u>: An ongoing maintenance strategy shall be included with the construction plans, subject to review and approval by the City of Pinole Development Services Department, to ensure the proper functioning of the proposed bioswale over time. The bioswale shall be inspected and maintained a minimum of once per year to ensure proper function. The inspection and maintenance shall occur annually in late August or September, prior to the rainy season (October to April). A maintenance check-list shall be completed for each annual inspection, which would include the date/time of the maintenance, name of the person conducting the maintenance, status of the bioswale, and maintenance activities conducted. The annual maintenance check-list shall be available at the request of the City of Pinole Development Services Department.*

b. Riparian vegetation is considered sensitive. Riparian vegetation functions to control water temperature, regulate nutrient supply, bank stabilization, rate of runoff, wildlife habitat, release of woody debris which functions as habitat and slow nutrient release, and protection for aquatic organisms. Riparian habitat exists along the north side of the existing Pinole Creek approximately 200 feet south of the site and 135 feet lower in elevation. Implementation of the project does not involve any disturbance or removal of the area where the riparian habitat is located. As such, the project would not affect the riparian habitat or vegetation. In addition, local or regional sensitive habitat types or natural communities regulated by the CDFW or USFWS are not present or associated with the project footprint. The project does not involve removal of any riparian vegetation or sensitive native vegetation. Consequently, the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS, and impacts would be ***less than significant***.

c. Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the CDFW, and the California Regional Water Quality Control Board (RWQCB).

Areas meeting the technical criteria for Waters of the U.S., Waters of the State, or areas under the jurisdiction of the CDFW (i.e., lakes, ponds or streams, etc.) were not detected

on the project site (e.g., no channels or ditches, no evidence of hydrology, hydric soils, or hydric plants).

Pinole Creek, which is approximately 200 feet south of the site and approximately 135 feet lower in elevation than the project site, would be considered Waters of the U.S and Waters of the State and under the jurisdiction of USACE and CDFW. Although the proposed project would not directly impact Pinole Creek, the possibility exists for indirect impacts to the Creek to occur in the event that sufficient construction and operational BMPs are not included as part of the project.

Without mitigation to ensure the erosion and sediment control measures are properly implemented and maintained, the proposed project may have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Impacts would be ***less than significant with mitigation***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the potential impact to a *less-than-significant* level.

IV-4. Implement Mitigation Measure IV-3.

d. Migratory corridors are natural areas interspersed with developed areas and are important for animal movement, increasing genetic variation in plant and animal populations, reduction of population fluctuations, and retention of predators of agricultural pests, and for movement of wildlife and plant populations. Wildlife corridors have been demonstrated not only to increase the range of vertebrates, including avifauna, between patches of habitat but also facilitate two key plant-animal interactions: pollination and seed dispersal. Corridors also preserve watershed connectivity. Corridor users could be grouped into two types: passage species and corridor dwellers.

Pinole Creek and associated riparian vegetation would be considered a migratory corridor. The project site is located adjacent to a private residence, atop a small hill northeast of the Creek. The density of shrubs surrounding the project site precludes use of the site as a migratory corridor. Lands surrounding most of the site have been developed with roads and residences, which likely impede the movement of wildlife between the site and more open lands to the east. In addition, the current residence on the site would likely restrict wildlife from entering the site. Following completion of the project, wildlife presently using the project area is expected to continue to utilize Pinole Creek and the associated riparian area. As such, the project would not impede the movement of wildlife in the aforementioned areas.

The project would not be expected to interfere with any migratory corridors, as species associated with the property site and the region have ample room to go around the project site. In addition, the five on-site oak trees would be preserved as part of the project.

Native habitat, native plant, or native animal populations would not be significantly reduced with implementation of the project. Therefore, the project would not 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, and impacts would be ***less than significant***.

e. A Tree Survey was prepared for the proposed project by Timothy C. Ghirardelli, Consulting Arborist Services (see Appendix C), which included a site survey and a tree health evaluation. According to City Municipal Code Ordinance 2012-03 Tree Protection 17.96.070, protected trees are defined as any native with a single perennial stem of 12 inches or larger in circumference measured four and a half feet above the natural grade. Existing protected trees were surveyed and evaluated for their individual health and potential effects of implementation of the proposed project. Any construction activities adjacent to protected trees are required to adhere to the Tree and Root Zone Protection Guidelines, as presented in the Tree Survey.

According to the Arborist Report, five individual trees are located within the immediate area of the proposed project: one native Valley oak, (*quercus lobata*), three California bay (*Umbellularia californica),* and one Buckeye (*Aesculus californica*). Trees that were surveyed range in health from good to fair and are established within the existing developed residential environment.

Primary construction activities will occur adjacent to one Valley oak where the water tower is proposed. Installing the proposed utilities and equipment area will require frequent access through the tree canopy and pruning of oak trees could be required. Mitigation Measures IV-5 through IV-7 have been included below to address this impact. Therefore, impacts related to local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, would be ***less than significant with mitigation***.

<u>Mitigation Measure(s)</u>
Implementation of the following mitigation measures would reduce the potential impacts to a *less-than-significant* level.

IV-5. *Prior to and during construction, the City shall ensure that all contractors comply with the tree protection measures outlined as follows:*

<u>Root Zone Protection, Demolition, and Construction</u>

1. *Prior to any approved activity, assign a confined, dedicated area for material and equipment storage away from the established tree canopies and the immediate project area.*
2. *Install a temporary chain-link fencing or approved equal at canopy perimeters prior to any grading or construction to establish the Critical Root Zone for all trees affected by*

construction. Fencing shall be a minimum of 6-feet high with steel posts on 8- to 10-foot centers driven directly into the ground.

3. *Any deviation as a result of approved construction inside protected tree canopies shall route fencing accordingly under Project Arborist direction and return to canopy edges (see Access Guidelines section below).*
4. *All protective fencing shall remain in place throughout the construction process.*
5. *Removal of the existing construction or hardscapes within the canopy of protected trees shall occur under Project Arborist direction.*
6. *Removal of existing surface materials shall proceed slowly under Arborist direction in shallow lifts so the Arborist can stop the process if roots are observed.*
7. *Material and soil excavation is performed by hand and careful equipment operation under the direction of the Arborist.*
8. *Material and soil excavations shall leave roots 2 inches and larger undisturbed. Root retention or removal to be evaluated individually by the Arborist to minimize tree decline.*
9. *Roots less than 2 inches must be pruned with loppers or hand saw.*

Pruning

1. *Any pruning and clearance work directly related to construction shall occur under Project Arborist direction.*
2. *Any necessary pruning of the trees shall be done prior to construction to avoid unnecessary limb damage.*
3. *All pruning shall be completed by approved Certified Arborists familiar with the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A-300) and Best Management Practices for Pruning published the International Society of Arboriculture.*
4. *Additional pruning to manage tree structure, shape, and balance and remove deadwood throughout the trees will reduce insect and disease problems and serve as an indicator to monitor ongoing tree health.*

Landscape Construction

1. *Any landscape planting shall remain no closer than 10 feet from the trunk of any native tree.*
2. *Selected plants shall be drought tolerant and compatible with the native environment.*
3. *Rototilling, soil disturbance or import soil shall not be introduced within existing tree canopies.*

4. *All new or proposed irrigation supply lines, or upgrades to drainage and electrical conduits shall observe the Trenching Guidelines described below.*

Trenching Guidelines – Drainage, Utilities, Conduits

1. *Any necessary trenching shall avoid routes inside, through or between protected tree canopies. Unavoidable paths inside tree canopies shall adopt accepted alternatives including Lateral Boring, Airspade or Hand Trenching. Hand Trenching Guidelines shall proceed under Project Arborist direction.*
2. *The process of hand trenching shall be used to minimize trauma to protected trees inside the tree canopy. Excavation is performed by hand and careful equipment operation.*
3. *Hand trenching leaves roots 2 inches and larger undisturbed. Soil is removed from under and around tree roots to form the necessary trench.*
4. *Roots 3 inches and larger may only be removed with the approval of the Project Arborist.*
5. *Lateral Bore pits and splicing vaults shall be located outside natural tree canopies.*

Access Guidelines – Equipment, Pedestrian, and Material Handling

1. *All alternative routes shall be explored to avoid access inside the natural tree canopy or Critical Root Zone. Access inside the Critical Root Zone shall adhere to the following procedures under the direction of the Project Arborist:*
2. *To create an access corridor, apply a 6-inch layer of wood chips or mulch by hand without equipment access on the soil surface over the selected access route.*
3. *Distribute ¾-thick or greater plywood over wood chips to laterally disperse heavy equipment weights and reduces soil compaction.*
4. *Maintain the access corridor with protective fencing on each side of the path as long as it is required to access this area of the project.*
5. *Preferred/approved alternative root zone protection applications include Geoweb products. A cellular confinement system that laterally disperses vertical weights throughout the applied area.*
6. *Trees in close proximity to construction activity inside the tree canopy shall apply straw wattles directly to the trunk. Wattles shall be attached around the tree from ground level to 5 feet above grade for protection of direct contact from equipment or materials. All applications shall be non-invasive and deconstructed by hand following project completion.*

Damage to a Protected Tree

1. *If any damage occurs to a protected tree during construction, the developer, contractor, or any agent thereof shall immediately notify the Development Services Department so that professional methods of treatment accepted by the Development Services Department may be administered. The repair of the damage shall be at the expense of the responsible party and shall be by professional standards, approved by the Development Services Department. Failure to comply will result in a stop work order.*

IV-6. *Prior to the issuance of any grading or building permits, all arborist tree protection measures shall be included on the project construction plans for review and approval by the Development Services Department.*

IV-7. *In accordance with Section 17.96.030 of the Pinole Municipal Code, the pruning of any protected tree shall be performed only when it enhances its structural strength, health, general appearance or for safety reasons. Any pruning must be completed by a certified/consulting arborist.*

f. According to the City's General Plan Update EIR, the City is within the boundaries of the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (USFWS, 1998). However, the City does not contain habitat for species listed in the recovery plan. The EBMUD adopted the Low Effect East Bay Habitat Conservation Plan in April 2008, which covers two plant and five animal species within EBMUD lands. The HCP is restricted to EBMUD lands in eastern Contra Costa County; therefore, the project site is not located within the HCP area. The land located immediately east of the project site is owned by EBMUD and therefore covered by the HCP. The proposed project will not impact any lands within EBMUD's HCP. Therefore, implementation of the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan, and impacts would be ***less than significant***.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	✖	☐	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	✖	☐	☐
c. Directly or indirectly destroy a unique paleontological resource on site or unique geologic features?	☐	☐	✖	☐
d. Disturb any human remains, including those interred outside of formal cemeteries.	☐	✖	☐	☐

Discussion

The following analysis is based on the Cultural Report prepared for the proposed project by EBI Consulting, Inc.

a,b,d. EBI Consulting, Inc. contacted the Native American Heritage Commission (NAHC) and requested a Sacred Lands File search for the project area in 2014. On October 6, 2014, a response was received from the NAHC failing to indicate the presence of cultural resources within the project area. In addition, according to the Northwest Information Center (NWIC) at California State University, Sonoma, two known historical archaeological sites are located within 0.5-mile of the project site. However, neither site is located within the proposed disturbance area. Furthermore, a survey of the project site was completed by EBI Consulting on October 1, 2014 and cultural materials, topographic anomalies, or other features that may indicate significant historic or prehistoric use were not observed on-site.

The proposed project site is located near a private residence atop a small hill within the City of Pinole. The project would be adjacent to the existing detached garage on-site. Historical resources were not found during the previous construction of the existing residence and garage, nor were unique archeological features, or human remains. In addition, according to the Cultural Report, the project site is not sensitive for the presence of significant prehistoric or historical archaeological resources.

Notwithstanding the above, tribes are known to have historically occupied the Pinole Creek area, and, though unlikely, the possibility exists for unknown resources to be discovered during construction activities, including excavation of the 5-foot wide and 4-foot deep utility trench. Therefore, construction activities could have the potential to unearth unknown historical or archaeological resources, which could destroy or disturb the resources. Impacts would be considered ***less than significant with mitigation***.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the potential impact to a *less-than-significant* level.

V-1. *Prior to the issuance of a grading permit for any construction activities, construction plans shall include a requirement (via notation) indicating that if buried archaeological or historical site indicators are encountered during site grading or other site work, all such work shall be halted immediately within the area of discovery and the contractor shall immediately notify the City of the discovery. Prehistoric archaeological site indicators expected within the general area include the following: chipped chert and obsidian tools and tool manufacture waste flakes; grinding and hammering implements; and for some sites, locally darkened soil that generally contains abundant archaeological specimens. Historic remains expected in the general area commonly include items of ceramic, glass, and metal. Features that might be present include structure remains (e.g., cabins or their foundations) and pits containing historic artifacts. If any of the aforementioned site indicators are encountered, the applicant shall halt work and retain the services of a qualified archaeologist for the purpose of evaluating the find(s) pursuant to Section 106 of the National Historic Preservation Act, as well as for recording, protecting, or curating the discovery as appropriate. The archaeologist shall be required to submit to the City for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the vicinity of the discovery, as identified by the qualified archaeologist, shall not be allowed until the preceding steps have been taken.*

V-2. *Pursuant to State Health and Safety Code §7050.5 (c) State Public Resources Code §5097.98, if human bone or bone of unknown origin is found during construction activities within the project area, all work shall stop in the vicinity of the find and the Contra Costa County Coroner shall be contacted immediately. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission who shall notify the person believed to be the most likely descendant. The most likely descendant shall work with the contractor to develop a program for re-internment of the human remains and any associated artifacts. Additional work is not to take place in the immediate vicinity of the find, which shall be identified, at a cost to the applicant, by the qualified archaeologist, until the identified appropriate actions have been implemented.*

c. Paleontology is defined as a science dealing with the life of past geological periods as known from fossil remains. Paleontological resources include fossil remains, as well as fossil localities and formations, which have produced fossil material in other nearby

areas. This resource can be an important educational resource for the reasons mentioned before and is non-renewable once destroyed.

According to the Pinole General Plan Update, a search of the University of California Museum of Paleontology (UCMP) collections database did not identify any evidence of significant paleontological resources within the Pinole GPU Planning Area.[3]As a result, it is anticipated that the proposed project, which will result in limited subsurface improvements, will have a ***less-than-significant*** impact on paleontological resources.

[3] City of Pinole. *City of Pinole General Plan Update Draft Environmental Impact Report*. July 2010, p. 4.10-7.

VI. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault?	☐	☐	✖	☐
ii. Strong seismic ground shaking?	☐	☐	✖	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	✖	☐
iv. Landslides?	☐	✖	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?		✖	☐	☐
c. Be located on 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?	☐	☐	✖	☐
d. Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code?	☐	☐	✖	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✖

Discussion

The following analysis is based on the Geotechnical Investigation Report prepared for the proposed project by Mid Pacific Engineering, Inc. (see Appendix D).

VI(a) i-iii, and IV(c). The proposed project site is located within a region of California characterized by active faulting. However, active faults are not known to cross the project site area nor is the site within a current Earthquake Fault Zone (formerly known as an Alquist Priolo Special Studies Zone). The closest active fault mapped by the California Division of Mines and Geology (now known as the California Geological Survey [CGS]) is the Hayward-Rodgers Creek Fault, located approximately 3.9 miles to the southwest of the site. As such, the Geotechnical Investigation Report determined that the potential for ground rupture or any similar seismic-related effects at the project site during a seismic event is highly unlikely.

The potential for other seismic-related ground failure effects at the project site are discussed in further detail below.

Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from cyclic loading, such as that caused by an earthquake. Among other effects, liquefaction can result in densification of such deposits after an earthquake as excess pore pressures are dissipated (and hence settlements of overlying deposits). The primary factors deciding liquefaction potential of a soil deposit are as follows: (l) the level and duration of seismic ground motions; (2) the type and consistency of the soils; and (3) the depth to groundwater.

Subsurface earth materials encountered during the field investigation generally consisted of medium dense silty sand underlain by highly to moderately-weathered, weak to moderately-strong marine sedimentary rock. Free groundwater was not encountered during field investigations of the site. Based on the generally fine-grained and/or relatively dense nature of the soils encountered during the field investigation as well as the lack of free groundwater, the potential for liquefaction at the site during or subsequent to a seismic event was determined to be unlikely.

Ground Subsidence

Ground subsidence within the project area would typically be due to densification of subsurface soils during or subsequent to a seismic event. Generally, loose, granular soils would be most susceptible to densification, resulting in ground subsidence. Given the generally fine-grained and/or relatively dense nature of the soils encountered during the field investigation of the site, the potential for significant ground subsidence at the site during or subsequent to a seismic event was determined to be unlikely.

Conclusion

Results of the site-specific investigation indicated that the site is not within a current Earthquake Fault Zone or other area known to possess a significant geologic risk to site development. As such, the project would not be expected to be affected by or subject to rupture of a known earthquake fault, strong seismic groundshaking, or seismic-related ground failure including liquefaction. In addition, the project would not be placed on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in lateral spreading, subsidence, liquefaction or collapse. Furthermore, the project does not involve housing or any land use that would increase population in the area. Therefore, implementation of the proposed project would not expose people or structures to substantial adverse seismic-related effects or be placed on a geologic unit or soil that is unstable or would become unstable as a result of the proposed project, and impacts would be ***less than significant***.

VI(a): iv. Landslides or indications of slope instability were not visually identified during the field investigation of the site. The site lies within an area of Contra Costa County "not evaluated" by the State of California for hazards from seismically-induced landsliding. However, according to the Geotechnical Investigation Report prepared for the proposed project, seismically-induced landsliding poses a significant geologic risk to site development. As a result, the anchoring system for the proposed water tower needs to be designed to withstand possible landslides.

The project site lies within an area of Miocene-age marine sedimentary rock. Below the near-surface soils, highly to moderately-weathered, weak to moderately-strong marine sedimentary rock was encountered at seven feet below existing grade to the maximum depth explored (approximately 15½ feet below existing site grade). The presence of on-site rock below the near-surface soils may hinder drilled excavations for the planned tower foundation pier, possibly resulting in slower-than-normal drilling rates and/or requiring special construction provisions (e.g., multiple passes with a small diameter auger or other methods) in order to advance drilled excavations into these materials. In the event the tower foundation designer anticipates the presence of on-site rock will significantly impact the cost and/or constructability of a drilled pier foundation system, or if a pier foundation system is considered less economical or impractical due to considerations beyond the scope of this study, a reinforced concrete mat foundation should be considered for the support of the planned tower.

The soil conditions described above may require special design or construction provisions; and the potential for landslides to result in adverse structural impacts would be considered ***less than significant with mitigation***.

<u>Mitigation Measure(s)</u>
Implementation of the following mitigation measure would reduce the potential impact to a *less-than-significant* level.

VI-1. *In conjunction with the submittal of construction drawings, the project applicant shall submit a design-level geotechnical report prepared by a California Registered Geotechnical Engineer to the City of Pinole Development Services Department for review and approval. The geotechnical report shall include, but would not be limited to, soil sampling and testing of bedrock, to determine whether a drilled pier foundation for the water tower is feasible. If a drilled pier foundation is not feasible, the geotechnical report shall specific another acceptable foundation design capable of withstanding geologic hazards, including landslides. In addition, the design-level geotechnical report shall consider the results and recommendations of the Geotechnical Investigation Report, Proposed Telecommunications Facility, dated February 4, 2015, prepared for the proposed project.*

All recommendations in the design-level geotechnical report shall be incorporated into the project design and all grading and foundation plans, subject to review and approval by the City of Pinole Development Services Department, to ensure that all geotechnical recommendations specified in the design-level geotechnical report are properly incorporated and utilized in the design.

VI(b) During construction within the proposed project area, topsoil would be moved and graded, leading to disturbed soils that do not have as much connectivity to the ground as undisturbed soils. Such disturbed soils are likely to suffer from erosion from a variety of sources, such as wind, rainfall, and construction equipment. The Geotechnical Investigation Report prepared for the project includes recommendations for reducing erosion potential during construction activities, such as revegetation and surface runoff control.

The project would not be required to comply with requirements of the State's General Construction Activity Stormwater Permit as the proposed project would disturb less than one acre. In addition, the City's Erosion and Sediment Control Plan Ordinance (Title 15, Chapter 15.36.190 of the City Code) requires that erosion and sediment control plans, prepared by a registered civil engineer, be submitted to the City for review for any building or construction activities over 0.25-acre. Because the proposed project would disturb less than 0.25-acre, the City's Erosion and Sediment Control Plan Ordinance would not apply to the proposed project. Although the aforementioned requirements do not apply to the proposed project, the project includes several erosion control best management practices to ensure that erosion of top soil is minimized throughout construction and operation of the project.

An erosion control plan has been included as part of the project to ensure impacts to nearby Pinole Creek would not occur as a result of the project. As part of the plan, the best management practices include placing two rows of fiber rolls (straw wattles), spaced 10 feet apart, north of the proposed utility route. The fiber rolls would be aligned parallel with the slope contours, and extended 20 feet past the disturbed utility trench length. The fiber rolls will prevent downslope erosion of disturbed soils into the ephemeral tributary to Pinole Creek to the north.

For excavation work associated with construction of the concrete retaining walls around the equipment area, fiber rolls will be equally spaced along the adjacent slopes (to the northwest, west, southwest). The fiber rolls will prevent downslope erosion of disturbed soils into Pinole Creek to the west, and the ephemeral tributary of Pinole Creek to the north.

In order to ensure that the proposed erosion and sediment control measures are properly implemented and maintained throughout construction and the lifetime of

the project, the following mitigation measure shall be implemented. Erosion impacts would be ***less than significant with mitigation***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the potential impact to a *less-than-significant* level.

VI-2. *In order to avoid erosion impacts to Pinole Creek, downslope of the project site, the following erosion-control measures shall be implemented:*

- *Construction Best Management Practices (BMPs): Prior to approval of construction drawings, the project applicant shall submit a design-level erosion control plan sheet to the City of Pinole Development Services Department for review and approval. The erosion control plan shall include, at a minimum, the following construction BMPs:*
    - *Two fiber rolls, spaced 10 feet apart, along the northern edge of the proposed 5-foot wide utility trench, and extending another 20 feet past the end of the disturbed trench.*
    - *Two fiber rolls, space 10 feet apart, beginning at the top of the slope surrounding the western, southern, and northwestern sides of the concrete foundation for the equipment area.*

  All construction BMPs shall be installed prior to initiation of any construction activities.

- *Operational BMPs: Prior to approval of construction drawings, the project applicant shall submit a design-level stormwater control plan sheet to the City of Pinole Development Services Department for review and approval. The stormwater control plan shall include, at a minimum, the following operational BMPs:*
    - *An 8-foot by 20-foot vegetated bioswale shall be constructed adjacent to the concrete pad to catch sheet flow runoff coming off of the faux water tower, diesel generator, other equipment on the concrete pad, and the concrete pad.*
    - *Permeable pavers shall replace the existing gravel driveway to reduce sheet flow off the site.*

All operational BMPs shall be installed prior to operation of the wireless facilities.

- *Construction Monitoring: After the fiber rolls are installed and prior to the start of construction, a Qualified Stormwater Pollution Prevention Plan (SWPPP) Practitioner (QSP) shall inspect the site to ensure the fiber rolls are installed properly. Additional BMPs are not required to prevent eroded soil and contaminants entering the Pinole Creek watershed during and after construction activities. Should the QSP recommend additional BMPs, the applicant shall install the recommended BMPs prior to the start of construction. Construction activities shall not initiate until a QSP has reported to the City of Pinole Department of Development Services on the installed erosion and sediment control methods. Within 30 days after completion of the construction activities, the QSP shall complete a site visit and report for the City of Pinole Department of Development Services to document the efficacy of the BMPs. The reports shall include photo documentation of the BMPs and before and after photos of the site.*

- *Revegetation: Immediately following completion of construction and prior to the final site visit by the QSP, disturbed soils of the site shall be revegetated with a seed mix recommended by a qualified biologist. The seed mix shall include a mix of native species and sterile non-native species.*

- *Annual Bioswale Inspection and Maintenance: An ongoing maintenance strategy shall be included with the construction plans, subject to review and approval by the City of Pinole Development Services Department, to ensure the proper functioning of the proposed bioswale over time. The bioswale shall be inspected and maintained a minimum of once per year to ensure proper function. The inspection and maintenance shall occur annually in late August or September, prior to the rainy season (October to April). A maintenance check-list shall be completed for each annual inspection, which would include the date/time of the maintenance, name of the person conducting the maintenance, status of the bioswale, and maintenance activities conducted. The annual maintenance check-list shall be available at the request of the City of Pinole Department of Development Services.*

VI(d). The proposed project is located within the Coast Range geologic province. The geologic structure of this province is complex, having been molded by numerous mountain building events characterized by extensive folding, faulting, and fracturing of variable intensity. Regionally, these folds and faults trend northwesterly and are responsible for the development of a pronounced northwest trending ridge-valley system. Existing topography within the immediate site area slopes gently down on all sides.

According to the Geotechnical Investigation Report prepared for the proposed project, the project site lies within an area of Miocene-age marine sedimentary rock. Earth materials encountered in the boring performed for the investigation consisted predominantly of fill composed predominantly of loose to medium dense silty sand to an approximate depth of seven feet below existing site grade. Below the near-surface soils, highly to moderately-weathered, weak to moderately-strong marine sedimentary rock was encountered to the maximum depth explored (approximately 15½ feet below existing site grade).

Expansive soils are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, roof drainage, drought, or other factors, and may cause unacceptable settlement or heave of structures, concrete slabs supported-on-grade, or pavements supported over these materials. Based on the scope of the proposed project, the presence of fill materials should not have a significant adverse effect on currently proposed project features.[4]

According to the Geotechnical Investigation Report, conventional grading practices may be used for most site earthwork activities (if any is required) and that drilled, cast-in-place concrete piers may be used for support of the proposed steel tower. Foundation support for the proposed equipment cabinet may be provided using shallow spread footings and/or a mat foundation. The Geotechnical Investigation Report anticipates that the project could be installed without any issues related to expansive soils. Therefore, the proposed project would not be located on or be affected by expansive soils, and impacts would be considered ***less than significant***.

VI(e). The proposed project includes the installation of a 34-foot tall faux water tank with nine internally-mounted panel antennas and support equipment. Operations would be performed remotely and the project would not use septic systems. Because the project would not involve use of a septic system or any type of wastewater treatment, ***no impact*** would occur.

[4] Mid Pacific Engineering, Inc. *Geotechnical Investigation Report, Proposed Telecommunications Facility [pg. 5]*. February 4, 2015.

VII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	✖	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	☐	☐	✖	☐

Discussion

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

The proposed project is located within the jurisdictional boundaries of the BAAQMD. The BAAQMD threshold of significance for operational GHG emissions is set at 1,100 metric tons of CO_2 equivalents ($MTCO_2e$) per year. BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions and does not require quantification. The City has elected to use the BAAQMD's thresholds and methodology for this project, as they are based on substantial evidence and remain the most up-to-date, scientifically-based method available to evaluate air quality impacts. Accordingly, should the proposed project result in the generation of a cumulatively considerable contribution to GHG emissions in excess of the BAAQMD threshold of significance (i.e., 1,100 $MTCO_2e$), impacts associated with global climate change would be considered significant.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions that are associated with global climate change. Estimated GHG emissions attributable to future development would be primarily associated with increases of CO_2 and, to a lesser extent, other GHG pollutants, such as CH_4 and N_2O. Sources of GHG emissions include area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste.

Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change. However, the proposed project's construction GHG emissions have been included in the annual GHG emissions for disclosure purposes. It should be noted that construction GHG emissions

are a one-time release that would occur only during construction of the project and, therefore, would not be emitted annually. Therefore, including them in the annual emissions would represent a worst-case scenario for the annual emissions. Modeling results are included in Appendix A.

The proposed project's GHG emissions were estimated and are presented in Table 5 below. As shown in the table, the project's total GHG emissions, including construction-related emissions and operational emissions from occasional maintenance vehicle trips and generator maintenance, were estimated to be approximately 64.762 $MTCO_2e$, which is well below the BAAQMD threshold of significance for GHG emissions. The project's annual GHG emissions would not exceed the 1,100 $MTCO_2e$ threshold utilized by the City. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and impacts associated with the generation of GHG emissions would be considered ***less than significant***.

Table 5
Project GHG Emissions ($MTCO_2e$/yr)

	Annual $MTCO_2e$
Construction-Related GHG Emissions[1]	64.762
Annual Operational GHG Emissions	0.036
TOTAL Project GHG Emissions	**64.798**
BAAQMD Thresholds	**1,100.00**

Source: CalEEMod, August 2015 (see Appendix A).

VIII. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	✖	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	☐	✖	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	✖
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	✖
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	✖
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	✖
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	✖
h. Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	✖	☐

Discussion

a, b. The proposed project would include the installation of nine panel antennas mounted within a new 34-foot tall faux water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand-by 30 kW diesel generator with a UL 142 fire-rated 132-gallon diesel fuel tank. The generator includes several built-in safety mechanisms, including a secondary containment basin, a secondary containment leak detection switch and safety shut off valve. If an accidental release or leak of diesel fuel were to occur in the tank, the secondary containment basin built into the tank would collect the fuel. Once the leak is detected, the alarm system would be triggered and the leak would be repaired by maintenance personnel.

The use, storage, and transport of hazardous materials by developers, contractors, business owners, industrial businesses, and others are required to be in compliance with local, State, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases.

The Contra Costa County Health Services Department, Hazardous Materials Division, which is the Certified Unified Program Agency (CUPA) for the City of Pinole, issues permits to and conducts inspections of businesses that use, store, or handle quantities of hazardous materials and/or waste greater than or equal to 55 gallons, 500 pounds, or 200 cubic feet of a compressed gas at any time. The division implements the Hazardous Material Management Plans (Business Plans) that include an inventory of hazardous materials used, handled, or stored at any business in the City of Pinole. The division also issues permits to and inspects businesses that handle acutely hazardous materials, such as those used in research and development facilities, and helps local fire departments respond to emergencies involving hazardous materials. Permits may also be required from the BAAQMD. The proposed project would obtain the necessary permits and comply with the associated standards and requirements.

In addition, the proposed wireless communications system would emit a radio frequency (RF) electromagnetic field. The proposed project's compliance with the guidelines outlined by the FCC limiting human exposure to RF electromagnetic fields was evaluated by Hammett & Edison, Inc (see Appendix E). The FCC sets exposure limits for continuous exposures that are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. These exposure limits are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5,000–80,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
BRS (Broadband Radio)	2,600	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

Base stations, such as is proposed for the project, typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well, and so are installed at some height above ground – in the case of this project,

approximately 24 feet above grade line. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

According to the RF exposure study, for a person anywhere at ground near the site, the maximum RF exposure level due to the proposed project was calculated to be 0.087 milliwatt per square-centimeter (mW/cm^2), which is 8.8 percent of the applicable public exposure limit of 1.00 mW/cm^2.[5] The maximum calculated level at the second-floor elevation of any nearby residence, which is located at least 20 feet from the proposed project, was 13.0 percent of the public exposure limit. It should be noted that the evaluation included several worst-case assumptions, including a conservative value for the reflection coefficient, the assumption that the carrier would be operating at full power at all times, and the assumption that a line-of-sight exists from the antennas to inhabited areas. Due to the use of worst-case assumptions, Hammett & Edison's professional opinion is that the results of the evaluation are likely overstated.

Due to their mounting locations, the Verizon antennas would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines.[6] As shown above, the highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

It should also be considered that in a site in an urban setting, such as the proposed project site, there are many existing sources of electromagnetic fields. Under CEQA, the existing environmental conditions as they exist at the time the environmental analysis is commenced will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant (see CEQA Guidelines Section 15125). Because there are many existing sources of electromagnetic fields in the vicinity, it is speculative whether or not an affect from the project's RF electromagnetic fields could be extracted from the considerable exposure of existing electromagnetic fields.

Based on the results of the RF exposure study, the proposed project would not cause exposure to RF electromagnetic fields in excess of the identified health risk exposure limits. Therefore, the proposed project would not create a significant hazard to the public or the environment associated with the RF electromagnet field.

For the aforementioned reasons, the proposed project would not result in impacts associated with the creation of a significant hazard to the public or the environment associated with hazardous materials, and impacts would be ***less than significant***.

c. The nearest school is Ellerhorst Elementary School located approximately 0.82 miles west of the project site. Therefore, the project would have ***no impact*** related to hazardous

[5] Hammett & Edison, Inc. *Statement* (regarding radio frequency electromagnetic fields) [pg. 2]. January 27, 2015.
[6] Hammett & Edison, Inc. *Statement* (regarding radio frequency electromagnetic fields) [pg. 3]. January 27, 2015.

emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. The proposed project site is not included on the list of hazardous materials sites complied pursuant to Government Code Section 65962.5.[7] As a result, the proposed project would not create a significant hazard to the public or the environment. Therefore, ***no impact*** would occur.

e,f. The project site is not located within an airport land use plan, two miles of a public airport, or the vicinity of a private airstrip. The nearest airport is the Buchanan Field Airport located approximately 10.8 miles east of the project site. In addition, the project does not involve any proposed uses that would result in an increase in populations in the area. Therefore, the project would not result in a safety hazard for people residing or working in the project area, and ***no impact*** would occur.

g. The proposed project would not physically interfere with any existing emergency plans, because the project would not alter the existing street system. The project includes an approved Fire Department turnaround on-site in order to provide adequate emergency access the project site. In addition, based on Pinole Municipal Code requirements, a portion of the property owner's driveway, the garage on the existing residence, the driveway retaining wall, the detached garage door, and the top of the project site slope on the southerly side are required to be paved surfaces capable of supporting vehicles, the load of a fire apparatus, and other emergency equipment vehicles. The proposed project's design complies with the loading requirements of the Pinole Municipal Code. Therefore, the project would result in ***no impact***.

h. The proposed project is located adjacent to a private residence atop a small hill. According to the City's General Plan Update, the project is located within a Low to Moderate Fire Hazard Severity Zone. The Pinole Fire Department manages the open space boundary issues and maintains the fire roads in the City's open space areas. As shown on the proposed project plans, all grading, site preparation, placing, and compaction of fill shall be done in accordance with the City of Pinole Grading Ordinance. In addition, vegetation clearance would be required for the proposed tower and equipment, per Fire Department vegetation clearance requirements. The applicant's compliance with the vegetation clearance requirements would help to ensure the project would not be subject to wildland fires. Therefore, the project would not expose the area to risks involving wildland fires, and impacts would be considered ***less than significant***.

[7] California Environmental Protection Agency, Cortese List, http://www.envirostor.dtsc.ca.gov, accessed July 2015.

IX. HYDROLOGY AND WATER QUALITY. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements?	☐	✖	☐	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	✖	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	✖	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	✖	☐
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	✖	☐
f. Otherwise substantially degrade water quality?	☐	✖	☐	☐
g. Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	✖
h. Place within a 100-year floodplain structures which would impede or redirect flood flows?	☐	☐	☐	✖
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.	☐	☐	☐	✖
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	✖

Discussion

a,f. Surface water quality can be adversely affected by erosion during project construction. Construction activities disturbing one or more acres are required under the federal Clean Water Act to comply with the State Water Resources Control Board (SWRCB) General Construction Activity Stormwater Discharge Permit. The proposed project could disturb up to approximately 4,483 sf and, thus, would not be subject to the requirements of the

General Construction Activity Stormwater Permit. In addition, the amount of impervious surfaces proposed for the project is relatively minimal; thus, the project would not generate a substantially increased amount of urban runoff.

Based on Pinole Municipal Code requirements, a portion of the property owner's driveway, the garage on the existing residence, the driveway retaining wall, the detached garage door, and the top of the project site slope on the southerly side are required to be paved surfaces capable of supporting vehicles, the load of a fire apparatus, and other emergency equipment vehicles. The exiting unpaved gravel driveway area is approximate 3,020 sf. Permeable driveway pavers would be utilized and would have integral spacers in order to allow runoff to fully infiltrate into the new driveway substrate.

Approximately 2,937 sf of constrained permeable pervious pavers would be utilized to comply with the Pinole Municipal Code requirements. The solid unit pavers would be set in sand and spaced to allow the runoff to infiltrate in the soil within the permeable area. Runoff from self-treating and self-retaining areas would not require any further treatment or flow control. In addition, approximately 83 sf of pervious material would be utilized in order to support the required loading.

An erosion control plan has been included as part of the project to ensure best management practices are utilized and impacts to the nearby Pinole Creek would not occur as a result of the project. The best management practices include placing two rows of fiber rolls (straw wattles) spaced 10 feet apart, aligned parallel with the contours, and extending 20 feet past the disturbed utility trench length. The fiber rolls will prevent downslope erosion of disturbed soils into the ephemeral tributary to Pinole Creek to the north. The utility trenches would encompass approximately 810 sf and would be restored to existing conditions once the lines are installed.

For excavation work associated with construction of the concrete retaining walls around the equipment area, fiber rolls will be equally spaced along the adjacent slopes (to the northwest, west, southwest). The fiber rolls will prevent downslope erosion of disturbed soils into Pinole Creek to the west, and the ephemeral tributary of Pinole Creek to the north.

To ensure project operation does not result in adverse effects to downstream water quality, the project includes an eight-foot by 20-foot vegetated bioswale within the equipment compound area in order to detain, treat, and control the volume of runoff from the site. The bioswale would be constructed with an approved soil mixture blend of 80 percent washed coarse sand and 20 percent sandy loam. The bioretention soil mixture would allow treated water to percolate into the soil. The treated drainage water is expected to infiltrate though the soil and eventually enter the Pinole Creek tributary in a natural water cycle.

Overall, implementation of the proposed project would not generate any new wastewater and does not involve discharge of any materials. However, without mitigation to ensure the erosion and sediment control measures are properly implemented and maintained, the

proposed project may violate water quality standards or waste discharge requirements. Impacts would be ***less than significant with mitigation***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the potential impact to a *less-than-significant* level.

IX-1. *In order to avoid indirect impacts to water quality in Pinole Creek, downslope of the project site, the following erosion-control measures shall be implemented:*

- *Construction Best Management Practices (BMPs): Prior to approval of construction drawings, the project applicant shall submit a design-level erosion control plan sheet to the City of Pinole Development Services Department for review and approval. The erosion control plan shall include, at a minimum, the following construction BMPs:*
    - *Two fiber rolls, spaced 10 feet apart, along the northern edge of the proposed 5-foot wide utility trench, and extending another 20 feet past the end of the disturbed trench.*
    - *Two fiber rolls, space 10 feet apart, beginning at the top of the slope surrounding the western, southern, and northwestern sides of the concrete foundation for the equipment area.*

  All construction BMPs shall be installed prior to initiation of any construction activities.

- *Operational BMPs: Prior to approval of construction drawings, the project applicant shall submit a design-level stormwater control plan sheet to the City of Pinole Development Services Department for review and approval. The stormwater control plan shall include, at a minimum, the following operational BMPs:*
    - *An 8-foot by 20-foot vegetated bioswale shall be constructed adjacent to the concrete pad to catch sheet flow runoff coming off of the faux water tower, diesel generator, other equipment on the concrete pad, and the concrete pad.*
    - *Permeable pavers shall replace the existing gravel driveway to reduce sheet flow off the site.*

  All operational BMPs shall be installed prior to operation of the wireless facilities.

- *Construction Monitoring: After the fiber rolls are installed and prior to the start of construction, a Qualified Stormwater Pollution Prevention Plan (SWPPP) Practitioner (QSP) shall inspect the site to ensure the fiber rolls are installed properly. Additional BMPs are not required to prevent eroded soil and contaminants entering the Pinole Creek watershed during and after construction activities. Should the QSP recommend additional BMPs, the applicant shall install the recommended BMPs prior to the start of construction. Construction activities shall not initiate until a QSP has reported to the City of Pinole Department of Development Services on the installed erosion and sediment control methods. Within 30 days after completion of the construction activities, the QSP shall complete a site visit and report for the City of Pinole Department of Development Services to document the efficacy of the BMPs. The reports shall include photo documentation of the BMPs and before and after photos of the site.*

- *Revegetation: Immediately following completion of construction and prior to the final site visit by the QSP, disturbed soils of the site shall be revegetated with a seed mix recommended by a qualified biologist. The seed mix shall include a mix of native species and sterile non-native species.*

- *Annual Bioswale Inspection and Maintenance: An ongoing maintenance strategy shall be included with the construction plans, subject to review and approval by the City of Pinole Development Services Department, to ensure the proper functioning of the proposed bioswale over time. The bioswale shall be inspected and maintained a minimum of once per year to ensure proper function. The inspection and maintenance shall occur annually in late August or September, prior to the rainy season (October to April). A maintenance check-list shall be completed for each annual inspection, which would include the date/time of the maintenance, name of the person conducting the maintenance, status of the bioswale, and maintenance activities conducted. The annual maintenance check-list shall be available at the request of the City of Pinole Department of Development Services.*

b. The proposed project includes the installation of a 34-foot tall faux water tank with nine panel antennas and support equipment. The only water utilized for the project will be irrigation water for the proposed grapevines. Groundwater would not be utilized for this purpose.

With respect to recharge, the amount of impervious surfaces proposed for the project is relatively minimal (approximately 653 sf required for the equipment storage area) and the

site is located within an area of dense brush, which would allow adequate groundwater recharge in the project area. As such, the minimal addition of impervious surfaces would not substantially interfere with groundwater recharge. Because the project would not deplete groundwater supplies or interfere with groundwater recharge, a ***less-than-significant*** impact would occur.

c-e. As discussed above, the project would not involve a substantial increase in impervious surfaces in the area. The drainage pattern of the project area would not be substantially altered and would not result in an increased potential for erosion or siltation on- or off-site with implementation of the proposed BMPs. The uses on the site would not result in polluted runoff. As noted above, the project includes an eight-foot by 20-foot vegetated bioswale within the equipment compound area in order to detain, treat, and control the volume of runoff from the site. The bioswale would be constructed with an approved soil mixture blend of 80 percent washed coarse sand and 20 percent sandy loam. The bioretention soil mixture would allow treated water to percolate into the soil. The treated drainage water is expected to infiltrate though the soil and eventually enter the Pinole Creek tributary in a natural water cycle.

Therefore, with implementation of the proposed erosion and sediment control measures, the project would not substantially alter the existing drainage pattern or the area and would not create or contribute substantial runoff water or polluted runoff, and impacts would be considered ***less than significant***.

g-i. According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Panel Number 06013C0232F, the proposed project is located in Flood Zone X, which is defined as an area of minimal flood hazard from the principal source of flood in the area and determined to be outside of the 0.2 percent annual chance floodplain. Therefore, the project site is not located within the 100-year floodplain. In addition, the project does not involve the placement of housing nor would the project increase population in the area. Because buildout of the proposed project would not place within the 100-year floodplain structures that would impede or redirect flood flows, and would not expose people or structures to a significant risk of loss, injury, or death involving flooding, the project would result in ***no impact*** related to development within the 100-year floodplain.

j. Tsunamis are defined as sea waves created by undersea fault movement. A tsunami poses little danger away from shorelines; however, when tsunamis reach the shoreline, high swells of water break and wash inland with great force. According to the City's General Plan Update EIR, the potential for a significant tsunami event to occur within the City's planning area and cause any significant damage is considered low. Possible effects of a tsunami would likely occur in areas near the shores of the San Pablo Bay, which is located on the western boundary of the City, opposite from the proposed project site. In addition, the General Plan Update EIR states that the San Francisco Bay would significantly attenuate the effect of tsunamis that might reach Pinole.

A seiche is a long-wavelength, large-scale wave action set up in a closed body of water such as a lake or reservoir, with destructive capacity that is not as great as that of a tsunami. The project is not located near a closed body of water large enough for a seiche to occur; therefore, the proposed project is not anticipated to be impacted by seiches. Mudflows typically occur at the base of mountainous or hilly terrain. Because the project site is not located at the base of any significant slopes, the project site would not be expected to be susceptible to mudflow inundation. Overall, the project area would not be threatened by a seiche, tsunami, or mudflow, and ***no impact*** would occur.

X. LAND USE AND PLANNING. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	✖
b. Conflict with any applicable land use plans, policies, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating on environmental effect?	☐	☐	☐	✖
c. Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	☐	✖

Discussion

a. The proposed project site is adjacent to a private residence atop a small hill, and is bounded by undeveloped land to the east. The project involves the installation of nine panel antennas mounted within a new 34-foot tall faux water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand-by 30 kW diesel fuel tank, which would be operated remotely and would require only occasional routine maintenance. The proposed project area is at the end of Pfeiffer Lane, atop a small hill, surrounded primarily by undeveloped land. Therefore, implementation of the proposed project would not physically divide an established community, and ***no impact*** would occur.

b. The proposed project site is designated in the General Plan and zoned as Suburban Residential. According to Table 17.020.030, a wireless communication facility is permitted within the Suburban Residential designation with a Conditional Use Permit. Should the Pinole Planning Commission approve the Conditional Use Permit, the uses proposed for the project site would be consistent with the zoning and General Plan land use designations. Development of the project would not interfere with the existing uses and would not involve any identifiable potential for conflict with surrounding land uses. Therefore, the proposed project would not conflict with any applicable land use plans, policies, or regulations and ***no impact*** would occur.

c. According to the City's General Plan Update EIR, the City is within the boundaries of the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (USFWS, 1998). However, the City does not contain habitat for species listed in the recovery plan. The EBMUD adopted the Low Effect East Bay Habitat Conservation Plan in April 2008, which covers two plant and five animal species within EBMUD lands. The HCP is restricted to EBMUD lands in eastern Contra Costa County; therefore, the project site is not located within the HCP area. The land located immediately east of the project site is owned by EBMUD and therefore covered by the HCP. The proposed project will not impact any lands within EBMUD's HCP. Therefore, implementation of the proposed

project would not conflict with any applicable Habitat Conservation Plan, Natural Community Conservation Plan, and ***no impact*** would occur.

XI. MINERAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	✖
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	✖

Discussion

a,b. The City of Pinole General Plan Update does not identify any regionally or locally important mineral resources within the City. In addition, the Geotechnical Investigation Report prepared for the proposed project site did not identify any on-site soils that would indicate the presence of any mineral resources. Therefore, the proposed project would not have an adverse effect on known mineral resources or recovery sites and ***no impact*** would occur.

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

Discussion

The following analysis is based on the Noise Statement prepared for the proposed project by Hammett & Edison, Inc., Consulting Engineers (see Appendix F).

a,c. Noise is generally defined as unwanted sound. For most people, the usual consequences of noise are associated with speech interference, distractions at home and at work, disturbance with rest and sleep, and disruption of recreational pursuits. The ambient noise of a community is all environmental noise, which is usually a composite of sound from many sources near and far. The noise of individual events, such as a passing car or train, an aircraft flying overhead or a lawn mower in the neighborhood, are superimposed on this composite of sound. The CEQA Guidelines define a project-level impact as being significant if it "[…] increases substantially the ambient noise levels for adjoining areas." The City's General Plan Update includes maximum allowable noise exposure limits for stationary noise sources, as presented in Table 6.

The project involves the installation of nine panel antennas mounted within a new 34-foot tall faux water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand-by 30 kW diesel generator with a UL 142 fire-rated 132-gallon diesel fuel tank. A GENERAC Model SD030 back-up

diesel generator would be installed and configured with the manufacturer's Level 2A sound enclosure for emergency use in the event of an extended commercial power outage. In order to maintain readiness for emergency operation, the generator would typically operate without load for a single 15-minute period once a week during daytime hours on a weekday. An approximately 8 ½-foot tall CMU block wall is proposed along the north and west faces of the generator in order to reduce noise in those directions.

Table 6
City of Pinole Maximum Allowable Noise Exposure for Stationary Sources[1]

	Daytime[5] (7 AM to 10 PM)	**Nighttime[2,5] (10 PM to 7 AM)**
Hourly Leq, dB[3]	55	45
Maximum Level, dB[3]	70	65
Maximum Level, dB – Impulsive Noise[4]	65	60

[1] As determined at the property line of the receiving land use. When determining effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.
[2] Applies only where the receiving land use operates or is occupied during nighttime hours.
[3] Sound level measurements shall be made with "slow" meter response.
[4] Sound level measurement shall be made with "fast" meter response.
[5] Allowable levels shall be raised to the ambient noise levels where the ambient levels exceed the allowable levels. Allowable levels shall be reduced 5 dB if the ambient hourly Leq is at least 10 dB lower than the allowable level.

Source: City of Pinole General Plan Update Draft EIR, July 2010.

As noted in Table 6, distances to stationary sources are determined at the property line of the receiving land use. The nearest property lines of receiving land uses, where residences are located, are to the northwest and southwest, approximately 86 and 116 feet from the near edges of the proposed enclosure, respectively. The manufacturer-provided maximum noise levels from various open equipment (i.e., not enclosed) are shown in Table 7.

Table 7
Maximum Noise Levels from Proposed Equipment

Equipment	**Maximum Noise Level (dBA)**	**Reference Distance (feet)**
CommScope RBA-72	58.7	5.0
Purcell FLX16WS	64.7	3.3
McLean T-20	64.0	5.0
Generac SD030	63.0	23.0

Source: Hammett & Edison, Inc., April 2015.

The calculated noise levels at the nearest property lines, for the simultaneous operation of all the fans in all four equipment cabinets and the emergency operation of the generator, are 44.6 and 42.3 dBA, at the northwest and southwest property lines, respectively. The aforementioned noise levels meet the City's most restrictive nighttime limit of 45 dBA. Because sound levels dissipates at a rate of approximately 6 dB with every doubling of distance, the maximum noise level due to the generator anticipated to be heard at the nearest sensitive receptor would be even less. Consequently, the proposed project would

not result in exposure of persons to or generation of noise levels in excess of standards established in the City's General Plan. In addition, as operation of the generator is the only source of noise proposed for the project, which would only run for approximately than 15 minutes per week, the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity. Therefore, the proposed project would not result in excessive noise levels, and a ***less-than-significant*** impact would occur.

b. Federal, state, or local regulatory standards for vibration do not exist; however, various criteria have been established to assist in the evaluation of vibration impacts, including vibration criteria based on human perception and structural damage risks developed by Caltrans. For most structures, Caltrans considers a peak-particle velocity (ppv) threshold of 0.2 inches per second (in/sec) at a distance of approximately 50 feet to be the level at which architectural damage (i.e., minor cracking of plaster walls and ceilings) to normal structures may occur. In terms of human annoyance, continuous vibrations in excess of 0.1 in/sec ppv are identified by Caltrans as the minimum level perceptible for ground vibration.

Construction activities could result in short-term groundborne vibration levels that could affect nearby sensitive land uses. According to the City's General Plan Update EIR, the maximum level of vibration associated with construction is typically due to a pavement breaker, which was measured to produce a ppv of 2.88 in/sec at 10 feet. As shown in Table 8, groundborne vibration levels of various construction equipment can range from approximately 0.001 to 0.074 in/sec ppv at distances of 50 feet. At distances of 100 feet, groundborne vibration levels of various construction equipment can range from approximately 0.004 to 0.026 in/sec ppv

Table 8
Vibration Levels for Various Construction Equipment

Type of Equipment	Peak Particle Velocity @ 25 feet (inches/second)	Peak Particle Velocity @ 50 feet (inches/second)	Peak Particle Velocity @ 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210	0.074	0.026

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006.

It should be noted that pile driving will not be required for the proposed project. As stated above, the nearest property lines of receiving sensitive land uses, where residences are located, are to the northwest and southwest, approximately 86 and 116 feet from the near edges of the proposed enclosure, respectively. Therefore, the nearest receptor would not

be subject to groundborne vibration levels at or above 0.2 in/sec ppv as a result of the proposed project.

Therefore, the proposed project would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Therefore, the proposed project would not result in excessive groundborne vibration or groundborne noise level, and a ***less-than-significant*** impact would occur.

d. The proposed project includes the installation of a 34-foot tall faux water tank with nine panel antennas and support equipment. Noise levels would temporarily increase substantially with the influx of trucks, construction equipment, and people during the construction process. According to the City's General Plan Update EIR, individual construction equipment noise levels typically range from approximately 74 to 88 dB at 50 feet. The City's Municipal Code Section 15.02.070, General Regulations of Construction, establishes hourly restrictions that pertain to construction-related activities. As stated above, the nearest sensitive receptor would be approximately 250 feet from the project site. In addition, due to the short-term nature of construction noise, the intermittent frequency of construction noise, and the required compliance with the construction noise standards established as part of the City's existing Municipal Code, construction noise level increases would not result in a substantial temporary or periodic increase in ambient noise levels that would result in exposure of persons to or generation of noise levels in excess of applicable standards. However, without mitigation to ensure construction of the project complies with the daytime construction hours and equipment has proper mufflers for noise, the proposed project may result in a temporary construction noise impact. Mitigation Measure XII-1 has been required to address this impact. Impacts would be ***less than significant with mitigation***.

<u>Mitigation Measure(s)</u>
Implementation of the following mitigation measure would reduce the potential impact to a *less-than-significant* level.

XII-1. *Construction activities shall be limited to the hours between 7:00 AM and 5:00 PM on non-federal holidays. No construction activities should occur on Saturdays or federal holidays (Consistent with Pinole Municipal Code Section 15.02.070). In addition, all construction and demolition equipment that utilizes internal combustion engines shall be fitted with manufacturer's mufflers or equivalent.*

e,f. The project site is not located within an airport land use plan, two miles of a public airport, or the vicinity of a private airstrip. The nearest airport is the Buchanan Field Airport located approximately 10.8 miles east of the project site. In addition, the project does not involve any proposed uses that would result in an increase in populations in the area and is not immediately adjacent to any sensitive receptors. Therefore, the project would not expose people to excessive noise levels associated with air traffic, and ***no impact*** would occur.

XIII. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	☐	✖
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✖
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✖

Discussion

a-c. The proposed project involves the installation of nine panel antennas mounted within a new 34-foot tall water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand0by 30 kW diesel generator accompanied by a diesel tank. Development of the proposed project would not induce substantial population growth by developing new housing or businesses within the City. The proposed tower would be constructed adjacent to a detached garage for a private residence that currently exists on the project site. Existing housing would not be demolished as part of the proposed project. Therefore, the project would not induce population in the area nor displace housing or people, and ***no impact*** would occur related to population and housing.

XIV. PUBLIC SERVICES. *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:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	☐	☐	✖	☐
b. Police protection?	☐	☐	✖	☐
c. Schools?	☐	☐	☐	✖
d. Parks?	☐	☐	☐	✖
e. Other Public Facilities?	☐	☐	☐	✖

Discussion

a. According to the City's General Plan Update, the project is located within a Low to Moderate Fire Hazard Severity Zone. Although the project would not be located in an area prone to fire, the project would be required to comply with certain restrictive building codes, including vegetation clearance requirements, which would help to reduce any potential for fire hazards at the project site.

The City of Pinole Fire Department provides full fire and rescue services, fire suppression, medical advanced life support, rescue and hazardous materials response. The Fire Department promotes disaster preparedness, fire prevention and safety in the City by providing free services and safety devices, public outreach (schools, businesses) and public education and/or training courses (safety demonstrations including child car seat safety and earthquake preparedness), maintenance (station upgrades, etc.) and biannual commercial inspections. According to Figure 8.1 of the City's General Plan, the project site is located within the Pinole Fire Department Service Area.

The City's Fire Department manages open space boundary issues, as well as maintains the fire roads and fire breaks in the City's open space areas and patrols the open space with assistance from the Pinole Police Department. The project site is located adjacent to a private residence, thus, fire protection services are already provided to the project site. The nearest fire department, Station 73, located at 880 Tennent Avenue, is approximately 2.4 miles northwest of the project site. In addition, the Pinole Fire Department shares a ladder truck with the Rodeo-Hercules Fire Protection District and the Contra Costa County Fire Protection District.[8] Therefore, the project site would not require an increase to the Fire Department's facilities or equipment in order for the Fire Department to provide adequate service to the project. In addition, the project includes the incorporation of a Fire Department turnaround that would ensure adequate access to the project site, as well as a sign identifying a 1-800 number to call in case of an emergency, which could

[8] Contra Costa Local Agency Formation Commission. *Municipal Service Review: Fire and Emergency Medical Service Providers*. Accepted by LAFCo August 12, 2009.

benefit emergency fire response times. Overall, the proposed project would result in a ***less-than-significant*** impact associated with fire protection services.

b. The Pinole Police Department, located at 880 Tennent Avenue, is located approximately 2.4 miles northwest of the project site. The project is not expected to result in an increased demand for police protection services. Out of an abundance of caution, the equipment area will be adequately fenced and protected with 6-foot chain link fencing on the southern and eastern sides. Overall, the proposed project would have a ***less-than-significant*** impact regarding the provision of new or physically altered police protection facilities.

c-e. The project involves the installation of nine panel antennas mounted within a new 34-foot tall faux water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand-by 30 kW diesel fuel tank, which would be operated remotely and would require only occasional routine maintenance. The project does not involve housing and would not introduce new residents to the area. As such, the project would neither directly nor indirectly result in an increased demand for schools, parks, or other public facilities. Therefore, the proposed project would have ***no impact*** regarding the provision of new or physically altered schools, park, or other services and facilities.

XV. RECREATION. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	✖
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	✖

Discussion

a,b. The proposed project does not include neighborhood recreation facilities, regional parks or other recreational facilities in the immediate vicinity. Because the project would not result in an increase in population, a new recreational area or need for expanded recreational facilities would not occur with implementation of the project. Therefore, the proposed project would result in ***no impact*** to recreation.

XVI. TRANSPORTATION AND CIRCULATION. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	✖	☐
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	✖	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	✖
d. Substantially increase hazards due to a design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	✖
e. Result in inadequate emergency access?	☐	☐	☐	✖
f. Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	✖

Discussion

a,b. The proposed project would include the installation of nine panel antennas mounted within a new 34-foot tall faux water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand-by 30 kW diesel generator with a UL 142 fire-rated 132-gallon diesel fuel tank. Approximately two daily standard pick-up truck vehicle trips are anticipated during construction of the proposed project and the construction phase is anticipated to be less than 60 days. It should be noted that, during the construction phase, there may be days when no construction activity is occurring. The following equipment will be moved on- and off-site during the construction phase, resulting in a total of 30 trips:

- Rubber-tired backhoe for trenching, footing, and general site preparation will be delivered via trailer no more than three times as the backhoe will most likely stay on-site during construction.
- Truck-mounted drill rig for the pier foundation drilling will be delivered on- and off-site one time.
- Concrete trucks for three to five different occurrences, with as many as three trucks for the largest concrete pours.
- Aerial lift for the erection of the tank structure and antenna installation will be delivered on- and off-site one time via tractor trailer to the lower streets then unloaded and driven up to the site location.

- Rubber-tired crane truck may be utilized for the tank erection and would be delivered on- and off-site one time.
- Rubber-tired crane truck for the generator will be delivered on- and off-site one time.
- Mid-sized box truck for the radio equipment delivery would occur for two to three consecutive days.

Therefore, the maximum number of trips during the construction phase would be 120 standard pick-up truck trips and 30 large truck trips, for a total of approximately 150 trips over a 60 day period. The level of activity, spread over 60 days, is not anticipated to cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

After installation of the project, only approximately one trip per month would be required for routine maintenance, and one truck trip every four months to refuel the emergency generator diesel fuel tank. As such, a substantial increase in traffic volumes along area roadways would not occur as a result of the proposed project construction or operation. Subsequently, the project would not cause any level of service standards to be exceeded. Therefore, a ***less-than-significant*** impact would occur.

c. The nearest airport is the Buchanan Field Airport located approximately 10.8 miles east of the project site. In addition, the project would not increase the population in the area. Therefore, the project would not result in a change in air traffic patterns, including an increase in traffic levels or change in location, and ***no impact*** would occur.

d,e. Design of the project does not involve any sharp curves, dangerous intersections, or incompatible uses that would substantially increase hazards on the site or immediate vicinity. As noted previously, an approved Fire Department turnaround would be incorporated within the site. Accordingly, adequate emergency access would be provided to the project site. Therefore, ***no impact*** would occur.

f. Due to the nature of the proposed project, population in the area would not increase with implementation of the project. The project does not involve the placement of housing or any other land use that would require alternative transportation options. In addition, the project does not involve modifications to area roadways. Improvements for a Fire Department turnaround are proposed. The improvements would not affect the use of any bicycle or pedestrian pathways and would merely improve emergency access. Therefore, implementation of the proposed project would not conflict with any adopted policies supporting alternative transportation, and ***no impact*** would occur.

XVII. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	✖
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	✖	☐
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	✖	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	✖	☐
e. 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?	☐	☐	☐	✖
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	✖	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	✖	☐

Discussion

a,e. The proposed project would include the installation of nine panel antennas mounted within a new 34-foot tall faux water tank, anchored to a concrete pad foundation, which will also support outdoor equipment cabinets, fencing, and a new stand-by 30 kW diesel generator with a UL 142 fire-rated 132-gallon diesel fuel tank. After installation, only routine maintenance would be required at the site approximately once a month. The project would not introduce new residents or employees to the area. As such, the project would not generate any wastewater. Therefore, the project would not exceed any wastewater treatment requirements, require or result in the construction of wastewater treatment facilities or expansion of any existing facilities, nor affect the capacity of wastewater treatment facilities. Consequently, ***no impact*** would occur.

b,d. The proposed project includes the installation of a 34-foot tall faux water tank with nine panel antennas and support equipment. The only water utilized for the project will be irrigation water for the proposed grapevines. Therefore, the project would not result in the construction of new water facilities, the expansion of existing facilities, or the need

for new or expanded water entitlements. Consequently, impacts would be ***less than significant***.

c. The project site is adjacent to a private residence atop a small hill to the north and east of Pinole Creek. The amount of impervious surfaces proposed for the project would be approximately 653 sf. Accordingly, implementation of the proposed project would not generate a substantial amount of stormwater. To ensure project operation does not result in adverse effects to downstream water quality, the project includes an eight-foot by 20-foot vegetated bioswale within the equipment compound area in order to detain, treat, and control the volume of runoff from the site. The bioswale would be constructed with an approved soil mixture blend of 80 percent washed coarse sand and 20 percent sandy loam. The bioretention soil mixture would allow treated water to percolate into the soil. The treated drainage water is expected to infiltrate though the soil and eventually enter the Pinole Creek tributary in a natural water cycle (i.e., through natural percolation via native soils).

Overall, implementation of the proposed project would not require the construction of new storm water drainage facilities or expansion of existing facilities. Therefore, a ***less-than-significant*** impact associated with stormwater drainage facilities would occur.

f.g, The proposed project does not involve any uses that would generate solid waste. However, during construction, waste may be generated on site associated with construction materials. As such, the project could have short-term effects on local landfill capacities. However, the amount of solid waste that would be anticipated due to construction would be minimal. Furthermore, the proposed project would be required to comply with all applicable standards and regulations related to solid waste, including the California Green Building Standards Code, which requires the diversion of at least 50 percent of construction waste. Therefore, the proposed project would not conflict with any federal, state, or local regulations related to solid waste, and a ***less than significant*** impact would occur.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	✖	☐
b. Does the project have impacts that are individually limited, but 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)?	☐	☐	✖	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	✖	☐

Discussion

a. Given the nature of the proposed project and the fact that significant operations are not proposed, the proposed project would have a low potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, 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. However, where a potentially significant impact could occur (i.e., impacts related to biological resources, cultural resources, soil erosion, landslides, water quality, and construction noise), mitigation measures have been included in this Initial Study/Mitigated Negative Declaration that would reduce such impacts to less-than-significant levels. Therefore, the proposed project would have a ***less-than-significant*** impact.

b,c. This Initial Study/Mitigated Negative Declaration demonstrates that the proposed project would not be expected to result in adverse impacts to human beings, either directly or indirectly. This Initial Study determined that the project would result in no impact or less-than-significant impacts to all resources areas, and that the project's incremental contribution to potential cumulative impacts would not be cumulatively considerable. Therefore, the project's impact would be considered ***less than significant***.

Appendix A

Verizon Wireless Facility

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.01	Acre	0.01	652.96	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per grading plan

Vehicle Trips - Per project description

Grading - Per grading plan

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	0.00	0.03
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	WD_TR	0.00	0.10

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					
2016	0.0852	0.7926	0.4953	6.9000e-004	2.0100e-003	0.0544	0.0564	7.0000e-004	0.0503	0.0510	0.0000	64.3764	64.3764	0.0184	0.0000	64.7618
Total	**0.0852**	**0.7926**	**0.4953**	**6.9000e-004**	**2.0100e-003**	**0.0544**	**0.0564**	**7.0000e-004**	**0.0503**	**0.0510**	**0.0000**	**64.3764**	**64.3764**	**0.0184**	**0.0000**	**64.7618**

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					
2016	0.0852	0.7926	0.4953	6.9000e-004	2.0100e-003	0.0544	0.0564	7.0000e-004	0.0503	0.0510	0.0000	64.3763	64.3763	0.0184	0.0000	64.7618
Total	**0.0852**	**0.7926**	**0.4953**	**6.9000e-004**	**2.0100e-003**	**0.0544**	**0.0564**	**7.0000e-004**	**0.0503**	**0.0510**	**0.0000**	**64.3763**	**64.3763**	**0.0184**	**0.0000**	**64.7618**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.8900e-003	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8900e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.8900e-003	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8900e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/14/2016	5	10	
2	Site Preparation	Site Preparation	1/15/2016	1/15/2016	5	1	
3	Grading	Grading	1/16/2016	1/19/2016	5	2	
4	Building Construction	Building Construction	1/20/2016	6/7/2016	5	100	
5	Paving	Paving	6/8/2016	6/14/2016	5	5	
6	Architectural Coating	Architectural Coating	6/15/2016	6/21/2016	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0.03359

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 979; Non-Residential Outdoor: 326 (Architectural Coating – sqft)

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	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	174	0.41
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	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
Demolition	4	10.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

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	6.5600e-003	0.0562	0.0435	6.0000e-005		4.0200e-003	4.0200e-003		3.8400e-003	3.8400e-003	0.0000	5.4141	5.4141	1.0800e-003	0.0000	5.4369
Total	**6.5600e-003**	**0.0562**	**0.0435**	**6.0000e-005**		**4.0200e-003**	**4.0200e-003**		**3.8400e-003**	**3.8400e-003**	**0.0000**	**5.4141**	**5.4141**	**1.0800e-003**	**0.0000**	**5.4369**

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	1.9000e-004	2.8000e-004	2.7000e-003	1.0000e-005	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.4111	0.4111	2.0000e-005	0.0000	0.4116
Total	**1.9000e-004**	**2.8000e-004**	**2.7000e-003**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**4.6000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4111**	**0.4111**	**2.0000e-005**	**0.0000**	**0.4116**

3.2 Demolition - 2016

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	6.5600e-003	0.0562	0.0435	6.0000e-005		4.0200e-003	4.0200e-003		3.8400e-003	3.8400e-003	0.0000	5.4141	5.4141	1.0800e-003	0.0000	5.4369
Total	**6.5600e-003**	**0.0562**	**0.0435**	**6.0000e-005**		**4.0200e-003**	**4.0200e-003**		**3.8400e-003**	**3.8400e-003**	**0.0000**	**5.4141**	**5.4141**	**1.0800e-003**	**0.0000**	**5.4369**

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	1.9000e-004	2.8000e-004	2.7000e-003	1.0000e-005	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.4111	0.4111	2.0000e-005	0.0000	0.4116
Total	**1.9000e-004**	**2.8000e-004**	**2.7000e-003**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**4.6000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.4111**	**0.4111**	**2.0000e-005**	**0.0000**	**0.4116**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8000e-004	6.8200e-003	3.6700e-003	0.0000		4.2000e-004	4.2000e-004		3.8000e-004	3.8000e-004	0.0000	0.4414	0.4414	1.3000e-004	0.0000	0.4442
Total	**6.8000e-004**	**6.8200e-003**	**3.6700e-003**	**0.0000**	**2.7000e-004**	**4.2000e-004**	**6.9000e-004**	**3.0000e-005**	**3.8000e-004**	**4.1000e-004**	**0.0000**	**0.4414**	**0.4414**	**1.3000e-004**	**0.0000**	**0.4442**

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	1.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0206	0.0206	0.0000	0.0000	0.0206
Total	**1.0000e-005**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0206**	**0.0206**	**0.0000**	**0.0000**	**0.0206**

3.3 Site Preparation - 2016

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8000e-004	6.8200e-003	3.6700e-003	0.0000		4.2000e-004	4.2000e-004		3.8000e-004	3.8000e-004	0.0000	0.4414	0.4414	1.3000e-004	0.0000	0.4442
Total	**6.8000e-004**	**6.8200e-003**	**3.6700e-003**	**0.0000**	**2.7000e-004**	**4.2000e-004**	**6.9000e-004**	**3.0000e-005**	**3.8000e-004**	**4.1000e-004**	**0.0000**	**0.4414**	**0.4414**	**1.3000e-004**	**0.0000**	**0.4442**

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	1.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0206	0.0206	0.0000	0.0000	0.0206
Total	**1.0000e-005**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0206**	**0.0206**	**0.0000**	**0.0000**	**0.0206**

3.4 Grading - 2016

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					7.7000e-004	0.0000	7.7000e-004	4.2000e-004	0.0000	4.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0112	8.7000e-003	1.0000e-005		8.0000e-004	8.0000e-004		7.7000e-004	7.7000e-004	0.0000	1.0828	1.0828	2.2000e-004	0.0000	1.0874
Total	**1.3100e-003**	**0.0112**	**8.7000e-003**	**1.0000e-005**	**7.7000e-004**	**8.0000e-004**	**1.5700e-003**	**4.2000e-004**	**7.7000e-004**	**1.1900e-003**	**0.0000**	**1.0828**	**1.0828**	**2.2000e-004**	**0.0000**	**1.0874**

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-005	6.0000e-005	5.4000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0822	0.0822	0.0000	0.0000	0.0823
Total	**4.0000e-005**	**6.0000e-005**	**5.4000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0822**	**0.0822**	**0.0000**	**0.0000**	**0.0823**

3.4 Grading - 2016

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					7.7000e-004	0.0000	7.7000e-004	4.2000e-004	0.0000	4.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0112	8.7000e-003	1.0000e-005		8.0000e-004	8.0000e-004		7.7000e-004	7.7000e-004	0.0000	1.0828	1.0828	2.2000e-004	0.0000	1.0874
Total	**1.3100e-003**	**0.0112**	**8.7000e-003**	**1.0000e-005**	**7.7000e-004**	**8.0000e-004**	**1.5700e-003**	**4.2000e-004**	**7.7000e-004**	**1.1900e-003**	**0.0000**	**1.0828**	**1.0828**	**2.2000e-004**	**0.0000**	**1.0874**

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-005	6.0000e-005	5.4000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0822	0.0822	0.0000	0.0000	0.0823
Total	**4.0000e-005**	**6.0000e-005**	**5.4000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0822**	**0.0822**	**0.0000**	**0.0000**	**0.0823**

3.5 Building Construction - 2016

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	0.0691	0.6853	0.4106	5.7000e-004		0.0470	0.0470		0.0432	0.0432	0.0000	53.4584	53.4584	0.0161	0.0000	53.7970
Total	**0.0691**	**0.6853**	**0.4106**	**5.7000e-004**		**0.0470**	**0.0470**		**0.0432**	**0.0432**	**0.0000**	**53.4584**	**53.4584**	**0.0161**	**0.0000**	**53.7970**

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	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Building Construction - 2016

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	0.0691	0.6853	0.4106	5.7000e-004		0.0470	0.0470		0.0432	0.0432	0.0000	53.4583	53.4583	0.0161	0.0000	53.7969
Total	**0.0691**	**0.6853**	**0.4106**	**5.7000e-004**		**0.0470**	**0.0470**		**0.0432**	**0.0432**	**0.0000**	**53.4583**	**53.4583**	**0.0161**	**0.0000**	**53.7969**

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	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Paving - 2016

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	2.8000e-003	0.0266	0.0182	3.0000e-005		1.6500e-003	1.6500e-003		1.5300e-003	1.5300e-003	0.0000	2.4575	2.4575	6.7000e-004	0.0000	2.4717
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8000e-003**	**0.0266**	**0.0182**	**3.0000e-005**		**1.6500e-003**	**1.6500e-003**		**1.5300e-003**	**1.5300e-003**	**0.0000**	**2.4575**	**2.4575**	**6.7000e-004**	**0.0000**	**2.4717**

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	1.7000e-004	2.5000e-004	2.4300e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3700	0.3700	2.0000e-005	0.0000	0.3704
Total	**1.7000e-004**	**2.5000e-004**	**2.4300e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3700**	**0.3700**	**2.0000e-005**	**0.0000**	**0.3704**

3.6 Paving - 2016

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	2.8000e-003	0.0266	0.0182	3.0000e-005		1.6500e-003	1.6500e-003		1.5300e-003	1.5300e-003	0.0000	2.4575	2.4575	6.7000e-004	0.0000	2.4717
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8000e-003**	**0.0266**	**0.0182**	**3.0000e-005**		**1.6500e-003**	**1.6500e-003**		**1.5300e-003**	**1.5300e-003**	**0.0000**	**2.4575**	**2.4575**	**6.7000e-004**	**0.0000**	**2.4717**

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	1.7000e-004	2.5000e-004	2.4300e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3700	0.3700	2.0000e-005	0.0000	0.3704
Total	**1.7000e-004**	**2.5000e-004**	**2.4300e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3700**	**0.3700**	**2.0000e-005**	**0.0000**	**0.3704**

3.7 Architectural Coating - 2016

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	3.4000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	5.9300e-003	4.7100e-003	1.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.6383	0.6383	8.0000e-005	0.0000	0.6399
Total	**4.3200e-003**	**5.9300e-003**	**4.7100e-003**	**1.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**0.6383**	**0.6383**	**8.0000e-005**	**0.0000**	**0.6399**

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	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2016

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	3.4000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2000e-004	5.9300e-003	4.7100e-003	1.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.6383	0.6383	8.0000e-005	0.0000	0.6399
Total	**4.3200e-003**	**5.9300e-003**	**4.7100e-003**	**1.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**0.6383**	**0.6383**	**8.0000e-005**	**0.0000**	**0.6399**

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	0.0000	0.0000	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**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527627	0.065080	0.176461	0.145848	0.036424	0.004888	0.009671	0.020781	0.001221	0.001487	0.006359	0.002101	0.002052

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	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**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.8900e-003	0.0000	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	2.8900e-003	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.5500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	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	**2.8900e-003**	**0.0000**	**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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.5500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	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	**2.8900e-003**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Verizon Wireless Facility

Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.01	Acre	0.01	652.96	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per grading plan

Vehicle Trips - Per project description

Grading - Per grading plan

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	0.00	0.03
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	WD_TR	0.00	0.10

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					
2016	1.7293	13.7058	9.2691	0.0131	0.8649	0.9398	1.6695	0.4407	0.8646	1.2088	0.0000	1,283.1367	1,283.1367	0.3555	0.0000	1,290.6021
Total	**1.7293**	**13.7058**	**9.2691**	**0.0131**	**0.8649**	**0.9398**	**1.6695**	**0.4407**	**0.8646**	**1.2088**	**0.0000**	**1,283.1367**	**1,283.1367**	**0.3555**	**0.0000**	**1,290.6021**

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					
2016	1.7293	13.7058	9.2691	0.0131	0.8649	0.9398	1.6695	0.4407	0.8646	1.2088	0.0000	1,283.1367	1,283.1367	0.3555	0.0000	1,290.6021
Total	**1.7293**	**13.7058**	**9.2691**	**0.0131**	**0.8649**	**0.9398**	**1.6695**	**0.4407**	**0.8646**	**1.2088**	**0.0000**	**1,283.1367**	**1,283.1367**	**0.3555**	**0.0000**	**1,290.6021**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**0.0158**	**0.0000**	**0.0000**	**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 Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**0.0158**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/14/2016	5	10	
2	Site Preparation	Site Preparation	1/15/2016	1/15/2016	5	1	
3	Grading	Grading	1/16/2016	1/19/2016	5	2	
4	Building Construction	Building Construction	1/20/2016	6/7/2016	5	100	
5	Paving	Paving	6/8/2016	6/14/2016	5	5	
6	Architectural Coating	Architectural Coating	6/15/2016	6/21/2016	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0.03359

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 979; Non-Residential Outdoor: 326 (Architectural Coating – sqft)

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	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	174	0.41
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	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
Demolition	4	10.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674		1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**		**0.8039**	**0.8039**		**0.7674**	**0.7674**		**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0402	0.0610	0.5644	1.0700e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		89.5261	89.5261	5.0200e-003		89.6315
Total	**0.0402**	**0.0610**	**0.5644**	**1.0700e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**89.5261**	**89.5261**	**5.0200e-003**		**89.6315**

3.2 Demolition - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674	0.0000	1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**		**0.8039**	**0.8039**		**0.7674**	**0.7674**	**0.0000**	**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0402	0.0610	0.5644	1.0700e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		89.5261	89.5261	5.0200e-003		89.6315
Total	**0.0402**	**0.0610**	**0.5644**	**1.0700e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**89.5261**	**89.5261**	**5.0200e-003**		**89.6315**

3.3 Site Preparation - 2016

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.3593	13.6350	7.3401	9.3500e-003		0.8338	0.8338		0.7671	0.7671		973.0842	973.0842	0.2935		979.2481
Total	**1.3593**	**13.6350**	**7.3401**	**9.3500e-003**	**0.5303**	**0.8338**	**1.3640**	**0.0573**	**0.7671**	**0.8243**		**973.0842**	**973.0842**	**0.2935**		**979.2481**

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	0.0201	0.0305	0.2822	5.3000e-004	0.0472	3.7000e-004	0.0475	0.0125	3.4000e-004	0.0129		44.7631	44.7631	2.5100e-003		44.8158
Total	**0.0201**	**0.0305**	**0.2822**	**5.3000e-004**	**0.0472**	**3.7000e-004**	**0.0475**	**0.0125**	**3.4000e-004**	**0.0129**		**44.7631**	**44.7631**	**2.5100e-003**		**44.8158**

3.3 Site Preparation - 2016

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.3593	13.6350	7.3401	9.3500e-003		0.8338	0.8338		0.7671	0.7671	0.0000	973.0842	973.0842	0.2935		979.2481
Total	**1.3593**	**13.6350**	**7.3401**	**9.3500e-003**	**0.5303**	**0.8338**	**1.3640**	**0.0573**	**0.7671**	**0.8243**	**0.0000**	**973.0842**	**973.0842**	**0.2935**		**979.2481**

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	0.0201	0.0305	0.2822	5.3000e-004	0.0472	3.7000e-004	0.0475	0.0125	3.4000e-004	0.0129		44.7631	44.7631	2.5100e-003		44.8158
Total	**0.0201**	**0.0305**	**0.2822**	**5.3000e-004**	**0.0472**	**3.7000e-004**	**0.0475**	**0.0125**	**3.4000e-004**	**0.0129**		**44.7631**	**44.7631**	**2.5100e-003**		**44.8158**

3.4 Grading - 2016

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					0.7706	0.0000	0.7706	0.4157	0.0000	0.4157			0.0000			0.0000
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674		1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**	**0.7706**	**0.8039**	**1.5745**	**0.4157**	**0.7674**	**1.1831**		**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0402	0.0610	0.5644	1.0700e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		89.5261	89.5261	5.0200e-003		89.6315
Total	**0.0402**	**0.0610**	**0.5644**	**1.0700e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**89.5261**	**89.5261**	**5.0200e-003**		**89.6315**

3.4 Grading - 2016

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					0.7706	0.0000	0.7706	0.4157	0.0000	0.4157			0.0000			0.0000
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674	0.0000	1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**	**0.7706**	**0.8039**	**1.5745**	**0.4157**	**0.7674**	**1.1831**	**0.0000**	**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0402	0.0610	0.5644	1.0700e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		89.5261	89.5261	5.0200e-003		89.6315
Total	**0.0402**	**0.0610**	**0.5644**	**1.0700e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**89.5261**	**89.5261**	**5.0200e-003**		**89.6315**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3816	13.7058	8.2122	0.0113		0.9398	0.9398		0.8646	0.8646		1,178.5549	1,178.5549	0.3555		1,186.0202
Total	**1.3816**	**13.7058**	**8.2122**	**0.0113**		**0.9398**	**0.9398**		**0.8646**	**0.8646**		**1,178.5549**	**1,178.5549**	**0.3555**		**1,186.0202**

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	0.0000	0.0000	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**

3.5 Building Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3816	13.7058	8.2122	0.0113		0.9398	0.9398		0.8646	0.8646	0.0000	1,178.5549	1,178.5549	0.3555		1,186.0202
Total	**1.3816**	**13.7058**	**8.2122**	**0.0113**		**0.9398**	**0.9398**		**0.8646**	**0.8646**	**0.0000**	**1,178.5549**	**1,178.5549**	**0.3555**		**1,186.0202**

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	0.0000	0.0000	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**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1203	10.6282	7.2935	0.0111		0.6606	0.6606		0.6113	0.6113		1,083.5832	1,083.5832	0.2969		1,089.8175
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1203**	**10.6282**	**7.2935**	**0.0111**		**0.6606**	**0.6606**		**0.6113**	**0.6113**		**1,083.5832**	**1,083.5832**	**0.2969**		**1,089.8175**

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	0.0724	0.1097	1.0158	1.9200e-003	0.1698	1.3400e-003	0.1711	0.0450	1.2200e-003	0.0462		161.1470	161.1470	9.0400e-003		161.3368
Total	**0.0724**	**0.1097**	**1.0158**	**1.9200e-003**	**0.1698**	**1.3400e-003**	**0.1711**	**0.0450**	**1.2200e-003**	**0.0462**		**161.1470**	**161.1470**	**9.0400e-003**		**161.3368**

3.6 Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1203	10.6282	7.2935	0.0111		0.6606	0.6606		0.6113	0.6113	0.0000	1,083.5832	1,083.5832	0.2969		1,089.8175
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1203**	**10.6282**	**7.2935**	**0.0111**		**0.6606**	**0.6606**		**0.6113**	**0.6113**	**0.0000**	**1,083.5832**	**1,083.5832**	**0.2969**		**1,089.8175**

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	0.0724	0.1097	1.0158	1.9200e-003	0.1698	1.3400e-003	0.1711	0.0450	1.2200e-003	0.0462		161.1470	161.1470	9.0400e-003		161.3368
Total	**0.0724**	**0.1097**	**1.0158**	**1.9200e-003**	**0.1698**	**1.3400e-003**	**0.1711**	**0.0450**	**1.2200e-003**	**0.0462**		**161.1470**	**161.1470**	**9.0400e-003**		**161.3368**

3.7 Architectural Coating - 2016

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	1.3608					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**1.7293**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

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	0.0000	0.0000	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**

3.7 Architectural Coating - 2016

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	1.3608					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	**1.7293**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**	**0.0000**	**281.4481**	**281.4481**	**0.0332**		**282.1449**

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	0.0000	0.0000	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527627	0.065080	0.176461	0.145848	0.036424	0.004888	0.009671	0.020781	0.001221	0.001487	0.006359	0.002101	0.002052

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	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**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0140					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**0.0158**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0140					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**0.0158**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Verizon Wireless Facility

Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.01	Acre	0.01	652.96	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per grading plan

Vehicle Trips - Per project description

Grading - Per grading plan

Table Name	Column Name	Default Value	New Value
tblGrading	AcresOfGrading	0.00	0.03
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	WD_TR	0.00	0.10

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					
2016	1.7293	13.7058	9.2964	0.0132	0.8649	0.9398	1.6695	0.4407	0.8646	1.2088	0.0000	1,292.3211	1,292.3211	0.3555	0.0000	1,299.7864
Total	**1.7293**	**13.7058**	**9.2964**	**0.0132**	**0.8649**	**0.9398**	**1.6695**	**0.4407**	**0.8646**	**1.2088**	**0.0000**	**1,292.3211**	**1,292.3211**	**0.3555**	**0.0000**	**1,299.7864**

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					
2016	1.7293	13.7058	9.2964	0.0132	0.8649	0.9398	1.6695	0.4407	0.8646	1.2088	0.0000	1,292.3211	1,292.3211	0.3555	0.0000	1,299.7864
Total	**1.7293**	**13.7058**	**9.2964**	**0.0132**	**0.8649**	**0.9398**	**1.6695**	**0.4407**	**0.8646**	**1.2088**	**0.0000**	**1,292.3211**	**1,292.3211**	**0.3555**	**0.0000**	**1,299.7864**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**0.0158**	**0.0000**	**0.0000**	**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 Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**0.0158**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/14/2016	5	10	
2	Site Preparation	Site Preparation	1/15/2016	1/15/2016	5	1	
3	Grading	Grading	1/16/2016	1/19/2016	5	2	
4	Building Construction	Building Construction	1/20/2016	6/7/2016	5	100	
5	Paving	Paving	6/8/2016	6/14/2016	5	5	
6	Architectural Coating	Architectural Coating	6/15/2016	6/21/2016	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0.03359

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 979; Non-Residential Outdoor: 326 (Architectural Coating – sqft)

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	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	174	0.41
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	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
Demolition	4	10.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674		1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**		**0.8039**	**0.8039**		**0.7674**	**0.7674**		**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0416	0.0494	0.5916	1.1800e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		98.7105	98.7105	5.0200e-003		98.8159
Total	**0.0416**	**0.0494**	**0.5916**	**1.1800e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**98.7105**	**98.7105**	**5.0200e-003**		**98.8159**

3.2 Demolition - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674	0.0000	1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**		**0.8039**	**0.8039**		**0.7674**	**0.7674**	**0.0000**	**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0416	0.0494	0.5916	1.1800e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		98.7105	98.7105	5.0200e-003		98.8159
Total	**0.0416**	**0.0494**	**0.5916**	**1.1800e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**98.7105**	**98.7105**	**5.0200e-003**		**98.8159**

3.3 Site Preparation - 2016

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.3593	13.6350	7.3401	9.3500e-003		0.8338	0.8338		0.7671	0.7671		973.0842	973.0842	0.2935		979.2481
Total	**1.3593**	**13.6350**	**7.3401**	**9.3500e-003**	**0.5303**	**0.8338**	**1.3640**	**0.0573**	**0.7671**	**0.8243**		**973.0842**	**973.0842**	**0.2935**		**979.2481**

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	0.0208	0.0247	0.2958	5.9000e-004	0.0472	3.7000e-004	0.0475	0.0125	3.4000e-004	0.0129		49.3552	49.3552	2.5100e-003		49.4080
Total	**0.0208**	**0.0247**	**0.2958**	**5.9000e-004**	**0.0472**	**3.7000e-004**	**0.0475**	**0.0125**	**3.4000e-004**	**0.0129**		**49.3552**	**49.3552**	**2.5100e-003**		**49.4080**

3.3 Site Preparation - 2016

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.3593	13.6350	7.3401	9.3500e-003		0.8338	0.8338		0.7671	0.7671	0.0000	973.0842	973.0842	0.2935		979.2481
Total	**1.3593**	**13.6350**	**7.3401**	**9.3500e-003**	**0.5303**	**0.8338**	**1.3640**	**0.0573**	**0.7671**	**0.8243**	**0.0000**	**973.0842**	**973.0842**	**0.2935**		**979.2481**

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	0.0208	0.0247	0.2958	5.9000e-004	0.0472	3.7000e-004	0.0475	0.0125	3.4000e-004	0.0129		49.3552	49.3552	2.5100e-003		49.4080
Total	**0.0208**	**0.0247**	**0.2958**	**5.9000e-004**	**0.0472**	**3.7000e-004**	**0.0475**	**0.0125**	**3.4000e-004**	**0.0129**		**49.3552**	**49.3552**	**2.5100e-003**		**49.4080**

3.4 Grading - 2016

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					0.7706	0.0000	0.7706	0.4157	0.0000	0.4157			0.0000			0.0000
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674		1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**	**0.7706**	**0.8039**	**1.5745**	**0.4157**	**0.7674**	**1.1831**		**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0416	0.0494	0.5916	1.1800e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		98.7105	98.7105	5.0200e-003		98.8159
Total	**0.0416**	**0.0494**	**0.5916**	**1.1800e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**98.7105**	**98.7105**	**5.0200e-003**		**98.8159**

3.4 Grading - 2016

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					0.7706	0.0000	0.7706	0.4157	0.0000	0.4157			0.0000			0.0000
Off-Road	1.3122	11.2385	8.7048	0.0120		0.8039	0.8039		0.7674	0.7674	0.0000	1,193.6106	1,193.6106	0.2386		1,198.6217
Total	**1.3122**	**11.2385**	**8.7048**	**0.0120**	**0.7706**	**0.8039**	**1.5745**	**0.4157**	**0.7674**	**1.1831**	**0.0000**	**1,193.6106**	**1,193.6106**	**0.2386**		**1,198.6217**

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	0.0416	0.0494	0.5916	1.1800e-003	0.0943	7.4000e-004	0.0950	0.0250	6.8000e-004	0.0257		98.7105	98.7105	5.0200e-003		98.8159
Total	**0.0416**	**0.0494**	**0.5916**	**1.1800e-003**	**0.0943**	**7.4000e-004**	**0.0950**	**0.0250**	**6.8000e-004**	**0.0257**		**98.7105**	**98.7105**	**5.0200e-003**		**98.8159**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3816	13.7058	8.2122	0.0113		0.9398	0.9398		0.8646	0.8646		1,178.5549	1,178.5549	0.3555		1,186.0202
Total	**1.3816**	**13.7058**	**8.2122**	**0.0113**		**0.9398**	**0.9398**		**0.8646**	**0.8646**		**1,178.5549**	**1,178.5549**	**0.3555**		**1,186.0202**

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	0.0000	0.0000	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**

3.5 Building Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3816	13.7058	8.2122	0.0113		0.9398	0.9398		0.8646	0.8646	0.0000	1,178.5549	1,178.5549	0.3555		1,186.0202
Total	**1.3816**	**13.7058**	**8.2122**	**0.0113**		**0.9398**	**0.9398**		**0.8646**	**0.8646**	**0.0000**	**1,178.5549**	**1,178.5549**	**0.3555**		**1,186.0202**

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	0.0000	0.0000	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**

3.6 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1203	10.6282	7.2935	0.0111		0.6606	0.6606		0.6113	0.6113		1,083.5832	1,083.5832	0.2969		1,089.8175
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1203**	**10.6282**	**7.2935**	**0.0111**		**0.6606**	**0.6606**		**0.6113**	**0.6113**		**1,083.5832**	**1,083.5832**	**0.2969**		**1,089.8175**

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	0.0749	0.0889	1.0649	2.1200e-003	0.1698	1.3400e-003	0.1711	0.0450	1.2200e-003	0.0462		177.6788	177.6788	9.0400e-003		177.8686
Total	**0.0749**	**0.0889**	**1.0649**	**2.1200e-003**	**0.1698**	**1.3400e-003**	**0.1711**	**0.0450**	**1.2200e-003**	**0.0462**		**177.6788**	**177.6788**	**9.0400e-003**		**177.8686**

3.6 Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1203	10.6282	7.2935	0.0111		0.6606	0.6606		0.6113	0.6113	0.0000	1,083.5832	1,083.5832	0.2969		1,089.8175
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1203**	**10.6282**	**7.2935**	**0.0111**		**0.6606**	**0.6606**		**0.6113**	**0.6113**	**0.0000**	**1,083.5832**	**1,083.5832**	**0.2969**		**1,089.8175**

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	0.0749	0.0889	1.0649	2.1200e-003	0.1698	1.3400e-003	0.1711	0.0450	1.2200e-003	0.0462		177.6788	177.6788	9.0400e-003		177.8686
Total	**0.0749**	**0.0889**	**1.0649**	**2.1200e-003**	**0.1698**	**1.3400e-003**	**0.1711**	**0.0450**	**1.2200e-003**	**0.0462**		**177.6788**	**177.6788**	**9.0400e-003**		**177.8686**

3.7 Architectural Coating - 2016

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	1.3608					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**1.7293**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

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	0.0000	0.0000	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**

3.7 Architectural Coating - 2016

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	1.3608					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	**1.7293**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**	**0.0000**	**281.4481**	**281.4481**	**0.0332**		**282.1449**

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	0.0000	0.0000	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**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527627	0.065080	0.176461	0.145848	0.036424	0.004888	0.009671	0.020781	0.001221	0.001487	0.006359	0.002101	0.002052

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	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**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0158	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0140					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**0.0158**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0140					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**0.0158**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix B

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

PINOLE VERIZON WIRELESS FACILITY BIOLOGICAL EVALUATION
PINOLE, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.

Geoffrey D. Cline. M.S. Senior Project Manager and Senior Ecologist
Mark Jennings, Ph.D., Associate Herpetologist
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Sacramento, CA 95834

August 20, 2015 PN 1963-01

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EXECUTIVE SUMMARY

Live Oak Associates, Inc. conducted an investigation of the biological resources of the Pinole Verizon Wireless Facility project. The project consists of the development of a cell phone tower and associated structures on top of an approximately 560 sq. ft. concrete pad surrounded by security and aesthetic fencing with an underground utility route to connect the tower to the adjacent transmission lines. Pervious pavers will replace the existing paved driveway and other erosion control measures will also be implemented to reduce or eliminate impacts to downstream waters.

The project site is located at 2518 Pfeiffer Lane in the City of Pinole, Contra Costa County, California. A tributary of Pinole Creek and Pinole Creek are adjacent to the property's northwest, west, and southwest sides. Residences are located on the opposite sides of the tributary and creek. Rangelands are located to the east of the property.

A field survey of the project site was conducted on July 23 and August 2, 2015. The site consists of ruderal habitat, which is immediately adjacent to the residence of the property. No special status plants or animals were observed and are not expected to occur on the site.

Should construction activities begin just before or during the nesting bird season (February – August) a pre-construction survey will be conducted. A suitable construction free buffer would be established around any active nests that were detected during pre-construction surveys.

Potential impacts to all downstream waters and any special status aquatic animal species known to occur in the Pinole Creek watershed will be minimized or eliminated by implementing the Best Management Practices (BMPs) for erosion and sediment control outlined in the project description, monitoring the site before and after construction to ensure the BMPs are in place and effective and reporting these results to Contra Costa County, revegetating disturbed soils from construction, and annually inspecting and maintaining the bioswale.

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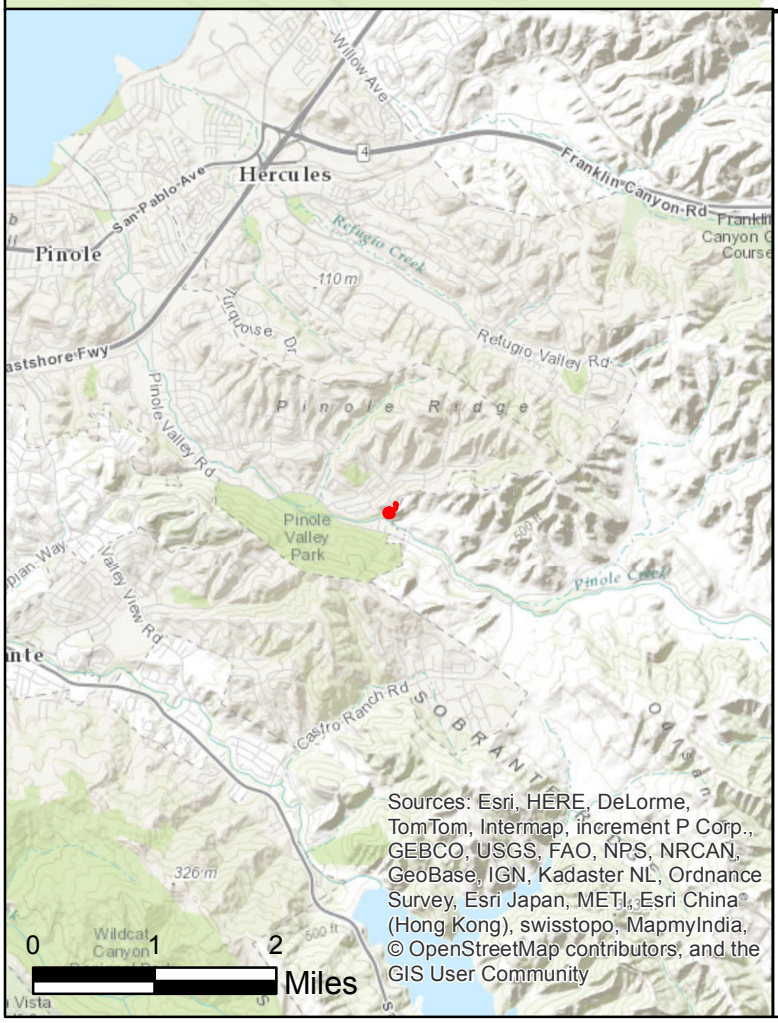
1.0 INTRODUCTION

Live Oak Associates, Inc. (LOA) has prepared the following report, which describes the biotic resources and evaluates likely impacts to these resources resulting from the construction and maintenance of a cell phone tower and associated infrastructure for the Pinole Verizon Wireless Facility project site ("project site" or "site") located at 2518 Pfeiffer Lane (APN 360-131-036-4) in the City of Pinole, Contra Costa County, California (Figure 1).

Development projects can damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, these activities may be regulated by state or federal agencies, subject to provisions of the California Environmental Quality Act (CEQA), and/or covered by policies and ordinances of the City of Pinole. This report addresses issues related to: 1) sensitive biotic resources occurring on the site; 2) the federal, state, and local laws regulating such resources, and 3) mitigation measures which may be required to reduce the magnitude of anticipated impacts. As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources;
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range;
- Summarize all state and federal natural resource protection laws that may be relevant to possible future site development;
- Identify and discuss project impacts to biological resources likely to occur on the site within the context of CEQA or any state or federal laws; and
- Identify avoidance and mitigation measures that would reduce impacts to a less-than-significant level as identified by CEQA and that are generally consistent with recommendations of the resource agencies for affected biological resources.

The analysis of impacts, as discussed in Section 3.0 of this report, is based on the known and potential biotic resources of the site, discussed in Section 2.0. Sources of information used in the preparation of this analysis included: 1) the California Natural Diversity Data Base (CDFW 2015a), 2) the Inventory of Rare and Endangered Vascular Plants of California (CNPS 2015), and 3) manuals and references related to plants and animals of the East Bay. A reconnaissance-level field survey of the study area was conducted on August 2, 2015, by LOA ecologist Geoffrey Cline, at which time the principal biotic habitats and land uses of the site were identified, and the constituent plants and animals of each were noted.



Live Oak Associates, Inc.

Pinole Verizon Wireless Facility

Vicinity Map

Date	Project #	Figure #
8/20/2015	1963-01	1

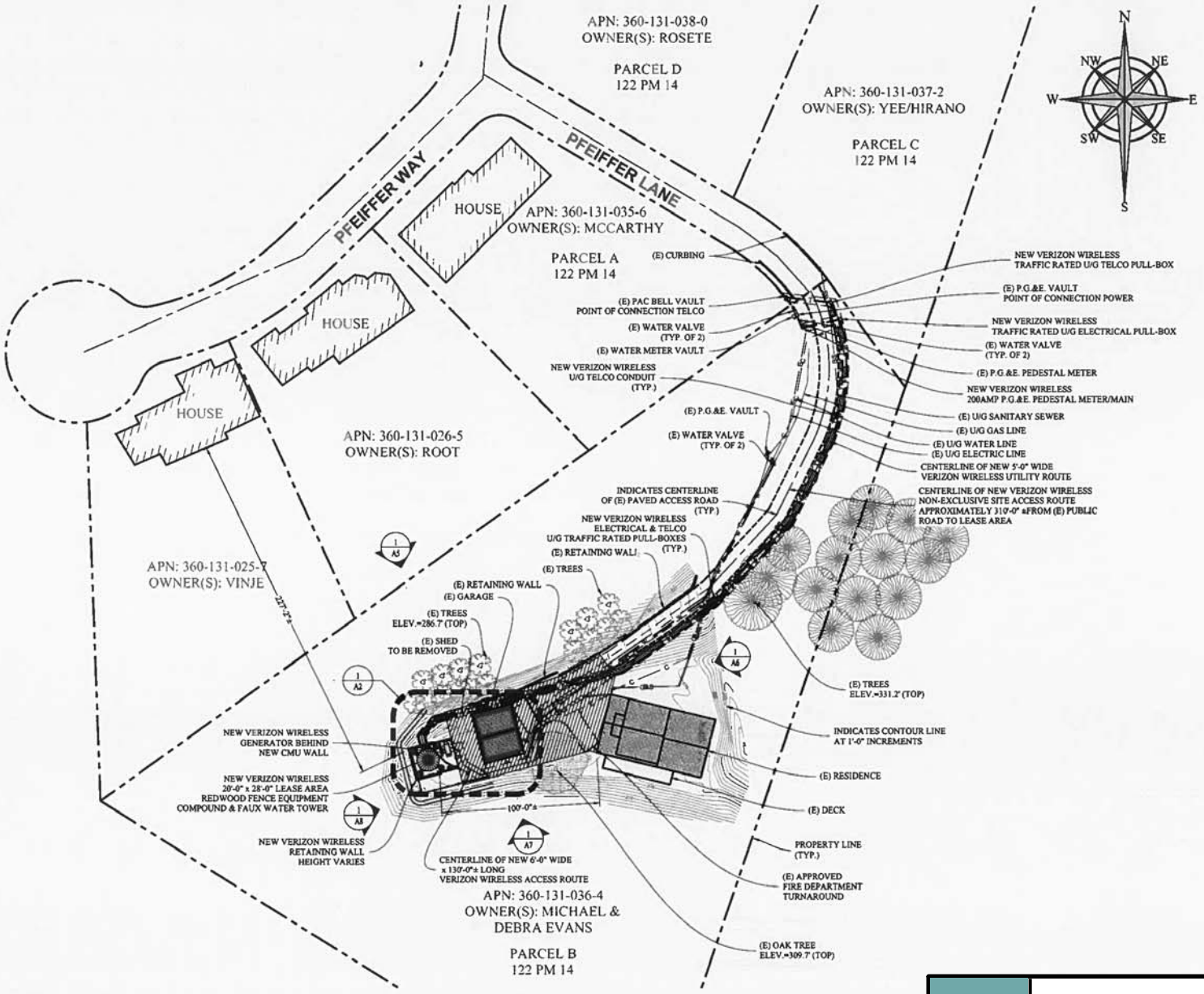
A field visit by LOA associate herpetologist Mark Jennings and LOA principal Rick Hopkins was completed on July 23, 2015 to meet with various stakeholders and investigate the site for impacts to special status fish species.

1.1 PROJECT DESCRIPTION

The project site consists of a 560 sq. ft. concrete pad with a cell phone tower, diesel generator, and associated structures, fencing, a utility route, and a pervious paver driveway within the approximately 2.79 acre lot (Figure 2 and 3). In total there will be 653 sq. feet of impervious surfaces constructed, which includes the concrete pad and associated structures, fencing, and utility pull boxes. Pervious surfaces constructed includes 3,020 sq. ft. of the driveway with permeable pavers and 810 sq. ft. of trenches that will be restored to the existing condition.

The concrete pad includes a 34-foot tall faux water tower design standing on four tower legs with numerous antennas, a diesel generator with a 132-gallon fuel tank equipped with a secondary containment with emergency vents and heavy duty 7-gauge side channels, and numerous cabinets. Chain link fencing will surround the tower and equipment of the concrete pad. Redwood fence with lattice top will further enclose the concrete pad, the chain link fencing and small areas around the northeast and southeast sides of the concrete pad. Two rows of grape vines will surround the northwest, southwest, and southeast sides of the concrete pad, chain link fencing, and redwood fencing. The approximately five foot wide utility route will enter the lot from the northern corner and the east side of the driveway and continue south towards the house where it then crosses the driveway diagonally and heads west around the north side of the garage and then turns south to be routed under the north side of the fencing and concrete pad. In total approximately 560 sq. ft. of area, 62.5 linear feet of redwood fencing, and 200-300 linear feet of grape vines will be permanently installed. Furthermore, a bioswale shall be constructed with an approved soil mixture blend of 80% washed coarse sand and 20% sandy loam, which will allow water to drain from the impervious surfaces of the concrete pad to percolate into the soil, and will be constructed within the project footprint.

Impacts to the area of the utility route will be temporary. Additional temporary impacts include the installation of two fiber rolls to be placed downslope of the southeast, southwest, and part of the northwest sides of the fencing and concrete pad and the north side of the utility route, extending 20 feet past the disturbed trench length, for erosion and sedimentation control.



1 SITE PLAN

DAVID DOSE ENGINEERING SERVICES
4256 PARK RD.
BENICIA, CA 94510

Verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
94598TEL: (925) 904-3533
FAX: (925) 904-3513

VERIZON WIRELESS
PSL #248125
2518 PFEIFFER LANE
PINOLE, CA 94564

SITE PLAN

REVISIONS

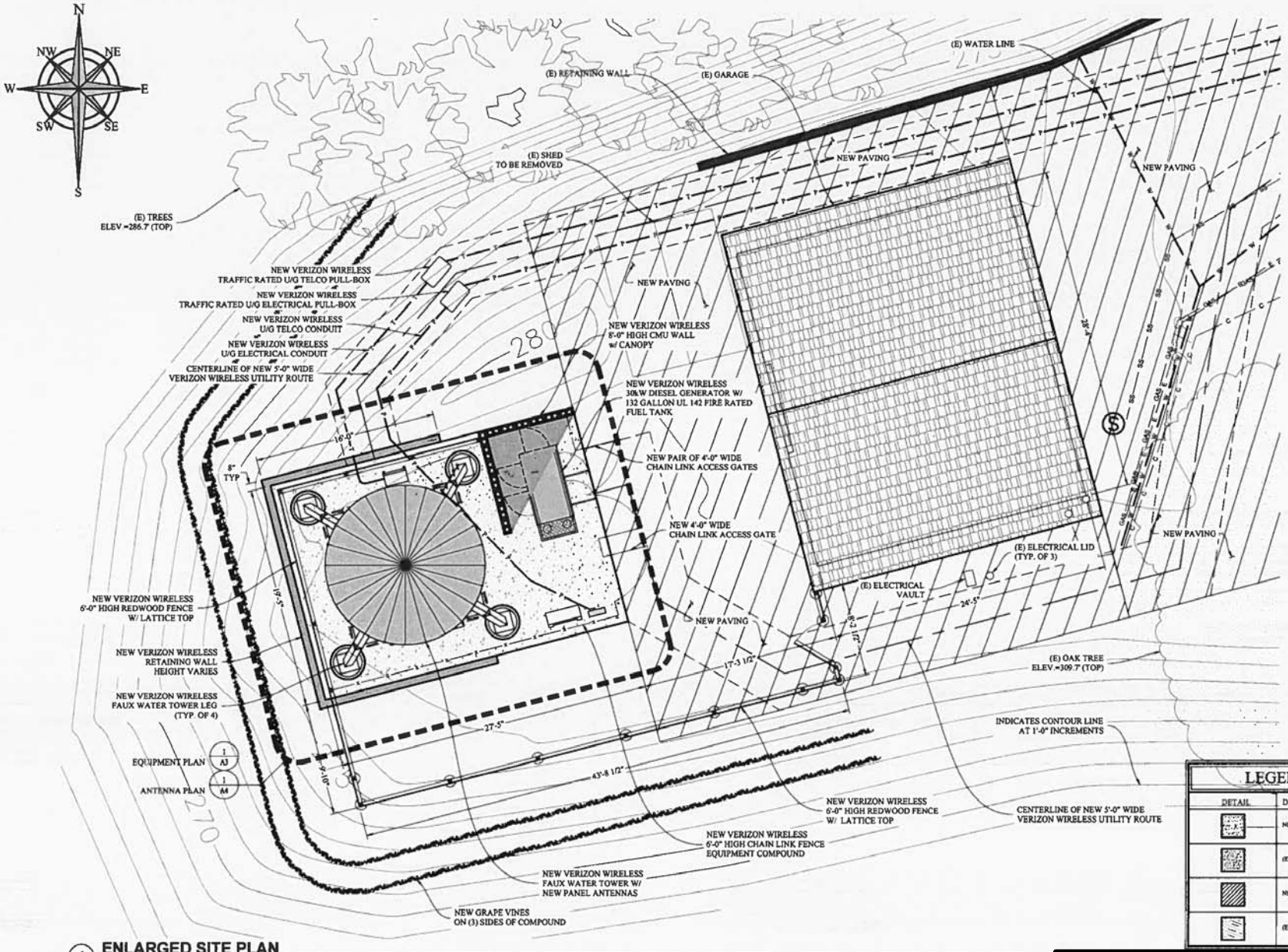
No.	DESCRIPTION	DATE
P	FOR REVIEW	10-30-2014
Q	FOR REVIEW	02-11-2015
R	FOR REVIEW	02-25-2015
S	FOR REVIEW	03-19-2015
T	ADD PIPE	05-01-2015
W	UPDATE EQUIPMENT LAYOUT	05-28-2015

Job No.: N14014
Draw/Check By: BLL / EKU

Live Oak Associates, Inc.

Pinole Verizon Wireless Facility
Site Plan A1

Date	Project #	Figure #
8/20/2015	1963-01	2



1 ENLARGED SITE PLAN

DIAMOND ENGINEERING SERVICES
4266 PARK RD.
BENICIA, CA 94510

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
94598TEL.: (925) 904-3533
FAX.: (925) 904-3513

VERIZON WIRELESS
PSL #248125
2518 PFEIFFER LANE
PINOLE, CA 94564

ENLARGED SITE PLAN

REVISIONS

No.	DESCRIPTION	DATE
P	FOR REVIEW	10-30-2014
Q	FOR REVIEW	02-11-2015
R	FOR REVIEW	02-25-2015
S	FOR REVIEW	03-19-2015
T	ADD PIPE	03-01-2015
W	UPDATE EQUIPMENT LAYOUT	05-28-2015

Job No.: N14014
Drawn/Check By: BLL / EKU

Live Oak Associates, Inc.

Pinole Verizon Wireless Facility
Site Plan A2

Date	Project #	Figure #
8/20/2015	1963-01	3

2.0 EXISTING CONDITIONS

The site is located in Pinole, California, and is bounded by Pinole Creek and a small tributary to Pinole Creek on the northwest, west, and southwest sides and by rangelands to the east. Numerous single-family residences are located on the opposite sides of Pinole Creek and the small tributary to Pinole Creek. The concrete pad of the site is located at approximately 265 ft. (131 m) in elevation, National Geodetic Vertical Datum (NGVD), and the utility route heads down along the driveway of the lot to approximately 240 feet in elevation. Surrounding land uses include residential, range lands and open space. Pinole Park is located approximately 0.2 miles southwest and rangeland is located just to the east of the site.

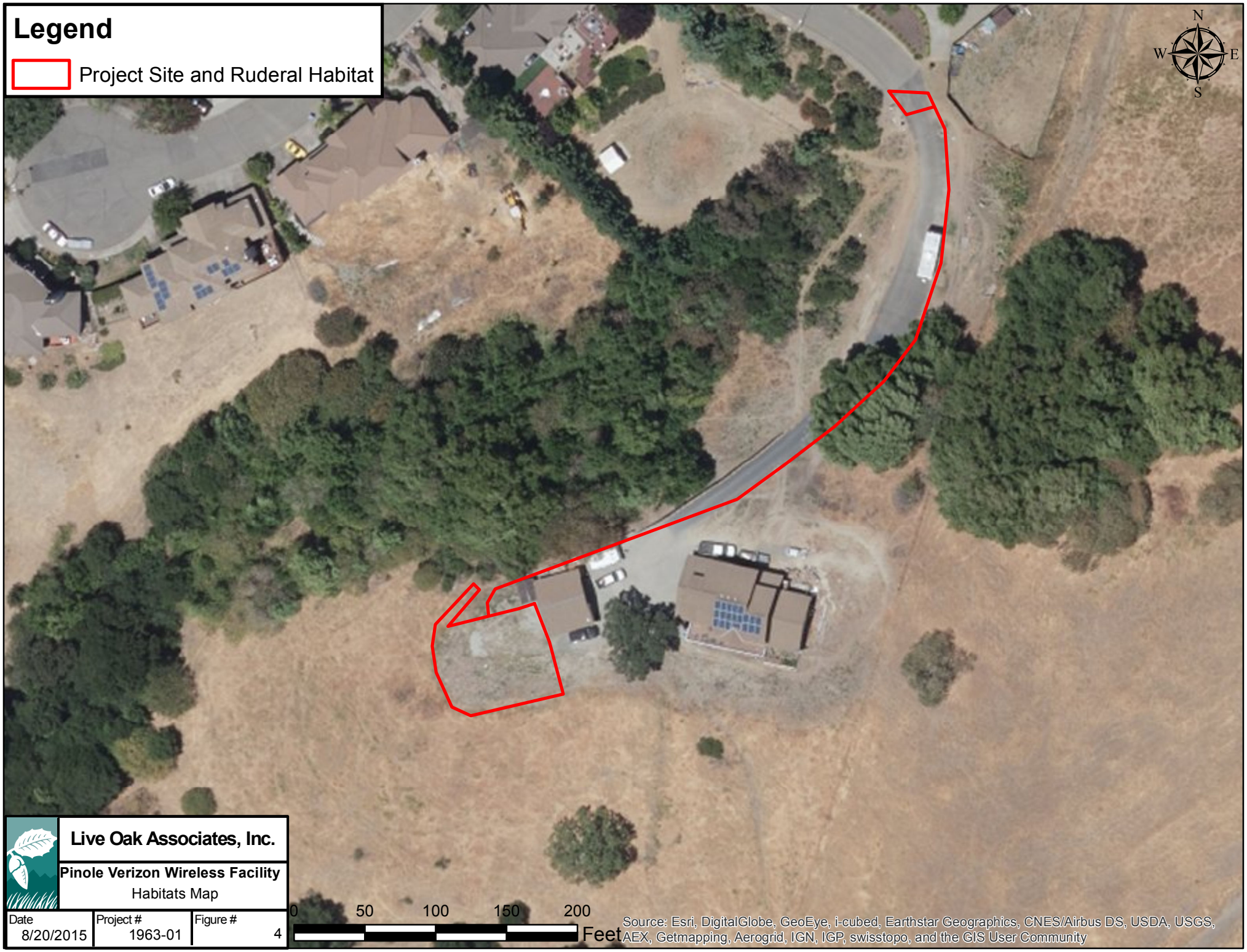
One soil series, Millsholm loam, 30 to 50 percent slopes was identified on the project site (NRCS 2015). The parent material is residuum weathered from sandstone and shale, it is well drained, only 12 inches to bedrock, and is not considered hydric.

The project site and the East Bay of the San Francisco Bay Area has a Mediterranean climate with warm to hot dry summers and cool winters. Annual precipitation in the general vicinity of the site is highly variable from year to year. Average annual rainfall is approximately 19 inches, most of which falls between October and April. Stormwater runoff readily infiltrates the site's soils; when field capacity has been reached, gravitational water drains into Pinole Creek and the small tributary of Pinole Creek adjacent to the northwest, west, and southwest sides of the site as shallow groundwater or as surface sheet flow.

Lands surrounding the site have been modestly developed with roads and residences. Some lands immediately east of the site remain as rangelands. The intervening residential uses and roads adjacent to the northwest, west, and southwest of the site constrain, but do not eliminate, access of the site for wildlife from these more substantial open space regions and the Pinole Creek Watershed.

2.1 BIOTIC HABITATS

One biotic habitat, ruderal, was observed within the project site (Figure 4). The term "ruderal" refers to habitats that have been heavily disturbed by human factors and that support vegetation that is adapted to such disturbed conditions. Vegetation observed in this habitat included numerous non-native weed species such as oat (*Avena barbata*), yellow-star thistle (*Centaurea*



Live Oak Associates, Inc.

Pinole Verizon Wireless Facility

Habitats Map

Date	Project #	Figure #
8/20/2015	1963-01	4

solstitialis), and milk thistle (*Silybum marianum*). In addition, numerous native species were located within or immediately adjacent to this habitat and included species such as poison oak (*Toxicodendron diversilobum*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), Canadian horsetail (*Conyza canadensis*), and California buckeye (*Aesculus californica*), among others.

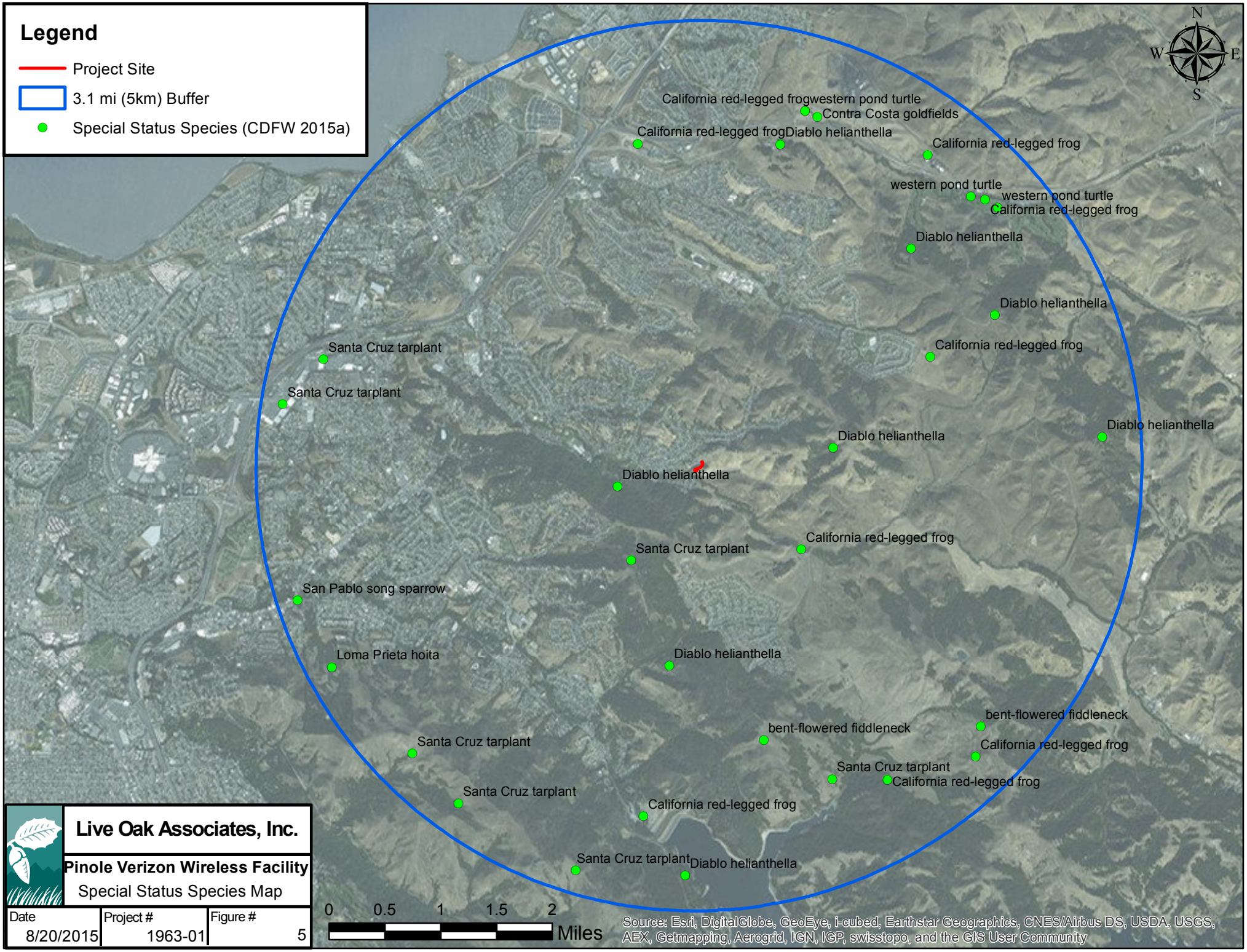
Animal species observed during the August 2015 survey are common to ruderal habitats of the East Bay and included species such as western fence lizard (*Sceloporus occidentalis*), turkey vultures (*Cathartes aura*), and eastern fox squirrel (*Sciurus niger*), among others.

A list of the vascular plant species observed on the project site and the terrestrial vertebrates using, or potentially using, the site are provided in Appendices A and B, respectively. Representative photos of the site are provided in Appendix C.

2.2 SPECIAL STATUS SPECIES

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural, urban, and other uses. As described more fully in Section 3.2, state and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The CDFW and California Native Plant Society (CNPS) have developed their own set of lists (i.e., California Rare Plant Ranks, or CRPR) of native plants considered rare, threatened, or endangered. Collectively, these plants and animals are referred to as "special status species."

A number of special status plants and animals occur in the site's vicinity (Figure 5). These species and their potential to occur in the project site and vicinity (USGS quadrangle and eight surrounding quadrangles) are listed in Table 1 on the following pages. Sources of information for this table included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988), California Natural Diversity Data Base (CDFW 2015a), *Special Animals* (CDFW 2015b), *State & Federally Listed Endangered & Threatened Animals of California* (CDFW 2015c), *State and*



Live Oak Associates, Inc.

Pinole Verizon Wireless Facility

Special Status Species Map

Date	Project #	Figure #
8/20/2015	1963-01	5

Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2015d), the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2015), the *Lower Pinole Creek Steelhead Habitat Assessment* (CCRCD 2009), and *Upper Pinole Creek Watershed Salmonid Habitat Assessment* (EBMUD 2009). This information was used to evaluate the potential for special status plant and animal species to occur on the site and figure 5 depicts the location of special status species reported in the California Natural Diversity Data Base (CNDDB). It is important to note that the CNDDB is a volunteer database; therefore, it may not contain all known records and some records may be false observations.

The special status plants included in this analysis were based on the California Rare Plant Ranks (CRPR) species that the CNPS has identified which meet the definitions of the California Endangered Species Act of the California Fish and Game Code and either are or are eligible for state listing (i.e. CRPR List 1A, 1B, 2, and 3). According to CNPS, these species must be analyzed during the preparation of environmental documents relating to CEQA because they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) and/or §15380.

A search of published accounts for all relevant special status plant and animal species was conducted for the Richmond USGS 7.5" quadrangle in which the project site occurs and for the eight surrounding quadrangles (Benicia, Briones Valley, Mare Island, Oakland East, Oakland West, Petaluma Point, San Francisco North, and San Quentin) using the California Natural Diversity Data Base Rarefind 5.0 (CDFW 2015a). Most plant species listed as occurring in these quadrangles on CRPR Lists 1A, 1B, 2, and 3 were also reviewed.

Certain special status plant species have been eliminated from review in Table 1 as they occur in habitats (wetlands, marshes, chaparral or scrub, coastal dunes, woodland, etc.) that are not present on the site, and/or are endemic to certain soil types that also do not occur on the site (i.e. serpentine, sand hills). These latter species include bent-flowered fiddleneck (*Amsinckia lunaris*), Franciscan manzanita (*Arctostaphylos franciscana*), Presidio manzanita (*Arctostaphylos montana* ssp. *ravenii*), marsh sandwort (*Arenaria paludicola*), Tiburon mariposa-lily (*Calochortus tiburonensis*), coastal bluff morning-glory (*Calystegia purpurata* ssp. *saxicola*), Bristly sedge (*Carex comosa*), Tiburon paintbrush (*Castilleja affinis* var. *neglecta*), Point Reyes salty bird's-beak (*Chloropyron maritimum* ssp. *palustre*), soft salty bird's-beak (*Chloropyron molle* ssp. *molle*), San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*), robust spineflower (*Chorizanthe robusta* var. *robusta*), Bolander's

water-hemlock (*Cicuta maculata* var. *bolanderi*), Franciscan thistle (*Cirsium andrewsii*), Presidio clarkia (*Clarkia franciscana*), round-headed Chinese-houses (*Collinsia corymbosa*), San Francisco collinsia (*Collinsia multicolor*), western leatherwood (*Dirca occidentalis*), Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*), minute pocket moss (*Fissidens pauperculus*), blue coast gilia (*Gilia capitata* ssp. *chamissonis*), dark-eyed gilia (*Gilia millefoliata*), Marin western flax (*Hesperolinon congestum*), water star-grass (*Heteranthera dubia*), Kellogg's horkelia (*Horkelia cuneata* var. *sericea*), Contra Costa goldfields (*Lasthenia conjugens*), Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), beach layia (*Layia carnosa*), Mason's lilaeopsis (*Lilaeopsis masonii*), Oregon meconella (*Meconella oregana*), marsh microseris (*Microseris paludosa*), woodland woolythreads (*Monolopia gracilens*), white-rayed pentachaeta (*Pentachaeta bellidiflora*), San Francisco popcornflower (*Plagiobothrys diffusus*), Marin knotweed (*Polygonum marinense*), chaparral ragwort (*Senecio aphanactis*), most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*), Tiburon jewelflower (*Streptanthus glandulosus* ssp. *niger*), Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*), California seablite (*Suaeda californica*), Suisun Marsh aster (*Symphyotrichum lentum*), saline clover (*Trifolium hydrophilum*), and oval-leaved viburnum (*Viburnum ellipticum*).

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT SITE AND VICINITY

Plant Species Listed as Rare, and/or Threatened, or Endangered Under the California Native Plant Society and/or State and/or Federal Endangered Species Acts

Species	Status	Habitat	*Occurrence in the Project site
Alkali milk-vetch (*Astragalus tener* var. *tener*)	CRPR 1B.2	Prefers coastal bluff scrub, dunes, coastal prairies, and valley and foothill grassland on adobe clay soils at elevations between 1 and 200 feet. Blooms Mar-June.	**Absent.** Habitats required by this species are absent from the project site and the site is above the elevation range for this species.
Big tarplant (*Blepharizonia plumosa*)	CRPR 1B.1	Prefers valley and foothill grassland at elevations between 100 and 1,650 feet. Blooms July-Oct.	**Absent.** Habitats required by this species are absent from the project site.
Round-leaved filaree (*California macrophylla*)	CRPR 1B.1	Prefers cismontane woodlands and valley and foothill grassland on clay soils at elevations between 50 and 3,900 feet. Blooms Mar-May.	**Absent.** Habitats required by this species are absent from the project site.
Mt. Diablo fairy-lantern (*Calochortus pulchellus*)	CRPR 1B.2	Prefers chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland at elevations between 100 and 2,700 feet. Blooms Apr-June.	**Absent.** Habitats required by this species are absent from the project site.
Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)	CRPR 1B.1	Prefers valley and foothill grassland on alkaline soils at elevations between 1 and 750 feet. Blooms May-Oct.	**Absent.** Habitats required by this species are absent from the project site.
San Joaquin spearscale (*Extriplex joaquinana*)	CRPR 1B.2	Prefers alkaline soils at elevations below 1,000 feet. Blooms Apr-Sept.	**Absent.** Soils required by this species are absent from the project site.
Fragrant fritillary (*Fritillaria lilacea*)	CRPR 1B.2	Prefers cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often on serpentine soils, at elevations between 10 and 1,300 feet. Blooms Feb-Apr.	**Absent.** Habitats required by this species are absent from the project site.
San Francisco gumplant (*Grindelia hirsutula* var. *maritima*)	CRPR 3.2	Prefers sandy, clay, or serpentine slopes or roadsides at elevations below 5,500 feet. Blooms Apr-June.	**Absent.** This species was not observed on the project site during the August 2015 survey.
Diablo helianthella (*Helianthella castanea*)	CRPR 1B.2	Prefers broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland at elevations between 200 and 4,200 feet. Blooms Mar-June.	**Absent.** Habitats required by this species are absent from the project site.
Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. conges*ta*)	CRPR 1B.2	Prefers grassy sites and marsh edges at elevations below 325 feet. Blooms May-Nov.	**Absent.** Habitats required by this species are absent from the project site.
Loma Prieta hoita (*Hoita strobilina*)	CRPR 1B.1	Prefers chaparral and oak woodland at elevations below 1,950 feet. Blooms June-Aug.	**Absent.** Habitats required by this species are absent from the project site.
Santa Cruz tarplant (*Holocarpha macradenia*)	FT, CE, CRPR 1B.1	Prefers coastal prairie, coastal scrub, and valley and foothill grassland, often on clay or sandy soils, and at elevations between 30 and 715 feet. Blooms June-Oct.	**Absent.** Habitats required by this species are absent from the project site.
Carquinez goldenbush (*Isocoma arguta*)	CRPR 1B.1	Prefers alkaline soils within flat and low hill grassland at elevations below 65 feet. Blooms Aug-Dec.	**Absent.** Habitats required by this species are absent from the project site and the site is well above the elevation range for this species.
Rose leptosiphon (*Leptosiphon rosaceus*)	CRPR 1B.1	Prefers open grassy slopes and coastal bluffs at elevations below 325 feet. Blooms Apr-July.	**Absent.** Habitats required by this species are absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT SITE AND VICINITY

Plant species continued.

Species	Status	Habitat	*Occurrence in the Project site
San Francisco lessingia (*Lessingia germanorum*)	FE, CE, CRPR 1B.1	Prefers sandy soils at elevations below 325 feet. Blooms June-Nov.	**Absent.** Habitats required by this species are absent from the project site.
Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*)	CRPR 1B.2	Prefers grass and moist areas, ephemeral drainages, coastal scrub, and chaparral at elevations below 2,000 feet. Blooms Mar-June.	**Absent.** Habitats required by this species are absent from the project site.
Oregon polemonium (*Polemonium carneum*)	CRPR 2B.2	Prefers moist to dry open areas at elevations below 5,900 feet. Blooms Apr-June.	**Absent.** Habits required by this species are absent from the project site.
Adobe sanicle (*Sanicula maritima*)	CRPR 1B.1	Prefers coastal grassy and open wet meadows and ravines at elevations below 500 feet. Blooms Apr-May.	**Absent.** Habitats required by this species are absent from the project site.
San Francisco campion (*Silene verecunda* ssp. *verecunda*)	CRPR 1B.2	Prefers open areas, chaparral, sagebrush, oak woodland, pinyon and juniper woodland, and conifer forest at elevations below 11,000 feet.	**Absent.** Habitats required by this species are marginal within the project site and this species was not observed during the August 2015 survey.
Santa Cruz microseris (*Stebbinsoseris decipiens*)	CRPR 1B.2	Prefers open and sandy, shaly, or serpentine sites along the coast at elevations between 30 and 1,600 feet. Blooms Apr-May.	**Absent.** Habitats of the site are marginal for this species and this species was not observed during the August 2, 2015 survey.
Showy rancheria clover (*Trifolium amoenum*)	CRPR 1B.1	Prefers moist and heavy soils in disturbed areas at elevations below 325 feet. Blooms Apr-June.	**Absent.** Habitats required by this species are marginal within the project site and this species was not observed during the August 2, 2015 survey.
San Francisco owl's-clover (*Triphysaria floribunda*)	CRPR 1B.2	Prefers coastal grassland and serpentine slopes at elevations below 650 feet. Blooms Apr-May.	**Absent.** Habitats required by this species are absent from the project site.
Coastal triquetrella (*Triquetrella californica*)	CRPR 1B.2	Exposed shaded soil, rocks, sand, or gravel in dry or moist areas at elevations from 0 to 1,600 feet, within 10 miles of the coast.	**Absent.** Habitats required by this species are marginal within the project site and this species was not observed during the August 2015 survey.

Animals listed as Species of Special Concern, Threatened, and/or Endangered under the State and/or Federal Endangered Species Acts and/or Fish and Game Code

Species	Status	Habitat	*Occurrence in the Project site
Steelhead – Central California Coast DPS (*Oncorhynchus mykiss irideus*)	FT	Cold-water streams with adequate dissolved oxygen and gravel substrates free of excessive silt for spawning in coastal streams from the Russian River to Soquel Creek and tributaries of San Francisco and San Pablo bays.	**Absent.** Habitats required by this species are absent from the project site. They have been observed in Pinole Creek (UCCC 2004), which is offsite and approximately 135 ft. lower in elevation from the project site. See expanded discussion below.
California tiger salamander (*Ambystoma californiense*)	FT, CT, CSC	Breeds in vernal pools and stock ponds of central California. Adults aestivate in grassland habitats adjacent to the breeding sites.	**Absent.** Habitats required by this species are absent from the project site.
Foothill yellow-legged frog (*Rana boylii*)	CSC	Frequents partly shaded, shallow, swiftly-flowing streams and riffles with rocky substrate in a variety of habitats.	**Absent.** Habitats required by this species are absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT SITE AND VICINITY

Animal species continued.

Species	Status	Habitat	*Occurrence in the Project site
California red-legged frog (*Rana draytonii*)	FT, CSC	Rivers, creeks and stock ponds of the Sierra foothills and coast range, preferring pools with overhanging vegetation.	**Absent.** Habitats required by this species are absent from the project site, however this species has been observed in Pinole Creek (CDFW 2015a). See expanded discussion below.
Western pond turtle (*Emys marmorata*)	CSC	An aquatic turtle of ponds, marshes, slow-moving rivers, streams and irrigation ditches with aquatic vegetation. Needs basking sites and sandy banks or grassy open fields for egg laying.	**Absent.** Habitats required by this species are absent from the project site.
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	FT, CT	Ranges from the inner coast range in western and central Contra Costa and Alameda counties. Typically occurs in chaparral and scrub habitats with rock outcrops and talus pilings. Also occurs in scrub communities, grasslands, oak, and oak/bay woodlands.	**Absent.** Habitats required by this species are absent from the project site.
Tricolored blackbird (*Agelaius tricolor*)	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	**Absent.** Habitats required by this species are absent from the project site.
Golden eagle (*Aquila chrysaetos*)	FP	Typically frequents rolling foothills, mountain areas, woodland areas, sage-juniper flats, and desert habitats.	**Unlikely.** No reported nests occur near or adjacent to the site; they may forage in the region in the open grassland habitats near the site.
Short-eared owl (*Asio flammeus*)	CSC	Open areas with few trees, especially swamplands, lowland meadows and grasslands, irrigated alfalfa fields; tule patches or tall grass for nesting and daytime seclusion.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site on rare occasions.
Burrowing owl (*Athene cunicularia*)	CSC	Open, dry grasslands, deserts and ruderal areas. Requires suitable burrows. Often associated with California ground squirrels.	**Unlikely.** No evidence observed during surveys (e.g., individuals, feathers, white-wash, etc.). Habitats required by this species are absent from the project site, however this species could fly over the site.
Northern harrier (*Circus cyaneaus*)	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.
White-tailed kite (*Elanus leucurus*)	FP	Open grasslands and agricultural areas throughout central California.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.
American peregrine falcon (*Falco peregrinus anatum*)	FP	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large populations of other bird species.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.
Bank swallow (*Riparia riparia*)	CT	Fields near water, marshes, streams, and lakes. Nests in vertical banks of dirt or sand, usually along rivers or ponds.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.
Pallid bat (*Antrozous pallidus*)	CSC	Grasslands, chaparral, woodlands, and forests of California; most common in dry rocky open areas that provide roosting opportunities.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT MAY OCCUR IN THE PROJECT SITE AND VICINITY

Animals cont'd

Species	Status	Habitat	*Occurrence in the Project site
Townsend's big-eared bat (*Corynorhinus townsendii*)	CT, CSC	Primarily a cave-dwelling bat that may also roost in buildings. Occurs in a variety of habitats of the state.	**Unlikely.** Habitats required by this species are marginal within the project site, however this species could fly over the site.
Western red bat (*Lasiurus blossevilii*)	CSC	Roosts primarily in trees. Prefers habitat edges and mosaics with trees.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.
Big free-tailed bat (*Nyctinomops macrotis*)	CSC	Roosts in buildings, caves, and occasionally in holes in trees and crevices and high cliffs or rock outcrops. Probably does not breed in California.	**Unlikely.** Habitats required by this species are absent from the project site, however this species could fly over the site.
American badger (*Taxidea taxus*)	CSC	Drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**Absent.** No evidence observed. Habitats required by this species are absent from the project site.

***Explanation of Occurrence Designations and Status Codes**

Occurrence Designations

Present: Species observed on the sites at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the sites, but it could occur there from time to time.
Unlikely: Species not observed on the sites, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the sites, and precluded from occurring there because habitat requirements not met.

Status Codes

Federal Listing

FE	Federally Endangered
FT	Federally Threatened
FPE	Federally Endangered (Proposed)
FC	Federal Candidate
FP	Federal Protected

California Listing

CE	California Endangered
CT	California Threatened
CPT	California Threatened (Proposed)
CP	California Protected
CSC	California Species of Special Concern

CNPS Listing and California Rare Plant Rank Codes

1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened, or Endangered in California and Elsewhere
2B	Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3	Plants About Which More Information is Needed – A Review List

CNPS Threat Ranks

0.1	Seriously Threatened in California
0.2	Fairly Threatened in California

2.3 SPECIAL STATUS SPECIES MERITING FURTHER DISCUSSION

Steelhead – Central California Coast Distinct Population Segment

Life History. Steelhead – Central California Coast Distinct Population Segment (DPS) are known to occur and appear to breed within Pinole Creek and there is interest in restoring a viable steelhead population in this watershed (CCRCD 2009). Steelhead require cobble and boulder substrate for hiding in high velocity flows and densities are reduced with increased small sediments (i.e. silt and sand). Spawning sites consist of gravel/cobble substrate with

sufficient velocity to maintain circulation through the gravel and provide a clean, well-oxygenated environment to incubate the eggs. Steelhead enter freshwater to spawn when winter rains raise flows to high velocities which are enough to breach sandbars at the mouths of the streams. Juvenile steelhead then travel downstream and migrate to sea in the spring and are subject to predation from birds and predatory fish.

Potential to Occur Onsite. There are no streams, drainages, nor wetland features on the Project site and therefore, no potential for this species to occur. However, healthy populations of native fish are known to occur in Pinole Creek, including rainbow trout/steelhead. Steelhead (anadromous or ocean going variety of rainbow trout) have been reported in the lower reaches of Pinole Creek and in the upper watersheds of East Bay Mud Lands (Mulchaey 2009, CCRCD 2009). Pinole Creek, while adjacent to the site, is approximately 200 ft. to the southwest and 135 ft. lower in elevation from the Project Site.

California Red-Legged Frog

Life History. The California red-legged frog has been observed less than one-mile from the site within Pinole Creek (CDFW 2015a). They require ponds near humid forest, woodland, grassland, coastal scrub, and stream sides with plant cover and streams adjacent to woods. Breeding habitat includes lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Once these wetlands dry, they require animal burrows or other moist refuges for estivation through the summer.

Potential to Occur Onsite. There are no wetland nor stream habitats preferred by this species on the site so there is no potential for this species to occur on the site. However, this species has been located in Pinole Creek, which is located approximately 200 ft. (and 135 ft. lower in elevation) from the site.

2.4 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW),

and the California Regional Water Quality Control Board (RWQCB). See Section 3.2.4 of this report for additional information.

No areas meeting the technical criteria for Waters of the U.S., Waters of the State, or areas under the jurisdiction of the CDFW (i.e., lakes, ponds or streams, etc.) were detected on site (e.g., no channels or ditches, no evidence of hydrology, hydric soils or hydric plants). Pinole Creek, which is approximately 200 ft. south and outside of the site and approximately 135 ft. lower in elevation than the project site, would be considered a Waters of the U.S, Waters of the State and under the jurisdiction of CDFW (i.e., Fish and Game Code, Section 1602).

3.0 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

Approval of general plans, area plans, and specific projects is subject to the provisions of the California Environmental Quality Act (CEQA). The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project's impacts. For example, a proposed development project may require the removal of some or all of a site's existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest."

Specific project impacts to biological resources may be considered "significant" if they would:

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

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

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

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

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a "mandatory findings of significance" if the project has the potential to

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

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 Threatened and Endangered Species

State and federal "endangered species" legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal endangered species acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special status." Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the "take" of a listed species. "Take" is defined by the state of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responding agencies under the California Environmental Quality Act (CEQA). Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

3.2.2 Migratory Birds

State and federal laws also protect most birds. The Federal Migratory Bird Treaty Act (16 U.S.C., scc. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.2.3 Birds of Prey

Birds of prey are also protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

3.2.4 Wetlands and Other Jurisdictional Waters

Natural drainage channels and adjacent wetlands may be considered "Waters of the United States" (hereafter referred to as "jurisdictional waters") subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE).

Waters of the United States are currently defined in 33 CFR §328.3(a) as:

1. All waters which are currently used, or 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. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    c. Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of water otherwise defined as waters of the United States under the definition;
5. Tributaries to waters identified in paragraphs (a)(1) through (4) of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters which are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section.

Examples of potential waters of the U.S. include stream channels, impoundments such as stock ponds occurring along a stream channel, and wetlands (Wetland Training Institute, Inc. 1990). Potentially jurisdictional wetlands are those wetlands that are adjacent to traditional navigable waters and tributaries of such waters.

The reach and extent of Clean Water Act jurisdiction over aquatic features has been the subject of several U.S. Supreme Court decisions, in *United States v. Riverside Bayview Homes* (Riverside), *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) and *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers* (referred together as the Rapanos decision).

In Riverside (1985), the Supreme Court unanimously ruled that adjacent wetlands are "inseparably bound up" with the waters that they are adjacent to. Therefore, wetlands, including intrastate wetlands, adjacent to waters of the United States were, themselves, waters of the United States.

In SWANCC (2001), the Supreme Court ruled that "non-navigable, isolated, intrastate" waters could not be claimed as jurisdictional by the USACE on the basis of their use by migratory birds. Although the Court did not specifically define the term "isolated," it upheld the jurisdictional status of "adjacent" wetlands and other waters, which are defined as "bordering, contiguous, or neighboring" other jurisdictional waters. Therefore, an "isolated wetland" was implicitly defined as "wetlands that are not bordering, contiguous, or neighboring" other jurisdictional waters.

In Rapanos (2006), the Supreme Court looked beyond the issue of "isolated" waters and considered what broader types of aquatic features are and are not subject to CWA Section 404 regulation. In June 2007, the USACE and the U.S. Environmental Protection Agency (EPA) issued guidance on how to apply the complicated, multiple-opinion rulings in Rapanos. In short, the USACE would assert CWA jurisdiction over traditional navigable waters, wetlands

adjacent thereto, non-navigable tributaries thereto that are "relatively permanent" (flow year-round or continuously on a seasonal basis), and wetlands that directly abut such tributaries. The USACE also currently asserts CWA jurisdiction over non-navigable tributaries that are not relatively permanent, and wetlands adjacent thereto, if such features are shown based on site-specific hydrologic and ecological factors to have a "significant nexus" with a traditional navigable water. The USACE will generally not assert CWA jurisdiction over swales or erosional features, or ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water (USACE and EPA 2007).

While the post-Rapanos guidance document was intended to clarify the regulatory status of aquatic features, its practical application has led to a time-intensive and inconsistent interpretation of CWA jurisdiction. In order for jurisdictional determinations to be made in a more timely, consistent, and predictable manner, the EPA and the USACE recently published a final rule, known as the Clean Water Rule, redefining the scope of waters that are protected under the CWA. Effective August 28, 2015, waters of the U.S. will be defined in 33 CFR §328.3(a) as:

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;
7. All waters in paragraphs (a)(7)(i) through (v) of this section where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1) through (3) of this section. The waters identified in each of paragraphs (a)(7)(i) through (v) of this section are similarly situated and shall be combined, for purposes of a significant nexus analysis, in the watershed that drains to the nearest water identified in paragraphs (a)(1) through (3) of this section. Waters identified in this paragraph shall not be combined with waters identified in paragraph (a)(6) of this section when performing a significant nexus analysis. If waters identified in this paragraph are also an adjacent water under paragraph (a)(6), they are an adjacent water and no case-specific significant nexus analysis is required.

a. *Prairie potholes.* Prairie potholes are a complex of glacially formed wetlands, usually occurring in depressions that lack permanent natural outlets, located in the upper Midwest.

b. *Carolina bays and Delmarva bays.* Carolina bays and Delmarva bays are ponded, depressional wetlands that occur along the Atlantic coastal plain.

c. *Pocosins.* Pocosins are evergreen shrub and tree dominated wetlands found predominantly along the Central Atlantic coastal plain.

d. *Western vernal pools.* Western vernal pools are seasonal wetlands located in parts of California and associated with topographic depression, soils with poor drainage, mild, wet winters and hot, dry summers.

e. *Texas coastal prairie wetlands.* Texas coastal prairie wetlands are freshwater wetlands that occur as a mosaic of depressions, ridges, intermound flats, and mima mound wetlands located along the Texas Gulf Coast.

8. All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1) through (3) of this section and all waters located within 4,000 feet of the high tide line or ordinary high water mark of a water identified in paragraphs (a)(1) through (5) of this section where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1) through (3) of this section. For waters determined to have a significant nexus, the entire water is a water of the United States if a portion is located within the 100-year floodplain of a water identified in paragraphs (a)(1) through (3) of this section or within 4,000 feet of the high tide line or ordinary high water mark. Waters identified in this paragraph shall not be combined with waters identified in paragraph (a)(6) of this section when performing a significant nexus analysis. If waters identified in this paragraph are also an adjacent water under paragraph (a)(6), they are an adjacent water and no case-specific significant nexus analysis is required.

In those cases where the USACE disclaims jurisdiction over aquatic features, two state agencies, the California Department of Fish and Wildlife and the California Regional Water Quality Control Board, may still regulate the placement of fill in such waters under California law.

All activities that involve the discharge of fill into jurisdictional waters are subject to the permit requirements of the USACE (Wetland Training Institute, Inc. 1991). Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the Regional Water Quality Control Board (RWQCB) issues a certification (or waiver of such certification) that the proposed activity will meet state water quality standards. The RWQCB is also responsible for enforcing National Pollution Discharge Elimination System (NPDES) permits, including the

General Construction Activity Storm Water Permit. All projects requiring federal money must also comply with Executive Order 11990 (Protection of Wetlands).

The California Department of Fish and Wildlife has jurisdiction over the bed and bank of rivers, lakes and streams according to provisions of Section 1601 and 1602 of the California Fish and Game Code (2003). Activities that would disturb these drainages are regulated by the CDFW via a Streambed Alteration Agreement. Such an agreement typically stipulates that certain measures will be implemented which protects the habitat values of the drainage in question.

3.2.5 Interference to Plant and Animal Resources from Increased Exposure to Anthropogenic Radiofrequency Electromagnetic Fields (EMFs).

In recent years, research (primarily in Europe) has focused on what, if any affect increases in anthropogenic (e.g., human-caused) EMFs has on the biology and spatial movement patterns on plant and animal species (see Balmori 2015). Some early research has suggested that some animal species are sensitive to low frequency EMFs, but these studies have not been able to elucidate as to whether or not this affect is trivial or substantial, discern what taxa are most sensitive, nor establish how this does nor does not affect ecological systems near or within urban centers. In other words, there is a substantial amount of uncertainty related to estimating any affects that EMFs may have on existing biological resources in an area. To further complicate the uncertainty around this question, CEQA is explicitly designed to estimate changes from the existing condition. In a site in an urban setting with significant existing sources of EMFs, it is highly speculative whether or not an unquantifiable affect from EMFs (based on the current level of uncertainty in the scientific literature) could be extracted from the considerable exposure of existing EMFs. Therefore, exposure to EMFs would be considered a less than significant affect in an urban setting, given the highly speculative nature of the increasing EMF exposure for plant and animal species beyond the existing EMF levels.

3.2.6 Local Ordinances, Policies, and Habitat Conservation Plans

City of Pinole General Plan (2010). This plan identifies a number of goals, policies, and implementation actions for natural resources and open space (Chapter 10). Goals identified include:

- Goal OS1: Ensure the preservation of natural resources by determining appropriate land use and compatibility with natural resources and open space.

- Goal OS2: Sustain, protect, and enhance natural communities, including special-status plants, special status wildlife, and comply with all applicable Federal, State and local regulatory and trustee agencies.
- Goal OS3: Protect, preserve, and restore open spaces.
- Goal OS4: Provide a network of trails linking open spaces and recreation opportunities.
- Goal OS5: Provide community stewardship of open spaces.
- Goal OS6: Protect scenic visual resources that help define and distinguish Pinole as a unique and desirable community.
- Goal OS7: Secure adequate funding for on-going open space preservation and stewardship.
- Goal OS8: Ensure Excellent Water Quality and Secure Water Supply for Human and Natural Communities.

HCCPs/NCCPs. No known habitat conservation plans are in effect for this property. The property lies outside of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan area.

3.3 IMPACTS AND MITIGATION SPECIFIC TO THE PROJECT SITE

The following assumes that the project would be developed as described in the project description (Section 1.1) and site plans (Figures 2 and 3), which includes various erosion control measures. Any appreciable difference in either scope or general location of the proposed project would require an additional impact assessment to ensure that unanticipated impacts to biotic resources are not likely to occur.

3.3.1 Loss of Habitat for Special Status Plants.

Potential Impacts. No special status plant species were observed, though protocol surveys were not completed, nor are they expected to occur as the site lacks suitable habitat to support them (see Table 1). The project area is immediately adjacent to a large outbuilding and consists of ruderal vegetation, unsuitable for those species noted in Table 1. Therefore, these species are presumed to be absent from the construction and development footprint and proposed project activities would have no impact on them.

Mitigation. Mitigation measures are not warranted.

3.3.2 Loss of Habitat for Special Status Animals

Potential Impacts. Nineteen special status animal species occur, or once occurred, regionally in the habitats associated within the vicinity (USGS quadrangle of the site and eight surrounding quadrangles) of the site (Table 1). Because the site is composed of ruderal habitat all of these species would be absent from or unlikely to occur on the site due to unsuitable habitat conditions. At most, a few species may travel over or through the site en route to preferred habitat. With the exception of the aquatic species that are known to occur in Pinole Creek (Steelhead – Central California Coast DPS and California red-legged frog), the proposed construction activities and completed project would have no direct effect on these species because there is little or no likelihood they are present.

Steelhead (Central California Coast DPS) and California red-legged frog are known to occur within Pinole Creek, which occurs approximately 200 ft. south of the site and considerably lower in elevation (i.e. approximately 135 ft.). Discharges of pollutants, soil, or any other contaminant from the project site to Pinole Creek may adversely affect habitat and potentially impact individuals of these species. Implementation of mitigation measures for impacts to downstream waters (section 3.3.7) would minimize or eliminate potential impacts to these species.

Mitigation. With the exception of following the mitigation measures in section 3.3.7, which would minimize or eliminate potential impacts to Steelhead (Central California Coast DPS) and California red-legged frog, mitigation measures are not warranted.

3.3.3 Loss of Habitat for Native Wildlife

The project footprint (approx. 653 sq. ft. of impervious surfaces and 3,020 sq. ft. of a permeable paver driveway) and temporary impacts from the utility route (approx.. 810 sq. ft. of pervious surface to be restored to existing condition) are very small. The site is composed of ruderal habitat that is not a high value for native wildlife and other ruderal habitat is found in adjacent residences. In addition, native wildlife species that may be occupying the site could relocate to other ruderal or suitable habitats.

Therefore, impacts to native wildlife due to loss of habitat resulting from the proposed project are considered less than significant under CEQA.

Mitigation. Mitigation measures are not warranted.

3.3.4 Interference with the Movement of Native Wildlife

Potential Impacts. Lands surrounding most of the site have been developed with roads and residences which likely impede the movement of wildlife between the site and more open lands to the east. In addition, the current residence on the site would likely restrict wildlife from entering the site. Following completion of the project, wildlife presently using the site are expected to continue moving through the property or adjacent to the site after the project is completed. Therefore, impacts to wildlife movements would not be considered significant.

Mitigation. Mitigation measures are not warranted.

3.3.5 Disturbance to Nesting Raptors and Migratory Birds

Potential Impacts. While no trees are expected to be removed within the project site, some of the adjacent vegetation may need to be limbed for access, etc. If a raptor or other migratory bird was to nest on or adjacent to the site prior to or during proposed construction activities, such activities could result in the abandonment of active nests or direct mortality to these birds. Construction related activities that adversely affect the nesting success of raptors or migratory birds, or result in mortality of these birds, would violate state and federal laws (see sections 3.2.2 and 3.2.3) and would be considered a significant impact under CEQA.

Mitigation. Should construction activities begin within 14 days prior to or during the nesting bird season (February 1 – August 31) the following measures shall be followed:

- Nesting Bird Survey – Conduct a pre-construction survey for tree-nesting raptors and other tree- or ground-nesting migratory birds in all trees or other areas of potential nesting habitat within the construction footprint and up to 250 ft. from the footprint no more than 14 days prior to the initiation of construction activities beginning during the breeding season (February through August).
- Nest Buffers – Should a nesting raptor or migratory bird be detected during the Nesting Bird Survey a suitable construction-free nest buffer shall be established around all active nests. Buffers for nesting raptors shall be a minimum of 250 ft. and buffers for other migratory birds shall be a minimum of 50 ft. Should a special status species bird nest be located during the Nesting Bird Survey, the buffer will be determined by consulting with

the CDFW. Buffers shall remain in place for the duration of the breeding season or until it has been confirmed by a qualified biologist that all chicks have fledged and are independent of their parents.

3.3.6 Disturbance to Waters of the United States or Riparian Habitats

Potential Impacts. No waters of the U.S. or riparian habitats occur on the site, however these waters and habitats occur adjacent to the site and property. With the exception of potential impacts to downstream waters (see section 3.3.7), no impacts are expected to occur to waters of the U.S. or riparian habitats.

Mitigation. Mitigation measures are not warranted.

3.3.7 Degradation of Downstream Water Quality

Potential Impacts. Proposed construction activities may result in soils left barren in the construction footprint. Additionally, grading and trenching often leaves the soils of construction zones barren of vegetation and, therefore, vulnerable to sheet, rill, or gully erosion. Furthermore, runoff is often polluted with grease, oil, pesticide and herbicide residues, heavy metals, etc. These pollutants may eventually be carried to sensitive wetland habitats used by a diversity of native wildlife species, including Steelhead (Central California Coastal DPS) and California red-legged frog which are known to inhabit Pinole Creek that is located approximately 200 feet south of the site and 135 ft. lower in elevation.

The proposed project has integrated a number of construction related measures along with design features that are specifically intended to prevent eroded soil or contaminants from reaching Pinole Creek or other sensitive habitats. The erosion control measures include installation of two fiber rolls downslope of the southeast, southwest, and part of the northwest sides of the fencing and concrete pad and additional fiber rolls downslope of the utility route, 20 ft. past the disturbed length. In total, fiber rolls will be placed surrounding the site in all areas downslope of the site. Design features include two rows of grapevines will be planted downslope and around three sides of the structure, adding vegetation that can further stabilize the slope just below the pad. A bioswale will be constructed adjacent to the concrete pad, which will allow runoff to drain from the impervious surfaces and percolate into the soil. A diesel generator with a 132-gallon fuel tank designed with a secondary containment structure containing emergency vents and heavy duty 7-gauge side channels will also be utilized to

prevent contaminants entering the Pinole Creek watershed. Permeable pavers will also replace the existing asphalt and gravel driveway, which will aid in reducing sheet flow.

Mitigation. To ensure these measures are implemented, the following mitigation measures will be followed:

- Best Management Practices: Prior to the start of construction, erosion and sediment control methods (i.e. fiber rolls) will be utilized downslope of all areas of disturbance to prevent soil and contaminants washing into the stream, as described in the project description (section 1.1). In addition, a bioswale will be constructed adjacent to the concrete pad to catch sheet flow runoff coming off of the cell phone tower, diesel generator, other equipment on the concrete pad, and the concrete pad. The diesel generator is designed to ensure containment. Permeable pavers will replace the existing drive to reduce sheet flow off the site.
- Construction Monitoring: After the fiber rolls are installed and prior to the start of construction a Qualified Stormwater Pollution Prevention Plan (SWPPP) Practitioner (QSP) will inspect the site to ensure the fiber rolls are installed properly and no additional BMPs are required to prevent eroded soil and contaminants entering the Pinole Creek watershed during and after construction activities. Should the QSP recommend additional BMPs, the applicant will install the recommended BMPs prior to the start of construction. Construction activities will not initiate until a QSP has reported to Contra Costa County on the installed erosion and sediment control methods. Within 30 days after completion of the construction activities the QSP shall complete a site visit and report for Contra Costa County to document the efficacy of the BMPs. The reports shall include photo documentation of the BMPs and before and after photos of the site.
- Revegetation: Immediately following completion of construction and prior to the final site visit by the QSP, disturbed soils of the site will be revegetated with a seed mix recommended by a qualified biologist. The seed mix shall include a mix of native species and sterile non-native species.
- Annual Bioswale Inspection and Maintenance: A minimum of once per year the bioswale shall be inspected and maintained to ensure it is functioning property. This inspection and maintenance shall occur annually in late August or September, prior to

the rainy season (Oct-Apr). A maintenance check-list shall be completed for each annual inspection, which will include the date/time of the maintenance, name of the person conducting the maintenance, status of the bioswale, and maintenance activities conducted. The annual maintenance check-lists shall be available at the request of Contra Costa County.

3.3.8. Local Ordinances, Policies, or Habitat Conservation Plans

Potential Impacts. The City of Pinole General Plan identifies goals for natural resources and open space. The site is comprised of ruderal habitat without any natural resources or open space.

Mitigation. Mitigation measures are not warranted.

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APPENDIX A: VASCULAR PLANTS OF THE STUDY AREA

The plants species listed below were observed on the project site during the field survey conducted by Live Oak Associates, Inc. in August 2015. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
+/- - Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

ANACARDIACEAE – Sumac Family		
Toxicodendron diversilobum	Poison oak	UPL
ASTERACEAE - Sunflower Family		
Baccharis pilularis	Coyote brush	UPL
*Centaurea solstitialis**	Yellow star thistle	UPL
Conyza canadensis	Canada horseweed	FAC
*Lactuca serriola**	Prickly lettuce	FAC
*Silybum marianum**	Milk thistle	UPL
BRASSICACEAE – Mustard Family		
*Brassica nigra**	Black mustard	UPL
CAPRIFOLIACEAE – Honeysuckle Family		
Sambucus nigra ssp. *caerulea*	Blue elderberry	FAC
HIPPOCASTANACEAE – Buckeye Family		
Aesculus californica	California buckeye	UPL
MALVACEAE – Mallow Family		
Malva sp.	Unknown mallow	
PAPAVERACEAE – Poppy Family		
Eschscholzia californica	California poppy	UPL
POACEAE - Grass Family		
*Avena barbata**	Oat	UPL

* Introduced non-native species

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE STUDY AREA

The species listed below are those that may reasonably be expected to use the habitats of the project site routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species, or their sign, observed in or adjacent to the study area during the August 2015 survey have been noted with an asterisk.

CLASS AMPHIBIA (Amphibians)

ORDER CAUDATA (Salamanders)

FAMILY SALAMANDRIDAE (Newts)

California newt	*Taricha torosa*

FAMILY PLETHODONTIDAE (Lungless Salamanders)

Ensatina	*Ensatina eschscholtzii*
Black salamander	*Aneides flavipunctatus*
California slender salamander	*Batrachoseps attenuatus*
Pacific slender salamander	*Batrachoseps pacificus*

ORDER ANURA (Frogs and Toads)

FAMILY BUFONIDAE (True Toads)

Western toad	*Bufo boreas*

FAMILY HYLIDAE (Tree Frogs and Relatives)

Pacific treefrog	*Hyla regilla*

CLASS REPTILIA (Reptiles)

ORDER SQUAMATA (Lizards and Snakes)

SUBORDER SAURIA (Lizards)

FAMILY PHRYNOSOMATIDAE

*Western fence lizard	*Sceloporus occidentalis*

FAMILY SCINCIDAE (Skinks)

Skilton skink	*Eumeces skiltonianus skiltonianus*

FAMILY ANGUIDAE (Alligator Lizards and Relatives)

California alligator lizard	*Elgaria multicarinata*

SUBORDER SERPENTES (Snakes)

FAMILY COLUBRIDAE (Colubrids)

Sharp-tailed snake	*Contia tenuis*
Gopher snake	*Pituophis catenifer*
Common kingsnake	*Lampropeltis getula*
California black-headed snake	*Tantilla planiceps*
Night snake	*Hypsiglena torquata*
Western terrestrial garter snake	*Thamnophis elegans*

CLASS AVES (Birds)

ORDER CICONIIFORMES (Herons, Storks, Ibises and Relatives)

FAMILY CATHARTIDAE (New World Vultures)

*Turkey vulture	*Cathartes aura*

ORDER FALCONIFORMES (Vultures, Hawks and Falcons)

FAMILY ACCIPITRIDAE (Hawks, Old World Vultures and Harriers)

White-tailed kite	*Elanus leucurus*
Northern harrier	*Circus cyaneus*
Sharp-shinned hawk	*Accipiter striatus*
Cooper's hawk	*Accipiter cooperii*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*

FAMILY FALCONIDAE (Caracaras and Falcons)

American kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Prairie falcon	*Falco mexicanus*

ORDER: CHARADRIIFORMES (Shorebirds, Gulls and Relatives)

FAMILY CHARADRIIDAE (Lapwings and Plovers)

Killdeer	*Charadrius vociferus*

ORDER GALLIFORMES (Magapodes, Curassows, Pheasants and Relatives)

FAMILY PHASIANIDAE (Quails, Pheasants and Relatives)

Ring-necked pheasant	*Phasianus colchicus*
*Wild turkey	*Meleagris gallopavo*

FAMILY ODONTOPHORIDAE (New World Quail)

California quail	*Callipepla californica*

ORDER COLUMBIFORMES (Pigeons and Doves)

FAMILY COLUMBIDAE (Pigeons and Doves)

Rock dove	*Columba livia*
Mourning dove	*Zenaida macroura*

ORDER STRIGIFORMES (Owls)

FAMILY TYTONIDAE (Barn Owls)

Barn owl	*Tyto alba*

FAMILY STRIGIDAE (Typical Owls)

Western screech owl	*Otus kennicottii*
Great horned owl	*Bubo virginianus*

ORDER APODIFORMES (Swifts and Hummingbirds)

FAMILY APODIDAE (Swifts)

*****White-throated swift	*Aeronautes saxatalis*

FAMILY TROCHILIDAE (Hummingbirds)

Anna's hummingbird	*Calypte anna*
Allen's hummingbird	*Selasphorus sasin*

ORDER PICIFORMES (Woodpeckers and Relatives)

FAMILY PICIDAE (Woodpeckers and Wrynecks)

Acorn woodpecker	*Melanerpes formicivorus*
Downy woodpecker	*Picoides pubescens*
Northern flicker	*Colaptes auratus*
Nuttall's woodpecker	*Picoides nuttallii*

ORDER PASSERIFORMES (Perching Birds)

FAMILY TYRANNIDAE (Tyrant Flycatchers)

Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
Ash-throated flycatcher	*Myiarchus cinerascens*

FAMILY LANIIDAE (Shrikes)	
Loggerhead shrike	*Lanius ludovicianus*
FAMILY VIREONIDAE (Typical Vireos)	
Cassin's vireo	*Vireo cassinii*
Hutton's vireo	*Vireo huttoni*
FAMILY CORVIDAE (Jays, Magpies and Crows)	
Steller's jay	*Cyanocitta stelleri*
*Western scrub-jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
FAMILY ALAUDIDAE (Larks)	
California horned lark	*Eremophila alpestris actia*
FAMILY HIRUNDINIDAE (Swallows)	
Tree swallow	*Tachycineta bicolor*
Violet-green swallow	*Tachycineta thalassina*
Cliff swallow	*Hirundo pyrrhonota*
Barn swallow	*Hirundo rustica*
FAMILY PARIDAE (Titmice and Relatives)	
Oak titmouse	*Baeolophus inornatus*
FAMILY AEGITHALIDAE (Bushtit)	
Bushtit	*Psaltriparus minimus*
FAMILY SITTIDAE (Nuthatches)	
*White-breasted nuthatch	*Sitta carolinensis*
FAMILY TROGLODYTIDAE (Wrens)	
Bewick's wren	*Thryomanes bewickii*
House wren	*Troglodytes aedon*
Winter wren	*Troglodytes troglodytes*
FAMILY REGULIDAE (Kinglets)	
Ruby-crowned kinglet	*Regulus calendula*
FAMILY SYLVIIDAE (Old World Warblers and Gnatcatchers)	
Blue-gray gnatcatcher	*Polioptila caerulea*
FAMILY TURDIDAE (Thrushes)	
Western bluebird	*Sialia mexicana*
Hermit thrush	*Catharus guttatus*
American robin	*Turdus migratorius*
FAMILY MIMIDAE (Mockingbirds and Thrashers)	
Northern mockingbird	*Mimus polyglottos*
FAMILY STURNIDAE (Starlings and Allies)	
European starling	*Sturnus vulgaris*
FAMILY PARULIDAE (Wood Warblers and Relatives)	
Yellow-rumped warbler	*Dendroica coronata*
Yellow warbler	*Dendroica petechia*
FAMILY EMBERIZIDAE (Emberizines)	
California towhee	*Pipilo crissalis*
Lark sparrow	*Chondestes grammacus*
Grasshopper sparrow	*Ammodramus savannarum*
Savannah sparrow	*Passerculus sandwichensis*
Fox sparrow	*Passerella iliaca*
White-throated sparrow	*Zonotrichia albicollis*
White-crowned sparrow	*Zonotrichia leucophrys*

Dark-eyed junco	*Junco hyemalis*
FAMILY ICTERIDAE (Blackbirds, Orioles and Allies)	
Red-winged blackbird	*Gelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Brewer's blackbird	*Euphagus cyanocephalus*
Brown-headed cowbird	*Molothrus ater*
FAMILY FRINGILLIDAE (Finches)	
Purple finch	*Carpodacus purpureus*
House finch	*Carpodacus mexicanus*
Lesser goldfinch	*Carduelis psaltria*
American goldfinch	*Carduelis tristis*

CLASS MAMMALIA (Mammals)

ORDER DIDELPHIMORPHIA (Marsupials)	
FAMILY DIDELPHIDAE (Opossums)	
Virginia opossum	*Didelphis virginiana*
ORDER CHIROPTERA (Bats)	
FAMILY VESPERTILIONIDAE (Evening Bats)	
Little brown myotis	*Myotis lucifugus*
Yuma myotis	*Myotis yumanensis*
California myotis	*Myotis californicus*
Western pipistrelle	*Pipistrellus hesperus*
Big brown bat	*Eptesicus fuscus*
Western red bat	*Lasiurus blossevillii*
Hoary bat	*Lasiurus cinereus*
Townsend's big-eared bat	*Corynorhinus townsendii*
Pallid bat	*Antrozous pallidus*
FAMILY MOLOSSIDAE (Free-tailed Bats)	
California mastiff bat	*Eumops perotis californicus*
Mexican free-tailed bat	*Tadarida brasiliensis*
ORDER LAGOMORPHA (Rabbits, Hares and Pika)	
FAMILY LEPORIDAE (Rabbits and Hares)	
Brush rabbit	*Sylvilagus bachmani*
Black-tailed jackrabbit	*Lepus californicus*
ORDER RODENTIA (Rodents)	
FAMILY SCIURIDAE (Squirrels, Chipmunks and Marmots)	
California ground squirrel	*Spermophilus beecheyi*
Western gray squirrel	*Sciurus griseus*
*Fox squirrel	*Sciurus niger*
FAMILY GEOMYIDAE (Pocket Gophers)	
Botta's pocket gopher	*Thomomys bottae*
FAMILY HETEROMYIDAE (Pocket Mice and Kangaroo Rats)	
California pocket mouse	*Chaetodipus californicus*
FAMILY MURIDAE (Mice, Rats and Voles)	
Deer mouse	*Peromyscus maniculatus*
Parasitic mouse	*Peromyscus californicus*
Western harvest mouse	*Reithrodontomys megalotis*
Common muskrat	*Ondatra zibethicus*

California meadow vole	*Microtus californicus*
ORDER CARNIVORA (Carnivores)	
FAMILY CANIDAE (Foxes, Wolves and Relatives)	
Coyote	*Canis latrans*
Gray fox	*Urocyon cinereoargenteus*
FAMILY PROCYONIDAE (Raccoons and Relatives)	
Raccoon	*Procyon lotor*
FAMILY MEPHITIDAE (Skunks)	
Striped skunk	*Mephitis mephitis*
FAMILY FELIDAE (Cats)	
Feral cat	*Felis catus*
Mountain lion	*Puma concolor*
Bobcat	*Lynx rufus*
ORDER ARTIODACTYLA (Even-toed Ungulates)	
FAMILY CERVIDAE (Deer, Elk and Relatives)	
Black-tailed deer	*Odocoileus hemionus columbianus*

APPENDIX C: SELECTED PHOTOGRAPHS OF THE PROJECT SITE

Picture 1: Location of the concrete pad for the tower and associated structures.

Picture 2: Northwest slope downhill from, and adjacent to, the concrete pad.

Appendix C

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Timothy C. Ghirardelli
CONSULTING ARBORIST SERVICES

Tree Survey

2518 Pfeiffer Lane
Pinole, CA.

SITE LOCATION #248125

JANUARY 27, 2015

Sustainable Solutions in the Urban Interface Since 1980

Certified Arborist #WCISA 0704 A

Introduction

I am retained by NSA Wireless for Verizon to review the proposed cell tower at 2518 Pfeiffer Lane pursuant to the City of Pinole Municipal Code Ordinance 2012-03 Tree Protection 17.96.070. Protected trees are defined as any native with a single perennial stem of twelve (12) inches or larger in circumference measured four (4) and a half feet above the natural grade. Existing protected trees are tagged, numbered and reviewed to evaluate their individual health and the affects of proposed construction. Proposed construction impacts are estimated based on the information provided.

I have reviewed the preliminary plan set from DES Engineering drawings G1, C1, C2, A1 to A8 dated 09.29.14. The C-2 Site Plan is enclosed on page 9 shown with tree numbers that correspond to those in the Tree Survey on page 4 of this report. This plan is not to scale.

Existing trees are examined on January 22, 2015.

Summary

Five (5) individual trees are reviewed within the immediate area of the proposed project: One (1) native Valley oak, (*quercus lobata*), three (3) California bay (*Umbellularia californica),* and one (1) Buckeye (*Aesculus californica*). Trees surveyed range in health from good to fair and are established within the existing developed residential environment.

Primary construction activities will occur adjacent to one Valley oak where the water tower cellular antenna is proposed. Installing the proposed utilities and equipment area will require frequent access through the tree canopy. Limiting access to the existing gravel drive and installing protective fencing as indicated is required to minimize secondary tree impacts.

My evaluation is provided on the following pages. Any and all construction activities adjacent to protected trees shall adhere to the Tree & Root Zone Protection Guidelines enclosed beginning on page 5.

Timothy C. Ghirardelli
CONSULTING ARBORIST
WC ISA CERTIFIED ARBORIST WE #0704 A

Construction Impact Evaluation

Most nutrient and water absorbing roots that sustain the trees can be found in the top 6 to 12 inches of soil. Raising or lowering grades just 4 to 6 inches, or trenching and compacting soils with equipment within natural tree canopies will all affect tree health and longevity.

Construction impact ratings are intended to serve as a guideline for evaluating the long term sustainability of trees as a result of impacts. Trees are evaluated to determine the potential impact of construction relative to their location on the site plan. The rating system measures to canopy edges to establish the critical root zone. Viewing canopy edges as one hundred percent of the critical root zone, proposed impacts are rated in percentages of root loss to the critical area. The more root loss that occurs to a tree, the less it will be able to survive. Tree species, age, health and vigor influence impact ratings. Construction Impact ratings are limited in efficacy to the information provided.

High Impact

Trees in the High Impact category are considered to be at, or beyond the maximum range of root loss for that specimen. Trees in this category are unlikely to sustain the proposed impacts for the long term. A significant change in the proposed plan is required in order to retain the tree. Specific recommendations are required from the Arborist to reduce proposed impacts.

- Grade cuts, fills and/or alterations that result in root loss to 30% and greater of the critical root zone.

Moderate Impact

Trees in the Moderate Impact category are considered to be within the range of sustainable root loss for that specimen. Trees in this category undergo alterations that require specific recommendations from the Arborist to reduce proposed impacts.

- Grade cuts, fills and/or alterations that result in root loss to less than 30% of the root zone.

Low Impact

Trees in the Low Impact category are considered to be well within the acceptable range of root loss for that specimen. Trees in this category may require specific recommendations from the Arborist to reduce proposed impacts.

- Grade cuts, fills at canopy edges or beyond and/or supervised alterations within the canopy.

Tree Survey

Tree No.	Species		Size @ 54"	Health[1] Vigor	Const.[2] Impact	Rem. For Const.	Retention Rating[3]	Comments
187	Native Valley oak *Quercus lobata*		18-17-17	Fair	Low	No	Good	Existing gravel driveway affects tree health. Proposed utility lines are located at canopy edges to northeast adjacent to garage. Any exposed trenching and vehicle access shall adhere to Tree Protection Guidelines enclosed. Sec. 1, 4 and 5.
188	Native Bay laurel *Umbellularia californica*		14-14-16-13-12-10	Good	None	No	Good	Proposed utility route in road at 4 ft. lower elevations approximately 10-ft to north at edge of tree canopy. Adhere to Tree Protection Guidelines, sec. 1 Root Zone Protection.
189	Native Bay laurel *Umbellularia californica*		36-32	Good	None	No	Good	Proposed utility route in road at 4 ft. lower elevations approximately 10-ft to north at edge of tree canopy. Adhere to Tree Protection Guidelines, sec. 1 Root Zone Protection.
190	Native Bay laurel *Umbellularia californica*		34-30	Good	None	No	Good	Proposed utility route in road at 4 ft. lower elevations approximately 10-ft to north at edge of tree canopy. Adhere to Tree Protection Guidelines, sec. 1 Root Zone Protection.
191	Native Buckeye *Aesculus californica*		12-12-8-10-10	Good	None	No	Good	Located on north side of garage on 10-ft lower elevations from garage. Concrete black seat wall provides suitable separation of any proposed construction activity. Bay trees surround on still lower elevations.

[1, 2, 3] see Tree Health Evaluation

Tree & Root Zone Protection Guidelines

A. **Tree Evaluation & the Affects of Construction**
Tree & Root Zone Protection Guidelines are provided as a guideline to mitigate the impacts to trees that will occur as a result of development. Most nutrient and water absorbing roots that sustain the trees can be found in the top 6 to 12 inches of soil. Raising or lowering grades just 4 to 6 inches, or trenching and compacting soils with equipment within natural tree canopies will all affect tree health and longevity.

B. Any tree to be retained within the construction envelope will require special considerations during the construction process. A good working relationship between the Arborist and contractor and a clear understanding of contractor issues relative to arboricultural issues is essential to avoid any debilitating tree damage. The Project Arborist should be on site for each phase where alterations occur within the canopy of trees selected to remain.

Summary of six key construction phases to navigate with the Project Arborist are:

1) **Pre-construction:** Review the site with the Project Arborist prior to alterations to identify specific site limitations such as vehicle access and material handling and equipment storage. Clarify methods needed to retain valuable trees.

2) **Protective tree fencing:** Prior to any alterations, proper fence placement is key to limiting damages to trees selected to remain. Map placement of protective tree fencing on-site with marking paint. Review limitations and discuss alternatives.

3) **Grading:** Raising or lowering grades is the single most destructive process to trees. There is no substitute for understanding sustainable limits and employing effective solutions.

4) **Trenching:** Severing roots can destabilize structure and result in rapid tree decline. Review proper techniques and guidelines prior to any trenching.

5) **Construction**: Requirements for space, access and storage places high demands near trees. Soil becomes compacted under material or equipment weight below unprotected trees resulting in root suffocation and long-term tree decline. Periodic review of the site is needed to assess tree health and review protective measures.

6) **Landscaping:** Any requirement for landscape plantings proposed within the canopy of existing trees shall require review. Trenching for irrigation, hardscape construction and the installation of incompatible plants can be just as traumatic to tree health as any of the above can be.

---

1. Root Zone Protection, Demolition & Construction

1.1 Prior to any approved activity, assign a confined, dedicated area for material and equipment storage away from the established tree canopies and the immediate project area.
1.2 Install a temporary Chain-Link fencing or approved equal at canopy perimeters prior to any grading or construction to establish the Critical Root Zone for all trees affected by construction. Fencing shall be a minimum of 6-feet high with steel posts on 8-10-foot centers driven directly into the ground.
1.3 Any deviation as a result of approved construction inside protected tree canopies shall route fencing accordingly under Project Arborist direction and return to canopy edges (see Section 5-Access Guidelines).
1.1 All protective fencing shall remain in place throughout the construction process.
1.2 Removal of the existing construction or hardscapes within the canopy of protected trees shall occur under Project Arborist direction.
1.3 Removal of existing surface materials shall proceed slowly under Arborist direction in shallow lifts so the Arborist can stop the process if roots are observed.
1.4 Material and soil excavation is performed by hand and careful equipment operation under the direction of the Arborist.
1.5 Material and soil excavations shall leave roots 2 inches and larger undisturbed. Root retention or removal to be evaluated individually by the Arborist to minimize tree decline.
1.6 Roots less than 2 inches must be pruned with loppers or hand saw.

2. Pruning

2.1 Any pruning and clearance work directly related to construction will occur under Project Arborist direction.
2.2 Any necessary pruning of the trees should be done prior to construction to avoid unnecessary limb damage.
2.3 All pruning shall be completed by approved Certified Arborists familiar with the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A-300) and Best Management Practices for Pruning published the International Society of Arboriculture.
2.4 Additional pruning to manage tree structure, shape, and balance and remove deadwood throughout the trees will reduce insect and disease problems and serve as an indicator to monitor ongoing tree health.

3. Landscape Construction

3.1 Any landscape planting shall remain no closer than 10-feet from the trunk of any native tree.
3.2 Selected plants shall be drought tolerant and compatible with the native environment.
3.3 Rototilling, soil disturbance or import soil shall not be introduced within existing tree canopies.
3.4 All new or proposed irrigation supply lines, or upgrades to drainage and electrical conduits shall observe Trenching Guidelines (Section 4).

4. Trenching Guidelines-Drainage, Utilities, Conduits

4.1 Any necessary trenching shall avoid routes inside, through or between protected tree canopies. Unavoidable paths inside tree canopies shall adopt accepted alternatives including Lateral Boring, Airspade or Hand Trenching. Hand Trenching Guidelines shall proceed under Project Arborist direction.
4.2 The process of hand trenching shall be used to minimize trauma to protected trees inside the tree canopy. Excavation is performed by hand and careful equipment operation.
4.3 Hand trenching leaves roots 2 inches and larger undisturbed. Soil is removed from under and around tree roots to form the necessary trench.
4.4 Roots 3 inches and larger may only be removed with the approval of the Project Arborist.
4.5 Lateral Bore pits and splicing vaults shall be located outside natural tree canopies.

5. Access Guidelines—Equipment, Pedestrian & Material Handling

5.1 All alternative routes shall be explored to avoid access inside the natural tree canopy or Critical Root Zone. Access inside the Critical Root Zone shall adhere to the following procedures under the direction of the Project Arborist:
5.2 To create an access corridor, apply a 6-inch layer of wood chips or mulch by hand without equipment access on the soil surface over the selected access route.
5.3 Distribute ¾ thick or greater Plywood over wood chips to laterally disperse heavy equipment weights and reduce soil compaction.
5.4 Maintain the access corridor with protective fencing on each side of the path as long as it is required to access this area of the project.
5.5 Preferred/approved alternative root zone protection applications include Geoweb products. A cellular confinement system that laterally disperses vertical weights throughout the applied area.
5.6 Trees in close proximity to construction activity inside the tree canopy shall apply straw wattles directly to the trunk. Wattles shall be attached around the tree from ground level to 5-feet above grade for protection of direct contact from equipment or materials. All applications shall be non-invasive and deconstructed by hand following project completion.

Tree Health Evaluation

Several factors are involved in the evaluation process. Healthy, vigorous trees are better able to tolerate impacts such as root injury, soil compaction and changes in soil moisture than are trees that are in poor condition prior to impact. The tree Health & Vigor ratings below provide an initial guideline for evaluating tree health. Trees with a Health & Vigor Rating of *excellent* or *good* will be more likely to survive development trauma than those with *fair* or *poor*.

[1]Health & Vigor Rating:

Excellent	A healthy, vigorous tree relatively free of signs and symptoms of disease.
Good	Tree with normal shoot elongation, interior dead wood, manageable twig dieback, and/or pest problems. Tree structure may influence considerations.
Fair	Tree with moderate amounts of twig and branch dieback, thinning canopy, reduced vigor, wounds that are slow to recover, with 65 to 80% of the canopy alive. May have poor branch structure and/or suppressed canopy. May have conditions that are manageable to improve tree health.
Poor	Tree with dieback of large limbs, large wounds with little callus growth, visible decay, and 30 to 60% of the canopy alive. Tree may also have dieback and decay in primary in scaffold limbs and/or trunk structure. May have large cavities and be structurally unsound beyond any reasonable management.

Retention Rating---*Factors Considered in the Evaluation of Trees Suitable for Retention*

1. Tree Location, Structure and Competition
   The location of the tree is considered with respect to the future environment. Site development increases the frequency of use thereby increasing the concern for structural deficiencies or trees in decline that might become a liability. Trunks and limbs are visually examined to evaluate structural defects and decay that could lead to breakage, or failure.

2. Species Tolerance
   Trees respond to environmental changes according to individual genetic ability. For example, Coast live oaks are more capable of withstanding development trauma than Valley oaks similar in size condition and relative construction impacts. Considerations also include age and longevity

3. Contribution
   Contribution refers to the evaluation of individual, and/or grove characteristics to the site, neighborhood and benefits to the public. Factors also weigh the above Health/Vigor assessments and both function and aesthetic:

   Functional considerations may include species, age and longevity, structure, stability and risks, benefits that include shade, screening and/or sun protection, wildlife habitat or ecological considerations, and the effects of competition.

   Aesthetic considerations may include species importance, rarity or uniqueness, natural or exotic, visual interest including seasonal and structural features, appearance and placement in the environment.

[3]Retention Rating

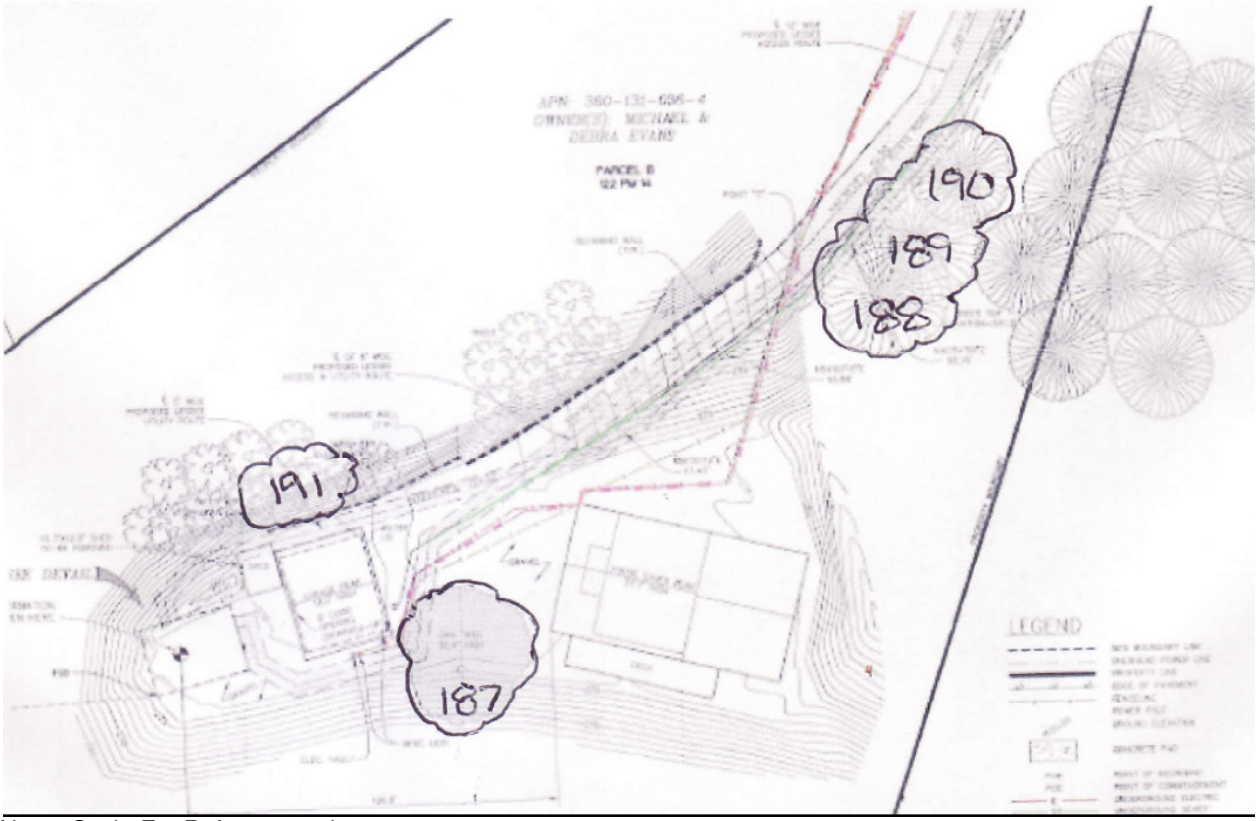
Excellent	Ideal specimen both functionally and aesthetically with good health and longevity.
Good	Tree suited to retention for the long term. Individual characteristics are weighed. Any health or structural concerns are manageable with reasonable care.
Fair	Tree may have age, health, and/or structural concerns that may, or may not be manageable. Aesthetics are likely to be affected or affect other more valuable trees. Removal may benefit others.
Poor	Tree is likely to be in decline and/or have non-manageable structural concerns. Removal is likely to benefit others.

[2]Proposed Construction Impacts

High Impact:	Impacts that are at, or beyond the maximum range of root loss. Significant changes in the proposed plan are required in order to retain the tree. Specific recommendations are required from the Arborist to reduce proposed impacts.
Moderate Impact:	Impacts considered to be within the range of sustainable root loss. Specific recommendations are required from the Arborist to reduce proposed impacts.
Low Impact:	Minor impacts well within the sustainable range of root loss. Arborist supervised alterations within the tree canopy.

Tree Survey

Site Plan C-2



Not to Scale-For Reference only

Appendix D

MID PACIFIC ENGINEERING, INC.

GEOTECHNICAL INVESTIGATION REPORT

PROPOSED TELECOMMUNICATIONS FACILITY

PINOLE PARK, PSL NUMBER 248125
2518 PFEIFFER LANE
PINOLE, CALIFORNIA
MPE NO. 02314-01

MPE
MID PACIFIC ENGINEERING, INC.

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WEST SACRAMENTO
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GEOTECHNICAL ENGINEERING | EARTHWORK TESTING | MATERIALS ENGINEERING AND TESTING | SPECIAL INSPECTIONS

February 4, 2015
MPE No. 02314-01

Mr. Archie Angulo
NSA Wireless
2010 Crow Canyon Place, Suite 355
San Ramon, California 94583

Subject: Geotechnical Investigation
Proposed Telecommunications Facility
Pinole Park, PSL Number 248125
2518 Pfeiffer Lane
Pinole, California

Dear Mr. Angulo:

Mid Pacific Engineering is pleased to present the attached geotechnical investigation report for a proposed telecommunications facility to be located at 2518 Pfeiffer Lane in Pinole, California. Results of our study indicate the site is not within a current Earthquake Fault Zone. However, the site lies within northeast portion of the *Richmond Quadrangle, California* and a State of California Seismic Hazard Zones Official Map exists for the quadrangle. That the site lies within an area of Contra Costa County "not evaluated" by the State of California for hazards from seismically induced landsliding does not preclude the possibility a landslide won't occur at the project location. In our opinion, seismically induced landsliding poses a significant geologic risk to site development and could result in severe damage to total destruction of the proposed telecommunications facility.

We anticipate conventional grading practices may be used for most site earthwork activities (if any) and that a mat foundation or drilled, cast-in-place concrete piers may be used for support of the proposed tower; foundation support for the planned equipment cabinet (or cabinets) may be provided using shallow spread footings and/or a mat foundation.

Though we anticipate the site may be developed generally using conventional grading and foundation construction techniques, it should be noted conditions were identified by our field exploration program that may require special design and/or construction provisions for

some project components. A brief summary of these conditions, as well as possible design and/or construction provisions to address these potential concerns, are outlined below.

- Existing fill materials were encountered during our field exploration program to an approximate depth of seven feet below existing site grade. In our opinion (and based on the scope of the currently proposed project), the presence of this fill should not have a significant adverse effect on planned project features. However, if the nature of the proposed construction changes (i.e., buildings, pavements, or other improvements sensitive to settlement are to be constructed at the site), special design and construction provisions may be required. Such provisions could include removal of on-site fill and replacement with engineered fill, or deepening structural foundations through these materials.

- The site lies within northeast portion of the Richmond Quadrangle, California and a State of California Seismic Hazard Zones Official Map exists for the quadrangle. That the site lies within an area of Contra Costa County "not evaluated" by the State of California for hazards from seismically induced landsliding does not preclude the possibility a landslide won't occur at the project location. In our opinion, seismically induced landsliding poses a significant geologic risk to site development and could result in severe damage to total destruction of the proposed telecommunications facility.

- Highly to moderately-weathered marine sedimentary rock was initially encountered during our field exploration program at an approximate depth of seven feet below existing site grade. In our opinion the presence of on-site rock may hinder drilled excavations for the planned tower foundation pier, possibly resulting in slower-than-normal drilling rates and/or requiring special construction provisions (e.g., multiple passes with a small diameter auger, use of specialized rock cutter wheels or core barrels, or other methods) in order to advance drilled excavations into these materials. In the event the tower foundation designer anticipates the presence of on-site rock will significantly impact the cost and/or constructability of a drilled pier foundation system, or if a pier foundation system is considered less economical or impractical due to considerations beyond the scope of this study, a reinforced concrete mat foundation should be considered for the support of the planned tower.

Specific comments regarding the conditions outlined above, as well as recommendations regarding the geotechnical aspects of project design and construction, are presented in the following report.

We appreciate the opportunity of providing our services for this project. If you have questions regarding this report or if we may be of further assistance, please contact the undersigned.

Sincerely,

Mid Pacific Engineering, Inc.

Todd Kamisky, P.E. *02/04/2015*
Principal Engineer

cc: Client

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FIGURES 1 THROUGH 5

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GEOTECHNICAL INVESTIGATION REPORT
PROPOSED TELECOMMUNICATIONS FACILITY
PINOLE PARK, PSL NUMBER 248125
2518 PFEIFFER LANE
PINOLE, CALIFORNIA
MPE NO . 02314-01

INTRODUCTION

GENERAL

This report presents the results of our geotechnical investigation for a proposed telecommunications facility to be located at 2518 Pfeiffer Lane in Pinole, California. The purpose of our investigation was to explore and evaluate the subsurface conditions at the site in order to develop recommendations related to the geotechnical aspects of project design and construction.

The project site is located within the northeast portion of the United States Geological Survey (USGS) 7.5 minute *Richmond quadrangle* at coordinates[1] N 37° 58' 47" (37.9796), W 122° 15' 27" (122.2576). The approximate site location relative to existing topographic features and roads is shown on Figure 1.

PROPOSED CONSTRUCTION

We understand the proposed project will involve construction of a telecommunications facility which will include the installation of a 33-foot-high, steel monopole tower (configured to resemble an elevated water storage tank) as well as equipment cabinet (or cabinets) supported-on-grade. Appurtenant construction may include underground utilities.

Plans indicating final site grades were not available at the time this report was prepared; however, as existing site topography is relatively level, we anticipate minimal earthwork cuts and fills (i.e., less than approximately one to two feet in vertical extent) will be required for

[1] Datum reference: North American Datum of 1983.

this project. Excavations for below-grade utilities are not anticipated to exceed approximately five feet below existing and final site grades.

A Boring Location Map indicating the proposed project area is presented on Figure 2.

SCOPE OF SERVICES

The scope of our services was outlined in our proposal dated January 13, 2015, and included the following:

- Review readily available (and relevant) literature pertaining to site geology, faulting, and seismicity.
- Exploration of the subsurface conditions at the site through the advancement of one exploratory boring.
- Preparation of this report which includes:
  - A description of the proposed project;
  - A summary of our field exploration program;
  - A description of site surface and subsurface conditions encountered during our field investigation;
  - Our comments regarding potential geologic hazards which could affect the site or proposed project;
  - California Building Code (CBC, 2010 and 2013 edition) seismic parameters; and
  - Recommendations related to the geotechnical aspects of site preparation and engineered fill, temporary excavations and trench backfill, and foundation design and construction.

FIELD INVESTIGATION

Subsurface conditions at the site were explored on January 28, 2015, by drilling one boring to an approximate depth of 15½ feet below existing site grade. The boring was advanced using a Mobile B-24, truck-mounted drill rig equipped with a four-inch-diameter, solid-stem

flight auger. The approximate location of the boring advanced for this investigation is shown on Figure 2.

Our engineer maintained a log of the boring, visually classified the soils and rock encountered according to the Unified Soil Classification System (see Figure 3) or Rock Classification Legend (see Figure 4), respectively, and obtained representative samples of the subsurface materials Soil and rock samples were obtained from the boring with a Standard Penetration Sampler driven 18 inches (unless otherwise noted) into undisturbed material using a 140-pound hammer falling 30 inches. After the boring was completed, it was backfilled with neat cement in accordance with Contra Costa County requirements. A log of the exploratory boring advanced for this investigation is presented on Figure 5.

SITE CONDITIONS

GEOLOGY AND SEISMICITY

Geologic Setting

The project site is located within the Coast Range geomorphic province of California. The geologic structure of this province is complex, having been molded by numerous mountain building events characterized by extensive folding, faulting, and fracturing of variable intensity. Regionally, these folds and faults trend northwesterly and are responsible for the development of a pronounced northwest trending ridge-valley system.

Based on our review of the Dibblee Geological Foundation map titled: "*Geologic Map of the Richmond Quadrangle, Contra Costa and Alameda Counties, California*," compiled by T.W. Dibblee, Jr. and J.A. Minch (published 2005), the project site lies within an area of Miocene-age Monterey Formation marine sedimentary rock.

Faulting and Seismicity

The project site is located within a region of California characterized by active faulting. The closest, active[2] fault mapped by the California Geological Survey[3] (CGS) is the Hayward-

[2] Within this report, a fault is considered active if there is evidence of Holocene (i.e., within the past 10,000 to 12,000 years) surface displacement along one or more of its segments or branches.

[3] Reference: Reference: California Geological Survey map titled "*Fault Activity Map of California and Adjacent Areas*," compiled by Charles W. Jennings, published 2010.

Rodgers Creek fault, located approximately 3.9 miles southwest of the site.

SURFACE

The project site consists of a rectangular-shaped area located at 2518 Pfeiffer Lane in Pinole, California. The site is bounded to the north, west, and south by a moderately steep, descending slope, and to the east by an existing garage. At the time of our field investigation, the site area was covered with dirt, low grasses, and weeds. Existing topography within the immediate site area was relatively level above the descending slopes.

SUBSURFACE

Earth materials encountered in the boring advanced for this investigation consisted of fill composed predominantly of loose to medium dense silty sand to an approximate depth of seven feet below existing site grade. Based on our observations of the site area, we suspect encountered fill represents previous site grading activities. Below these near-surface fill soils, highly to moderately-weathered, weak to moderately-strong marine sedimentary rock was encountered to the maximum depth explored (approximately 15½ feet below existing site grade).

No free groundwater was encountered during our field investigation. However, groundwater conditions can vary depending on the season, precipitation, runoff conditions, irrigation and/or groundwater pumping practices (both on and off site), the level of nearby bodies of water, and possibly other factors. Further, during the winter or spring season, or shortly after significant precipitation, perched groundwater (or groundwater seepage) may be present above on-site rock. Therefore, groundwater conditions presented in this report may not be representative of those which may be encountered during or subsequent to construction.

A more detailed description of the subsurface conditions encountered during our field investigation is provided on the attached log.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Results of our study indicate the site is not within a current Earthquake Fault Zone. However, the site lies within northeast portion of the *Richmond Quadrangle, California* and a State of California Seismic Hazard Zones Official Map exists for the quadrangle. That the site lies within an area of Contra Costa County "not evaluated" by the State of California for hazards from seismically induced landsliding does not preclude the possibility a landslide won't occur at the project location. In our opinion, seismically induced landsliding poses a significant geologic risk to site development.

We anticipate conventional grading practices may be used for most site earthwork activities (if any) and that a mat foundation or drilled, cast-in-place concrete piers may be used for support of the proposed tower; foundation support for the planned equipment cabinet (or cabinets) may be provided using shallow spread footings and/or a mat foundation.

Though we anticipate the site may be developed generally using conventional grading and foundation construction techniques, it should be noted conditions were identified by our field exploration program that may require special design and/or construction provisions for some project components. A brief summary of these conditions, as well as possible design and/or construction provisions to address these potential concerns, are outlined below.

- Existing fill materials were encountered during our field exploration program to an approximate depth of seven feet below existing site grade. In our opinion (and based on the scope of the currently proposed project), the presence of this fill should not have a significant adverse effect on planned project features. However, if the nature of the proposed construction changes (i.e., buildings, pavements, or other improvements sensitive to settlement are to be constructed at the site), special design and construction provisions may be required. Such provisions could include removal of on-site fill and replacement with engineered fill, or deepening structural foundations through these materials.

- The site lies within northeast portion of the Richmond Quadrangle, California and a State of California Seismic Hazard Zones Official Map exists for the quadrangle. That the site lies within an area of Contra Costa County "not evaluated" by the State of California for hazards from seismically induced landsliding does not preclude the possibility a landslide won't occur at the project location. In our opinion, seismically induced landsliding poses a significant geologic risk to site development and could

result in severe damage to total destruction of the proposed telecommunications facility.

- Highly to moderately-weathered marine sedimentary rock was initially encountered during our field exploration program at an approximate depth of seven feet below existing site grade. In our opinion the presence of on-site rock may hinder drilled excavations for the planned tower foundation pier, possibly resulting in slower-than-normal drilling rates and/or requiring special construction provisions (e.g., multiple passes with a small diameter auger, use of specialized rock cutter wheels or core barrels, or other methods) in order to advance drilled excavations into these materials. In the event the tower foundation designer anticipates the presence of on-site rock will significantly impact the cost and/or constructability of a drilled pier foundation system, or if a pier foundation system is considered less economical or impractical due to considerations beyond the scope of this study, a reinforced concrete mat foundation should be considered for the support of the planned tower.

Specific comments regarding the conditions outlined above, as well as recommendations regarding the geotechnical aspects of project design and construction, are presented in the following sections of this report.

GEOLOGIC HAZARDS

Ground Rupture

No active faults are known to cross the site area, nor is the site within a current Alquist-Priolo Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone). Therefore, it is our professional opinion that the potential for ground rupture (or other similar effect) at the site in the event of a seismic event is unlikely.

CBC Seismic Design Parameters

In the event the California Building Code (CBC, 2010 or 2013 edition) is used for seismic design, it is our opinion encountered subsurface conditions (and those suspected below the maximum depth explored) would warrant a Type D (i.e., Stiff Soil) Site Classification. Further, using software provided by the United States Geological Survey (i.e. USGS computer program *United States Seismic Design Maps* (v3.1.0 - 7-11-13)), site-specific spectral response acceleration parameters were obtained for the maximum considered earthquake and are summarized in the table below.

Spectral Response Acceleration Parameters		2010 CBC Value	2013 CBC Value
Mapped spectral acceleration for short periods	S_S	1.500g	1.641g
Mapped spectral acceleration at 1-second period	S_1	0.600g	0.645g
Site coefficient for short periods	F_a	1.000	1.000
Site coefficient at 1-second period	F_v	1.500	1.500
Adjusted earthquake spectral response acceleration for short periods	S_{MS}	1.500g	1.641g
Adjusted earthquake spectral response acceleration at 1-second period	S_{M1}	0.900g	0.968g
Design earthquake spectral response acceleration for short periods	S_{DS}	1.000g	1.094g
Design earthquake spectral response acceleration at 1-second period	S_{D1}	0.600g	0.645g

Seismic Hazard Zones

In 1990, the California Legislature enacted the Seismic Hazards Mapping Act (SHMA, Public Resources Code, Chapter 7.8, Section 2690-2699.6) which directed the Department of Conservation, California Geological Survey (CGS) to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides and amplified ground shaking. In order to comply with the Act, CGS has an ongoing effort (i.e., the Seismic Hazard Mapping Program) to gather existing geological, geophysical and geotechnical data and compile this data into regional maps known as Seismic Hazard Zone Maps. The Program will ultimately map California's principal urban and major growth areas, though only certain areas of the state are currently mapped and the corresponding Official Map issued to the affected cities, counties and state agencies.

Results of our investigation did indicate the site region has been mapped by CGS and an Official Seismic Hazard Zone Map exists for the project area. However, the specific site area (i.e., within the northeast portion of the USGS Geological Survey 7.5 minute *Richmond quadrangle*) was not evaluated for historical occurrences of liquefaction or landslide movement.

Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from cyclic loading, such as that caused by an earthquake. Among other effects, liquefaction can result in densification of such deposits after an earthquake as excess pore

pressures are dissipated (and hence settlements of overlying deposits). The primary factors deciding liquefaction potential of a soil deposit are: (1) the level and duration of seismic ground motions; (2) the type and consistency of the soils; and (3) the depth to groundwater.

Subsurface earth materials encountered during our field investigation generally consisted of medium dense silty sand underlain by highly to moderately-weathered, weak to moderately-strong marine sedimentary rock. No free groundwater was encountered during our field investigation.

Based on the generally fine-grained and/or relatively dense nature of the soils encountered during our field investigation, as well as the lack of free groundwater, it is our professional opinion the potential for liquefaction at the site during or subsequent to a seismic event is unlikely.

Ground Subsidence

Ground subsidence within the site area would typically be due to densification of subsurface soils during or subsequent to a seismic event. Generally, loose, granular soils would be most susceptible to densification, resulting in ground subsidence.

Given the generally fine-grained and/or relatively dense nature of the soils encountered during our field investigation, it is our professional opinion that the potential for significant ground subsidence at the site during or subsequent to a seismic event is unlikely.

Landslides

The project site is located within an area of known and/or mapped occurrences of landslide activity[4]. Results of our field investigation did not identify any occurrence of slope instability or landslides.

[4] Reference: "Summary Distribution of Slides and Earth Flows in Contra Costa County, California," by Carl M. Wentworth, Scott E. Graham, Richard J. Pike, Gregg S. Beukelman, David W. Ramsey, and Andrew D. Barron, United States Geological Survey, 1997.

TOP OF SLOPE STRUCTURAL SETBACK

Site topography varies from relatively level within the project area to moderately steep slopes on three sides of the project area. We recommend all structural foundations be setback a minimum of 10 feet, horizontally, from the top of any descending slope. Alternatively, foundations should be deepened such that a minimum of 10 feet of soil exists between the foundation and the face of the slope.

EXISTING, ON-SITE FILL

Based on the results of our field investigation and site observations, it appears existing fill is present within the site area to an approximate depth of seven feet below existing site grade. In our opinion (and based on the scope of the currently proposed project), the presence of this fill should not have a significant adverse effect on planned project features. However, if the nature of the proposed construction changes (i.e., buildings, pavements, or other improvements sensitive to settlement are to be constructed at the site), special design and construction provisions may be required. Such provisions could include removal of on-site fill and replacement with engineered fill, or deepening structural foundations through these materials.

SITE PREPARATION

Stripping

Within the area of proposed construction, any existing vegetation, organic soil, or debris should be stripped and disposed of off-site or outside the construction limits. In the event organic soils or tree roots are encountered (or suspected) at or beneath the stripped surface, deep stripping or grubbing will be required to remove these (or other similar) deleterious materials.

Scarification and Compaction

If engineered fill is required for this project, we recommend the ground surface upon which this fill will be placed be scarified to a depth of eight inches, uniformly moisture-conditioned to between 0 and 5 percent above the optimum moisture content, and compacted to at

least 90 percent of the maximum dry density as determined by ASTM (American Society for Testing and Materials) Test Method D 1557[5].

Overexcavation of Loose or Disturbed Material

Within areas grubbed or otherwise disturbed below an approximate depth of 12 inches, in-place scarification and compaction may not be adequate to densify all disturbed soil. Therefore, overexcavation of the disturbed soil, scarification and compaction of the exposed subgrade, and replacement with engineered fill may be required in these areas.

Existing Utilities

If abandoned (or to be abandoned), below-grade utility lines, septic tanks, cesspools, wells, and/or foundations are encountered or are known to exist within the area of construction, they should be removed and disposed of off-site. Existing, below-grade utility pipelines (if any) which extend beyond the limits of the proposed construction and will be abandoned in-place should be plugged with cement grout to prevent migration of soil and/or water. All excavations resulting from removal activities should be cleaned of all loose or disturbed material (including previously-placed backfill) prior to placing any fill or backfill.

TEMPORARY EXCAVATIONS

General

All excavations must comply with applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the responsibility of the contractor, who should be solely responsible for the means, methods, and sequencing of construction operations.

Construction Considerations

Construction equipment, building materials, excavated soil, vehicular traffic, and other similar loads should not be allowed near the top of any un-shored or un-braced excavation. Where the stability of adjoining buildings, walls, pavements, or other similar improvements is endangered by excavation operations, support systems such as shoring, bracing, or underpinning may be required to provide structural stability and to protect personnel

[5] This test procedure should be used wherever relative compaction, maximum dry density, or optimum moisture content is referenced within this report.

working within the excavation. Since excavation operations are dependent on construction methods and scheduling, the contractor should be solely responsible for the design, installation, maintenance, and performance of all shoring, bracing, underpinning, and other similar systems. Under no circumstances should comments provided herein be inferred to mean that Mid Pacific Engineering is assuming any responsibility for temporary excavations, or for the design, installation, maintenance, and performance of any shoring, bracing, underpinning, or other similar systems.

During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff water within or adjacent to any excavations should be collected and disposed of outside the construction limits.

Excavation Conditions

Based on our experience in the site area and conditions encountered during our field exploration program, we anticipate trench (and other shallow) excavations should be possible with a conventional backhoe (such as a Case 580 or equivalent).

TRENCH BACKFILL

Materials

Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) should consist of on-site or imported soil and/or soil-aggregate mixtures generally less than one inch in maximum dimension and free of organic or other deleterious debris; trench zone backfill (i.e., material placed between the pipe zone backfill and finished subgrade) may consist of on-site soil, generally less than three inches in maximum dimension and free of organic or other deleterious debris.

If imported material is used for pipe or trench zone backfill, we recommend it not consist of gravel due to the potential for soil migration into, and water seepage along, trenches backfilled with this type of material.

Recommendations provided above for pipe zone backfill are minimum requirements only. More stringent material specifications may be required to fulfill local codes and/or bedding requirements for specific types of pipe. We recommend the project Civil Engineer develop these material specifications based on planned pipe types, bedding conditions, and other factors beyond the scope of this study.

Placement and Compaction

Trench backfill should be uniformly moisture-conditioned to between 0 and 5 percent above the optimum moisture content, placed in horizontal lifts less than eight inches in loose thickness, and compacted to at least 90 percent relative compaction. Within pavement areas, trench backfill should be compacted to at least 95 percent relative compaction within 12 inches of finished subgrade[6]. Mechanical compaction is strongly recommended; ponding or jetting should not be allowed unless specifically reviewed and approved by the project Geotechnical Engineer prior to construction.

Important Note: All pipe zone backfill should be placed on undisturbed earth materials. In the event earth materials located directly beneath the planned pipe zone backfill are disturbed during construction, these materials should either be compacted in-place (if the depth of disturbance is less than approximately 12 inches deep), or removed (if the depth of disturbance is greater than approximately 12 inches) and replaced in accordance with recommendations provided above for trench backfill.

ENGINEERED FILL

Materials

As site topography within the area of planned improvements is relatively level, we anticipate little-to-no earthwork grading will be performed for this project. However, some fill may be required to backfill around foundations or for other purposes. If required, we recommend this material consist of on-site or imported[7] soil and/or soil-aggregate mixtures generally less than three inches in maximum dimension, nearly-free of organic or other deleterious debris, and essentially non-plastic. Typically, well-graded mixtures of gravel, sand, non-plastic silt, and small quantities of clay would be acceptable for use as engineered fill.

Placement and Compaction

Soil and/or soil-aggregate mixtures used for engineered fill should be uniformly moisture-conditioned to between 0 and 5 percent above the optimum moisture content, placed in

[6] Within this report, finished subgrade refers to the top surface of undisturbed on-site soil compacted during site preparation, compacted trench backfill, and/or engineered fill.

[7] All imported soil and/or soil-aggregate mixtures used for engineered fill should be sampled, tested and approved by the project Geotechnical Engineer prior to being transported to the site.

horizontal lifts less than eight inches in loose thickness, and compacted to at least 90 percent relative compaction. In pavement areas, engineered fill placed within 12 inches of finished subgrade should be compacted to at least 95 percent relative compaction.

TOWER FOUNDATION - DRILLED PIERS

General

We anticipate the planned tower foundation will be subjected to relatively high lateral loads. Typically, such loads are resisted using deep foundations (i.e., a drilled pier) or a large mat foundation. Based on the results of our investigation, it is our professional opinion either drilled, cast-in-place concrete piers or a single concrete mat foundation (see following section) may be used for support of the planned tower. In the event a drilled pier foundation system is utilized for support of the planned tower, we recommend the proposed piers consist of drilled, straight-shafted holes, filled with concrete, and reinforced with steel to resist and transfer lateral and axial loads. Further, we recommend the proposed piers extend to a depth of at least 12 feet below existing (and final) adjacent site grades, have a diameter of at least two feet, and generally not extend below an approximate depth of 15½ feet below existing site grade (the approximate maximum depth explored during this investigation).

Design parameters as well as construction recommendations for drilled, cast-in-place concrete piers are provided below.

Axial Capacities

Cast-in-place concrete piers constructed in accordance with recommendations provided herein may be designed to resist downward loads using an allowable end bearing pressure of 5,000 pounds per square foot (psf) and a unit skin friction of 25 psf. The uppermost three feet of the embedded portion of the pier should be neglected when evaluating the skin friction component of the axial capacities.

The allowable end bearing pressure provided above is a net value; therefore, the weight of the pier may be neglected when evaluating downward capacities. Total downward capacities derived from the parameters provided above may be increased by 1/3 for short-term loading due to wind or seismic forces and include calculated factors of safety of at least two on skin friction and three on end bearing.

Estimated Settlement

Total settlement of the proposed pier is estimated to be less than 3/4-inch and should occur shortly after the initial loads are applied.

Lateral Capacities

We recommend lateral resistance and deflection of the proposed pier be evaluated using methods proposed by Broms for rigid piles[8]. For this method we recommend an ultimate passive earth pressure of 350 pounds per square foot per foot of embedment depth, and a coefficient of horizontal subgrade reaction of six tons per cubic foot be used to evaluate lateral capacities and deflections.

Since the aforementioned method requires information regarding the proposed pier (i.e., depth of embedment, pier diameter, pier length, lateral loads, and location of loading), which was not available at the time this report was prepared, we recommend the project Structural Engineer evaluate lateral deflections of the proposed pier (if required).

Alternatively, lateral capacity may be evaluated using the "Pole Formula" given in Sections 1807.3.1 through 1807.3.3 of the California Building Code (CBC, 2010 and 2013 editions). For this method we recommend a lateral soil bearing pressure of 150 pounds per square foot per foot of embedment be used for analysis. If applicable, the 100 percent increase allowed by the Code for isolated poles (which are not adversely affected by a ½-inch horizontal deflection at the ground surface due to short-term lateral loads) may be used for design.

To account for possible loss of subgrade support due to surface disturbance, we recommend soil located within the uppermost two feet of the embedded portion of the pier be neglected when evaluating lateral capacities and/or deflections.

Excavation Conditions

Based on the conditions encountered during our field exploration program, we anticipate excavations for the proposed pier should be possible using a large, truck-mounted drill rig equipped with a hydraulically-advanced, flight and/or bucket auger. Further, we would not anticipate drilled excavations for the proposed pier to be susceptible to significant caving, provided the pier diameter is less than approximately five feet and the drilled hole is not

[8] Broms, Bengt B., "Lateral Resistance of Piles in Cohesionless Soils," *Journal of Soil Mechanics and Foundations Division*, ASCE, May, 1964.

permitted to remain open more than a few hours. However, due to the presence of on-site rock, drilled excavations for the proposed tower foundation pier may encounter slower-than-normal drilling rates and/or require special construction provisions (e.g., multiple passes with a small diameter auger, use of specialized rock cutter wheels or core barrels, or other similar equipment specifically intended for rock removal).

Casing

If casing is used, we recommend it be removed from the excavation as concrete is being placed. The bottom of the casing should be maintained below the top of the concrete at all times during casing withdrawal and concrete placement. Further, continuous vibration or other approved methods should be used during casing withdrawal to reduce the potential for void-space formation within the concrete. Abandoning the casing in-place should not be allowed.

Bottom Preparation

All debris, loose or disturbed soil or rock, and any water (if applicable) should be removed from the pier excavation just prior to placing reinforcing steel and/or concrete. A representative from Mid Pacific Engineering should observe the pier excavation to verify that subsurface conditions are consistent with those encountered during our field investigation.

Steel and Concrete Placement

Reinforcing steel and/or concrete should be placed immediately upon completion of the pier excavation. If water is present during concrete placement and/or drilling fluids are used to maintain hole stability, concrete should be pumped or otherwise discharged to the bottom of the hole via a hose or tremie pipe. The end of the hose or tremie pipe must remain below the top surface of any water, drilling fluids, and the in-place concrete at all times. In addition, concrete (used for pier construction) should be consolidated using vibratory methods over the entire length and width of the pier. However, if water and/or drilling fluids are present, concrete (used for pier construction) should be consolidated only after these fluids are removed and to the extent possible (i.e., over the entire width of the pier and within five to ten feet of the ground surface).

In order to develop the design skin friction value provided above and to reduce the potential for void formation, concrete used for pier construction should have a slump of from four to six inches if placed in a dry shaft without temporary casing, and from six to eight inches if casing and/or drilling fluids are used. The concrete mix should be designed with appropriate

admixtures and/or water/cement ratios to achieve recommended slumps. Adding water to a conventional mix to achieve recommended slumps should not be allowed.

TOWER FOUNDATION - MAT

General

As an alternative to a drilled pier foundation system, the planned tower may be supported using a single concrete mat. In general, we recommend this proposed mat be constructed of reinforced concrete, a minimum of five feet wide, embedded at least two (but no more than approximately ten) feet below the lowest adjacent final subgrade[9], and founded on undisturbed, on-site rock materials.

Allowable Bearing Pressure

An allowable bearing pressure of 3,000 pounds per square foot (psf) may be used for the design of a mat foundation with the above minimum dimensions. The allowable bearing pressure provided is a net value; therefore, the weight of the foundation (which extends below finished subgrade) may be neglected when computing dead loads. The allowable bearing pressure provided herein applies to dead plus live loads, includes a calculated factor of safety of at least three, and may be increased by 1/3 for short-term loading due to wind or seismic forces. For a mat foundation subject to overturning, the maximum edge pressure should not exceed the allowable bearing pressure.

Estimated Settlement

Based on anticipated foundation dimensions and loads, we estimate maximum settlement of the proposed mat foundation to be on the order of ½-inch. Settlement of this foundation is expected to occur rapidly, and should be essentially complete shortly after initial application of the loads.

[9] Within this report, final subgrade refers to the top surface of undisturbed on-site soil, on-site soil compacted during site preparation, and/or engineered fill.

Overturning Resistance

Overturning tower forces may be resisted by the weight of the proposed concrete mat foundation (and any soil placed over this foundation) and edge bearing of the foundation on undisturbed on-site soil. If soil is to be placed over the proposed mat, the unit weight of this material may be taken as 100 pounds per cubic foot.

Lateral Resistance

Resistance to lateral loads (including those due to wind or seismic forces) may be provided by frictional resistance between the bottom of the proposed concrete mat foundation and the underlying soil, and by passive earth pressure against the sides of the foundation. A coefficient of friction of 0.3 may be used between cast-in-place concrete foundations and the underlying soil; passive pressure available in undisturbed on-site soil and/or engineered fill may be taken as equivalent to the pressure exerted by a fluid weighing 300 pounds per cubic foot (pcf). To account for the possible future loss of subgrade support due to surface disturbance, we recommend earth materials located within the uppermost one foot of the embedded portion of the proposed tower mat foundation be neglected when evaluating passive resistance.

Friction and passive pressure parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. Depending on the application, typical factors of safety could range from 1.0 to 1.5. Frictional and passive resistance may be used in combination, provided a suitable factor of safety is applied to these values during design.

Construction Considerations

Prior to placing steel or concrete, the excavation for the proposed tower mat foundation should be cleaned of all debris, loose or disturbed soil, and any water.

EQUIPMENT CABINET FOUNDATIONS

General

Foundation support for planned equipment cabinets may be provided using either spread footings or a mat foundation (mat foundations should typically consist of a slab with thickened edges). In general, these proposed foundations should be constructed of

reinforced concrete and founded on undisturbed on-site soil and/or engineered fill. In addition, we recommend all spread footings be a minimum of 12 inches wide and embedded a minimum of 12 inches below the lowest adjacent final subgrade; the thickened edge of all mat slab foundations should also be embedded a minimum of 12 inches below the lowest adjacent final subgrade.

Allowable Bearing Pressure

An allowable bearing pressure of 2,000 pounds per square foot (psf) may be used for the design of proposed spread and/or mat foundations which possess the above minimum dimensions. The allowable bearing pressure provided is a net value; therefore, the weight of the foundation (which extends below finished subgrade) may be neglected when computing dead loads. The allowable bearing pressure provided herein applies to dead plus live loads, includes a calculated factor of safety of at least three, and may be increased by 1/3 for short-term loading due to wind or seismic forces. For mat foundations subject to overturning forces, the maximum edge pressure should not exceed the allowable bearing pressure.

Lateral Resistance

Resistance to lateral loads (including those due to wind or seismic forces) may be provided by frictional resistance between the bottom of proposed concrete spread or mat foundations and the underlying soil, and by passive earth pressure against the sides of the foundations. A coefficient of friction of 0.3 may be used between cast-in-place concrete foundations and the underlying soil; passive pressure available in undisturbed on-site soil and/or engineered fill may be taken as equivalent to the pressure exerted by a fluid weighing 300 pounds per cubic foot (pcf). To account for possible future loss of subgrade support due to surface disturbance, we recommend earth materials located within the uppermost six inches of the embedded portion of all shallow spread and/or mat foundations be neglected when evaluating passive pressures.

Lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. Depending on the application, typical factors of safety could range from 1.0 to 1.5.

Construction Considerations

Prior to placing steel or concrete, foundation excavations should be cleaned of all debris, loose or disturbed soil, and any water.

ADDITIONAL SERVICES

We recommend Mid Pacific Engineering review final earthwork grading (if any) and/or foundation plans and specifications to evaluate that recommendations contained herein have been properly interpreted and implemented during design. Further, all site earthwork activities, including site preparation, placement of engineered fill and trench backfill, and all foundation excavations should be monitored by a representative from Mid Pacific Engineering.

Monitoring services are an essential component of our design services. Monitoring allows us to observe the soil conditions encountered during construction, evaluate the applicability of the recommendations presented in this report to the soil conditions encountered, and recommend appropriate changes in design or construction procedures if conditions differ from those described herein.

LIMITATIONS

This report has been prepared in substantial accordance with the generally accepted geotechnical engineering practice as it existed in the site area at the time our services were rendered. No warranty is either expressed or implied.

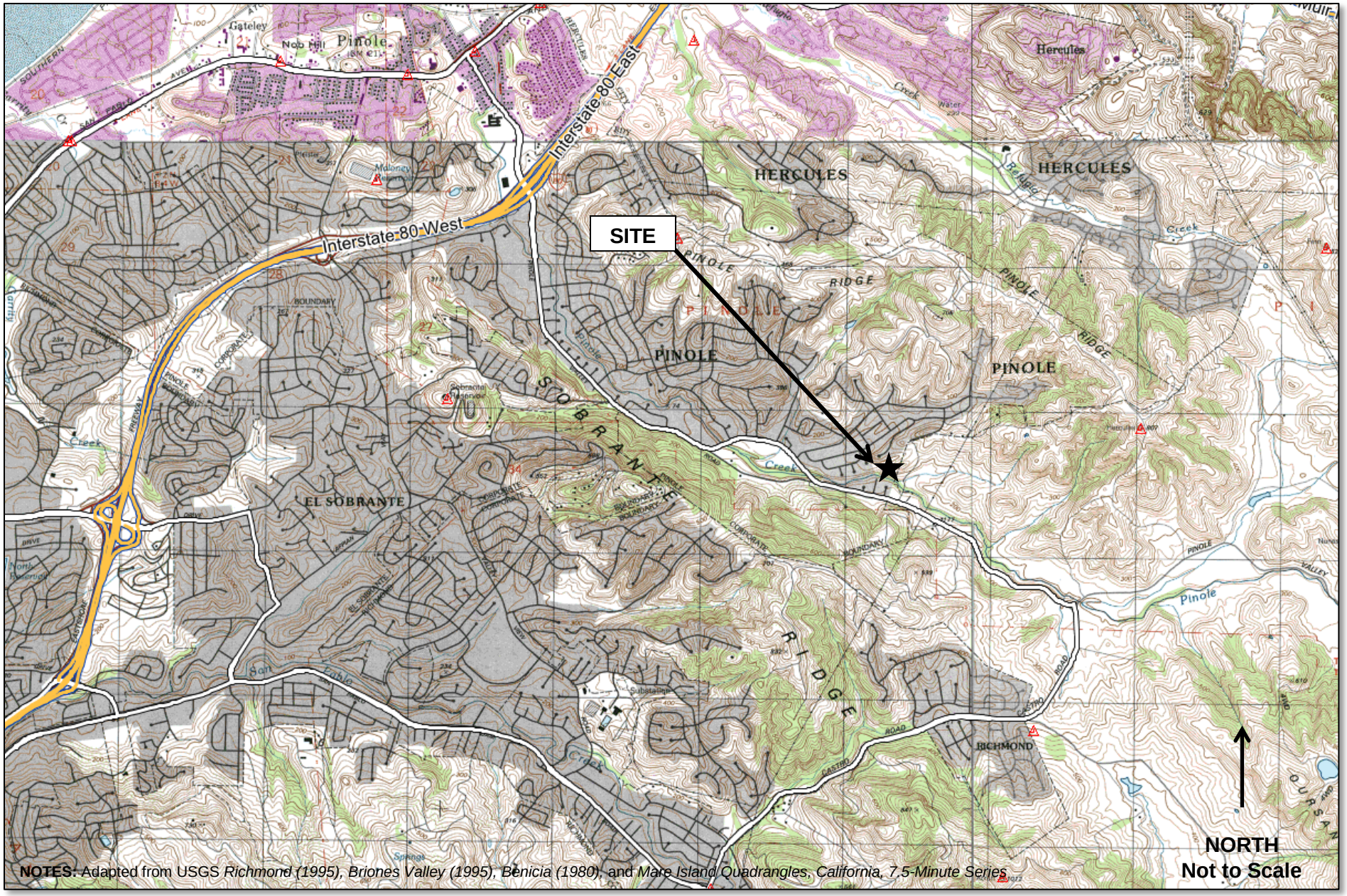
Conclusions and recommendations contained in this report were based on the conditions encountered during our field investigation and are applicable only to those project features described above (see section titled "PROPOSED CONSTRUCTION"). It is possible subsurface conditions could vary beyond the point explored. If conditions are encountered during construction which differ from those described in this report, or if the scope or nature of the proposed construction changes, we should be notified immediately in order to review and, if deemed necessary, conduct additional studies and/or provide supplemental recommendations.

Recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be conducted by Mid Pacific Engineering during the construction phase in order to evaluate compliance with our recommendations.

The scope of services provided by Mid Pacific Engineering for this project did not include the investigation and/or evaluation of toxic substances, or soil or groundwater contamination of any type. If such conditions are encountered during site development, additional studies may be required. Further, services provided by Mid Pacific Engineering for this project did not include the investigation and/or evaluation of soil corrosivity. Depending on planned pipe types, bedding conditions, and other factors beyond the scope of this study, it may be appropriate to evaluate soil corrosivity prior to development.

This report may be used only by our client, and only for the purposes stated herein, within a reasonable time from its issuance. Land use, site conditions, and other factors may change over time which may require additional studies. In the event a significant period of time elapses between the date of this report and construction, Mid Pacific Engineering shall be notified of such occurrence in order to review current conditions. Depending on that review, additional studies and/or an updated or revised report may be required prior to completion of final design.

Any party other than our client who wishes to use all or any portion of this report shall notify Mid Pacific Engineering of such intended use. Based on the intended use as well as other site-related factors, Mid Pacific Engineering may require that additional studies be conducted and that an updated or revised report be issued. Failure to comply with any of the requirements outlined above by the client or any other party shall release Mid Pacific Engineering from any liability arising from the unauthorized use of this report.



NOTES: Adapted from USGS *Richmond (1995), Briones Valley (1995), Benicia (1980),* and *Mare Island Quadrangles, California, 7.5-Minute Series*

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VICINITY MAP

PROPOSED TELECOMMUNICATIONS FACILITY

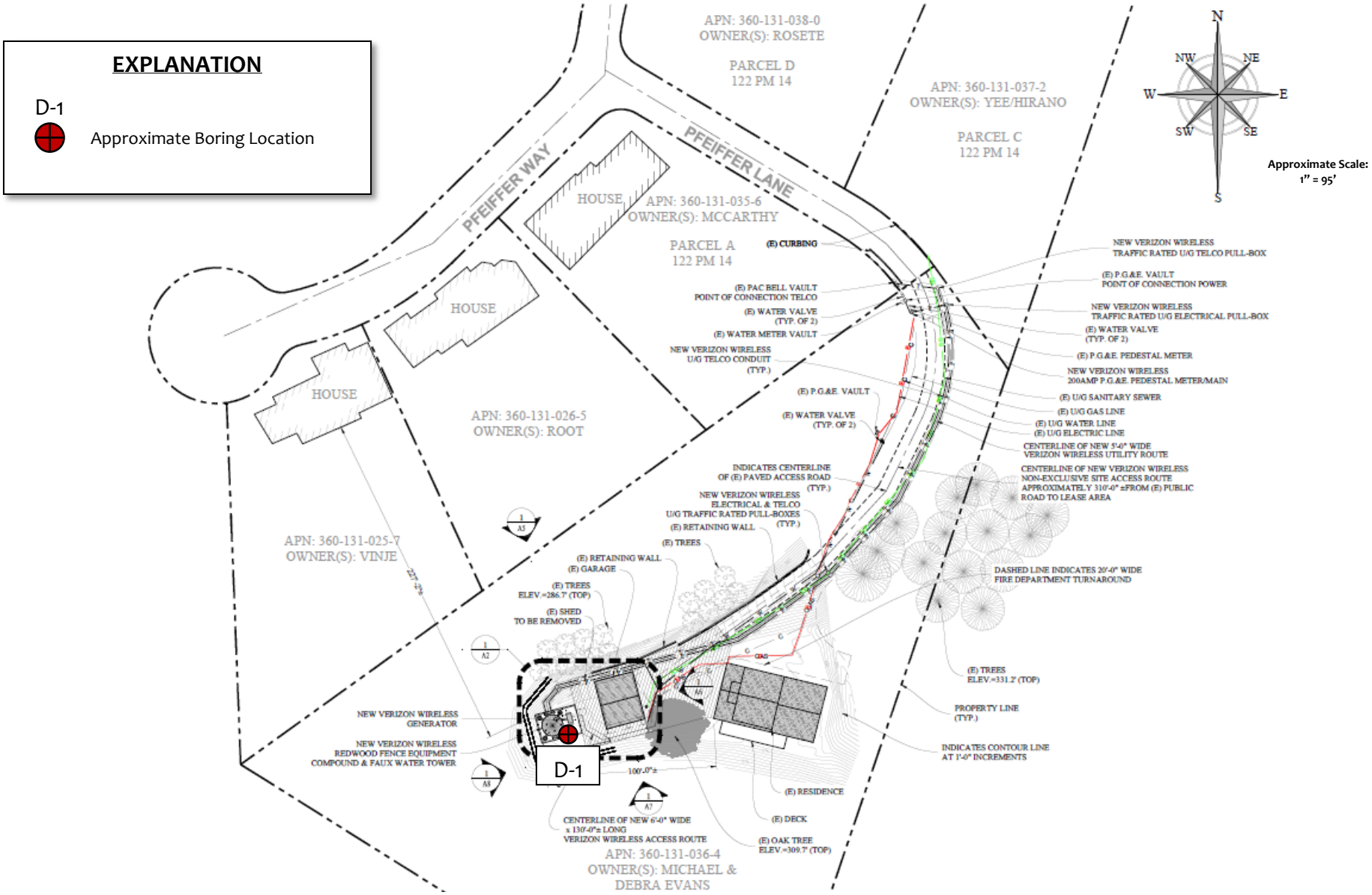
Pinole Park, PSL Number: 248125

Pinole, California

FIGURE 1

Date: 02/15

MPE No. 02314-01



NOTES: Adapted from *PSL #248125, Site Plan,* Sheet A1, prepared by Diamond Engineering Services, dated October 30, 2014.

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BORING LOCATION MAP

PROPOSED TELECOMMUNICATIONS FACILITY
Pinole Park, PSL Number: 248125
Pinole, California

FIGURE 2
Date: 02/15
MPE No. 02314-01

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		SYMBOL	CODE	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well graded gravels or gravel - sand mixtures, little or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM		Silty gravels, gravel - sand - silt mixtures
		GC		Clayey gravels, gravel - sand - silt mixtures
	SANDS (50% or more of coarse fraction < no. 4 sieve size)	SW		Well graded sands or gravelly sands, little or no fines
		SP		Poorly graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand - silt mixtures
		SC		Clayey sands, sand clay mixtures
FINE GRAINED SOILS (More than 50% of soil < no. 200 sieve size)	SILTS & CLAYS LL< 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL ≥ 50	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils
ROCK		RX		Rocks, weathered to fresh
FILL		FILL		Artificially placed fill material

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. Modified California sampler

= Hand Driven Sample

=SPT Sampler

= Initial Water Level

= Final Water Level

= Estimated or gradational material change line

= Observed material change line

Laboratory Tests

PI = Plasticity Index
EI =Expansive Index
UCC = Unconfined Compression Test
TR = Triaxial Compression Test
GR = Gradation Analysis (Sieve)
K = Permeability Test

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse (c) Medium (m) fine (f)	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

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UNIFIED SOIL CLASSIFICATION SYSTEM
PROPOSED COMMNUNICATIONS FACILITY
Pinole Park, PSL Number #248125
Pinole, California

FIGURE 3
Date: 02/15
MPE No. 02314-01

FRACTURING	
LOG TERM	DEFINITION
Very Wide	> 6 feet
Wide	2 to 6 feet
Moderately	8 to 24 inches
Closely	2 1/2 to 8 inches
Very Closely	3/4 to 2 1/2 inches

ROCK QUALITY DESIGNATION (ROD)	
ROD (%)	ROCK QUALITY
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor

WEATHERING	
LOG TERM	DESCRIPTION/DEFINITION
Fresh	No visible sign of decomposition or discoloration. Rings under hammer impact
Slightly Weathered	Slight discoloration inwards from open fractures; otherwise similar to fresh
Moderately Weathered	Discoloration throughout. Strength less than fresh rock, specimens cannot be broken by hand or scraped with knife
Highly Weathered	Specimens can be broken by hand with effort and shaved with knife. Textures becoming indistinct but fabric preserved
Completely Weathered	Mineral decomposed to soil but fabric and structure preserved. Specimens easily crumbled or penetrated.

COMPETENCY			
CLASS	LOG TERM	DESCRIPTION/DEFINITION	APPROXIMATE RANGE OF UNCONFINED COMPRESSIVE STRENGTHS (tsf)
I	Extremely Strong	Many blows with geologic hammer required to break intact specimens	>2000
II	Very Strong	Hand held specimens break with pick end of hammer under more than one blow	1000 to 2000
III	Strong	Hand held specimens can be broken with singer, moderate blow with pick end of hammer	500 to 1000
IV	Moderately Strong	Specimens can be scraped with knife; light blow with pick end of hammer causes indentations	250 to 500
V	Weak	Specimens crumble under moderate blow with pick end of hammer	10 to 250
VI	Friable	Specimens crumble in hand	N/A

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ROCK LEGEND

PROPOSED TELECOMMUNICATIONS FACILITY
Pinole Park, PSL Number: 248125
Pinole, California

FIGURE 4
Date: 02/15
MPE No. 02314-01

Project: PINOLE PARK, PSL NUMBER #248125 Project Location: 2518 Pfeiffer Lane, Pinole, CA MPE Number: 02314-01	LOG OF SOIL BORING D-1 Sheet 1 of 1

Date(s) Drilled	1/28/2015	Logged By	MSO	Checked By	
Drilling Method	Solid Flight Auger	Drilling Contractor	Hillside Drilling	Total Depth of Drill Hole	15.5 Feet
Drill Rig Type	Mobile B-24	Diameter(s) of Hole, inches	4 Inches	Approx. Surface Elevation, ft MSL	+277 Feet
Groundwater Depth [Elevation], feet	N/A	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	TEST DATA: DRY UNIT WEIGHT, pcf	TEST DATA: ADDITIONAL TESTS
			Artificial Fill Light brown, silty, fine sand (SM), slightly moist						
			Light brown, silty, fine sand (SM), slightly moist, medium dense, rock fragments to 2.5"		D1-1	24			
	5		Light to dark brown, silty fine sand (SM) with some rock fragments		D1-2	7			
			Driller indicates difficult drilling **Monterey Formation**						
	10		Light brown with orange veining and orange mottling, weakly cemented, silty, fine sandstone		D1-3	90/9"			
	15		Light brown with orange veining, weakly to moderately cemented, silty, fine sandstone, slightly moist		D1-3	50/3"			
			Bottom of Hole = 15.5 Feet No Grounwater Encountered Backfilled with Soil Cuttings						
	20								
	25								

Appendix E

Verizon Wireless • Proposed Base Station (Site No. 248125)
2518 Pfeiffer Lane • Pinole, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 248125) proposed to be located at 2518 Pfeiffer Lane in Pinole, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install directional panel antennas within a new structure, configured to resemble a water tower, to be located at 2518 Pfeiffer Lane in Pinole. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5,000–80,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
BRS (Broadband Radio)	2,600	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

General Facility Requirements

Base stations typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some

height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including zoning drawings by Diamond Engineering Services, Inc., dated September 29, 2014, it is proposed to install nine Andrew Model SBNHH-1D65B directional panel antennas on a new 32½-foot structure, configured to resemble a water tower, to be sited to the west of the two-story residence located at 2518 Pfeiffer Lane in Pinole. The antennas would be mounted with no downtilt at an effective height of about 27 feet above ground and would be oriented in groups of three toward 30°T, 135°T, and 290°T. The maximum effective radiated power in any direction would be 8,260 watts, representing simultaneous operation at 4,460 watts for AWS, 1,900 watts for PCS, and 1,900 watts for 700 MHz service; no operation is proposed in the cellular band. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.087 mW/cm^2, which is 8.8% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby residence* is 13% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

* Located at least 20 feet away, based on photographs from Google Maps.

No Recommended Mitigation Measures

Due to their mounting locations, the Verizon antennas would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. It is presumed that Verizon will, as an FCC licensee, take adequate steps to ensure that its employees or contractors receive appropriate training and comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the base station proposed by Verizon Wireless at 2518 Pfeiffer Lane in Pinole, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-20309, which expires on March 31, 2015. This work has been carried out under her direction, and all statements are true and correct of her own knowledge except, where noted, when data has been supplied by others, which data she believes to be correct.

Andrea L. Bright, P.E.
707/996-5200

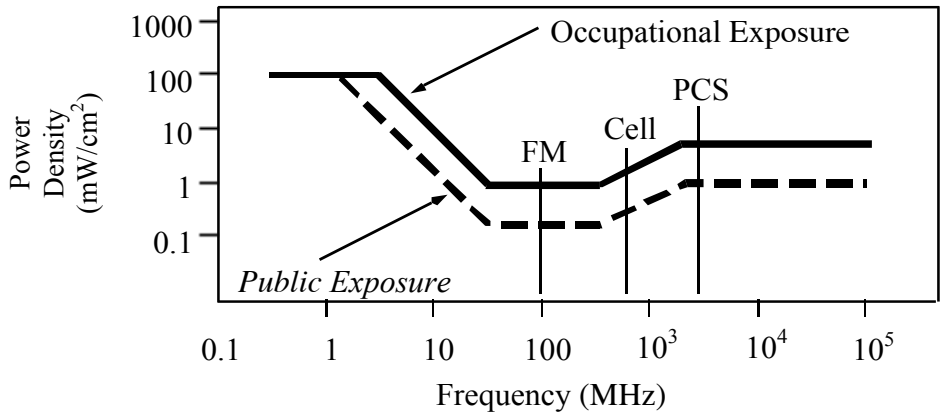
November 4, 2014

FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency	Electromagnetic Fields (f is frequency of emission in MHz)					
Applicable Range (MHz)	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm^2)	
0.3 – 1.34	614	*614*	1.63	*1.63*	100	*100*
1.34 – 3.0	614	*823.8/ f*	1.63	*2.19/ f*	100	*180/ f^2*
3.0 – 30	1842/ f	*823.8/ f*	4.89/ f	*2.19/ f*	900/ f^2	*180/ f^2*
30 – 300	61.4	*27.5*	0.163	*0.0729*	1.0	*0.2*
300 – 1,500	$3.54\sqrt{f}$	*$1.59\sqrt{f}$*	$\sqrt{f}/106$	*$\sqrt{f}/238$*	f/300	*f/1500*
1,500 – 100,000	137	*61.4*	0.364	*0.163*	5.0	*1.0*



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm^2,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm^2,

where θ_{BW} = half-power beamwidth of the antenna, in degrees, and
P_{net} = net power input to the antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of the antenna, in meters, and
η = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$$\text{power density} \quad S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in } mW/cm^2,$$

where ERP = total ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, and
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

Appendix F

Verizon Wireless • Proposed Base Station (Site No. 248125 "Pinole Park")
2518 Pfeiffer Lane • Pinole, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal telecommunications carrier, to evaluate its base station (Site No. 248125 "Pinole Park") proposed to be located at 2518 Pfeiffer Lane in Pinole, California, for compliance with appropriate guidelines limiting sound levels from the installation.

Executive Summary

Verizon proposes to install a new base station at 2518 Pfeiffer Lane in Pinole, California, to include outdoor equipment cabinets and a stand-by diesel generator within a fenced enclosure. Noise levels from the operation will be below the allowed municipal limit.

Prevailing Standard

The City of Pinole addresses noise exposure in Chapter 9 (Health and Safety) of its General Plan, including the following recommended limits for noise as stated in Action HS.9.1.1:

	Daytime Limit *(7 am to 10 pm)*	Nighttime Limit *(10 pm to 7 am)*
Hourly Average	55 dBA	45 dBA
Maximum Level	70 dBA	65 dBA

Figure 1 attached describes the calculation methodology used to determine applicable noise levels for evaluation against the prevailing standard.

For recognized land uses in unincorporated areas beyond the City limits, Contra Costa County's noise limits would apply. The County sets forth limits on sound levels in its 2005–2020 General Plan, Chapter 11 "Noise Element." The most restrictive noise limit in Figure 11-6 is 60 dBA L_{dn}; that composite "day-night" average incorporates a 10 dBA penalty during nighttime hours (10 pm to 7 am), to reflect typical residential conditions, where noise is more readily heard at night.

Figure 1 attached describes the calculation methodology used to determine applicable noise levels for evaluation against the prevailing standard.

General Facility Requirements

Wireless telecommunications facilities ("cell sites") typically consist of two distinct parts: the electronic base transceiver stations ("BTS" or "cabinets") that are connected to traditional wired telephone lines, and the antennas that send wireless signals created by the BTS out to be received by individual subscriber units. The BTS are often located outdoors at ground level and are connected to the antennas by coaxial cables. The BTS typically require environmental units to cool the electronics

inside. Such cooling is often integrated into the BTS, although external air conditioning may be installed, especially when the BTS are housed within a larger enclosure.

Most cell sites have back-up battery power available, to run the site for some number of hours in the event of a power outage. Many sites have back-up power generators installed, to run the site during an extended power outage.

Site & Facility Description

Based upon information provided by Verizon, including zoning drawings by Diamond Engineering Services, dated March 19, 2015, that carrier proposes to install four equipment cabinets beneath a proposed 32½-foot tall antenna structure, configured to resemble an elevated water tank, and an emergency back-up power generator, all to be sited within a new fenced compound on the triangular hilltop parcel at the end of Pfeiffer Lane in Pinole. For the purpose of this study, the cabinets with active cooling fans are assumed to be two Purcell FLX16WS BTS cabinets, one CommScope RBA-72 battery cabinet, and one cabinet cooled by a McLean T-20 unit.

A Generac Model SD030 back-up diesel generator would be installed, configured with the manufacturer's Level 2A sound enclosure, for emergency use in the event of an extended commercial power outage. The generator is typically operated with no load for a single 15-minute period once a week during daytime hours on a weekday, to maintain its readiness for emergency operation. A sound wall is proposed along the north and west faces of the generator, to reduce noise in those directions.

The nearest property lines are to the northwest and southwest, about 86 and 116 feet from the near edges of Verizon's proposed enclosure, respectively; the adjacent property to the east, about 187 feet away, is in unincorporated Contra Costa County.

Study Results

The manufacturers provide the following maximum noise levels from their equipment:

Equipment	Maximum Noise Level	Reference Distance
CommScope RBA-72	58.7 dBA	5 feet
Purcell FLX16WS	64.7 dBA	1 meter
[McLean T-20]	64.0 dBA	5 feet
Generac SD030	63.0 dBA	23 feet

The calculated noise levels at the nearest property lines, for the simultaneous operation of all the fans in all four Verizon cabinets and the emergency operation of the generator, are 44.6 and 42.3 dBA, at the northwest and southwest property lines, respectively. These levels meet the City's most restrictive, nighttime limit of 45 dBA. The maximum calculated level at the east property line,

adjacent to a parcel in the County, is 44.5 dBA; this is equivalent to 50.9 dBA L_{dn}, well below the County's most restrictive limit of 60 dBA L_{dn}.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that the operation of the Verizon Wireless base station proposed to be located at 2518 Pfeiffer Lane in Pinole, California, will comply with the pertinent standards limiting acoustic noise emission levels.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2015. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

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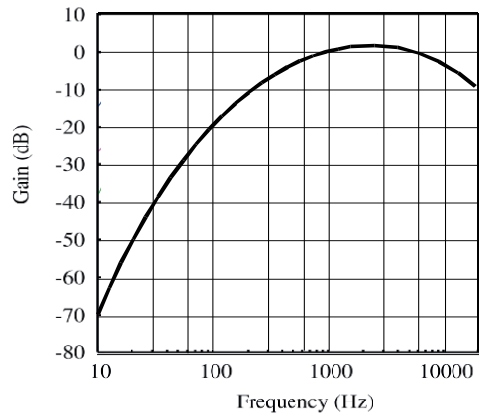
April 14, 2015

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("L_P") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 µPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

$$L_T = 10 \log \left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.