AGENDA FOR THE

CITY OF PINOLE PLANNING COMMISSION
REGULAR MEETING

Monday, November 16, 2015
7:00 P.M.
City Council Chambers, 2131 Pear Street, Pinole, CA 94564

In compliance with the Americans with Disabilities Act of 1990, if you need special assistance to participate in a City meeting or you need a copy of the agenda, or the agenda packet in an appropriate alternative format, please contact the Development Services Department at (510) 724-9014. Notification of at least 48 hours prior to the meeting or time when services are needed will assist the City staff in assuring that reasonable arrangements can be made to provide accessibility to the meeting or service.

Assistant listening devices are available at this meeting. Ask staff if you desire to use this device.

CONSENT CALENDAR:

All matters listed under the Consent Calendar are considered to be routine and non-controversial. These items will be enacted by one motion and without discussion. If, however, any interested party or Commissioner(s) wishes to discuss a consent item, it will be removed from the Consent Calendar and taken up in order after the last item under New Business.

PROCEDURE FOR CONSIDERING AN AGENDA ITEM:

At the beginning of an item, the Chair will read the description of that item as stated on the Agenda. The City Staff will then give a brief presentation of the proposed project. The Commission may then ask Staff questions about the item.

For those items listed as Public Hearings, the Chair will open the public hearing and ask the applicant if they wish to make a presentation. Those persons in favor of the project will then be given an opportunity to speak followed by those who are opposed to the project. The applicant will then be given an opportunity for rebuttal.

The Public Hearing will then be closed and the Commission may discuss the item amongst themselves and ask questions of Staff. The Commission will then vote to approve, deny, approve in a modified form, or continue the matter to a later date for a decision. The Chair will announce the Commission's decision and advise the audience of the appeal procedure.

Note: No Public Hearings will begin after 11:00 p.m. Items still remaining on the agenda after 11:00 p.m. will be held over to the next meeting.

CITIZEN PARTICIPATION:

Persons wishing to speak on an item listed on the Agenda may do so when the Chair asks for comments in favor of or in opposition to the item under consideration. After all of those persons wishing to speak have done so, the hearing will be closed and the matter will be discussed amongst the Commission prior to rendering a decision.

Prior to speaking on an item, you must fill out one of the speaker cards (available at the back of the Council Chambers) and hand it to the Secretary. If a number of persons wish to speak on an item, the Chair may limit each speaker to a set time period in which to address the Commission.

Any person may appeal an action of the Planning Commission or of the Planning Manager by filing an appeal with the City Clerk, in writing, within ten (10) days of such action. Following a Public Hearing, the City Council may act to confirm, modify or reverse the action of the Planning Commission or Planning Manager. The cost to appeal a decision is $803.

Note: If you challenge a decision of the Commission regarding a project in court, you may be limited to raising only those issues you or someone else raised at the public hearing or in writing delivered to the City of Pinole at, or prior to, the public hearing.

A. **CALL TO ORDER**

B. **PLEDGE OF ALLEGIANCE AND ROLL CALL**

C. **CITIZENS TO BE HEARD:**

The public may address the Planning Commission on items that are within its jurisdiction and not otherwise listed on the agenda. Planning Commissioners may discuss the matter brought to their attention, but by State law (Ralph M. Brown Act), action must be deferred to a future meeting. Time allowed: five (5) minutes each.

D. **CONSENT CALENDAR**: None

E. **PUBLIC HEARINGS:**

1. **Conditional Use Permit (CUP14-13) and Design Review (DR 14-26): Pinole Verizon Wireless Communications Facility project.**

Request: Consideration of a conditional use permit and design review request to construct a new wireless communications facility including the installation of nine panel antennas mounted within a 34-foot tall faux water tank on a concrete pad foundation and an approximately 653 square foot fenced equipment area, located below a faux water tank. The project includes a stand-by 30 kilowatt (kW) diesel generator with UL 142 fire-rated 132-gallon diesel fuel tank and underground utility lines leading up to the proposed facility from Pfeiffer Lane. Grapevine plantings would be included on the north, west, and south sides of the fenced equipment area for partial screening purposes. The total disturbed area for the project would be approximately 4,483 square feet which includes the driveway modifications, utility trenches, and equipment area.

Environmental Review: The City prepared a draft Mitigated Negative Declaration (MND) to identify the potential environmental impacts of the project. The Planning Commission will consider adoption of an Initial Study/MND and Mitigation Monitoring and Reporting Program (MMRP) in conjunction with consideration of the request.

Applicant: Pamela Nobel
Verizon Wireless

2010 Crow Canyon Place, Suite 355
San Ramon, CA 94583

Location: 2518 Pfeiffer Lane
Pinole, CA 94564
APN: 360-131-036

Project Planner: Mike Moore, Contract Planner

F. **OLD BUSINESS:** None

G. **NEW BUSINESS:** None

H. **CITY PLANNER'S/COMMISSIONER'S REPORT:**

I. **COMMUNICATIONS:**

J. **NEXT MEETING:**

Planning Commission Regular Meeting, December 14, 2015 at 7:00PM

K. **ADJOURNMENT**

POSTED: November 12, 2015

Winston Rhodes

Winston Rhodes, AICP
Planning Manager

Item E1

Memorandum

TO: PINOLE PLANNING COMMISSION

FROM: MIKE MOORE, CONTRACT PLANNER
REVIEWED BY WINSTON RHODES, AICP, PLANNING MANAGER

SUBJECT: VERIZON WIRELESS COMMUNICATION FACILITY, 2518 PFEIFFER LANE

DATE: NOVEMBER 16, 2015

Property Owner:	**Applicant/Representative:**
Michael & Debra Evans 2518 Pfeiffer Lane Pinole, CA 94564	Pamela Nobel NSA Wireless (on behalf of Verizon) 12893 Acosta Blvd., Suite G San Ramon, CA 94583

FILE:	CUP14-13 / DR 14-26
LOCATION:	2518 Pfeiffer Lane
APN:	360-131-036
ZONING:	Suburban Residential (R-1)
GP LU:	Suburban Residential (SR)

REQUEST

The applicant is seeking to establish a new wireless communications facility on a portion of private property located at 2518 Pfeiffer Lane that will include a nine panel antenna enclosed within a 34 foot tall structure designed to appear as a small private water tower and ground-based support equipment including fenced and landscaped equipment cabinets, a generator, and diesel fuel tank. The proposed location of this facility is the result of a settlement agreement negotiated between the City of Pinole and Verizon Wireless and replaces the formerly City-approved wireless communications facility that was to be located in Pinole Valley Park. The Planning Commission is the required reviewing authority under the Zoning Code for new conditional use permit and comprehensive design review requests and related environmental review.

STAFF RECOMMENDATION

Adopt Resolution 15-15 approving a Mitigated Negative Declaration, Mitigation Monitoring and Reporting Program, Conditional Use Permit and Design Review for the new wireless communications facility, including the proposed 34-foot water tower structure and related facilities and landscaping with conditions.

SITE LOCATION

The proposed project is located on the easterly portion of a hilltop private property at 2518 Pfeiffer Lane. The property is located at the end of Pfeiffer Lane, a short steep street off of Pfeiffer Way in southeastern Pinole. The site was selected to address wireless communication network gaps in the neighborhoods adjacent to the subject property and along Pinole Valley Road.

Figure 1 – Site Location Map

Direction from Project Site	Land Use
North	Single-family Residential
West	Single-family Residential
South	Single-family Residential
East	Open Space

PROJECT DESCRIPTION

The project involves the development of a Verizon Wireless telecommunications facility at 2518 Pfeiffer Lane. The proposed project would include the installation of nine panel antennas within a 34-foot structure designed to appear as a small, private water tower. The water tower is only intended to disguise the antennas and appear as an accessory structure to the adjacent private residence and garage. All required support equipment will be placed at the base of the water tower structure within a 27 foot, 5 inch by 19 foot, 5 inch area to be leased by the applicant from the property owners and residents of 2518 Pfeiffer Lane, Michael and Debra Evans. Support equipment includes an equipment cabinet and a generator and fuel tank located at the base of the water tower structure (see sheet A-1 of project plans). The equipment cabinet would be placed on a new concrete pad. The 30 kilowatt diesel generator would typically run once a week for approximately 15 minutes. A 132-gallon Underwriters Laboratories (UL) 142 fire-rated diesel fuel tank would be provided for the generator. The fuel tank is constructed with a heavy gauge steel secondary containment space to prevent fuel from leaking into the soil or down into Pinole Creek at the base of the subject property. In addition to a chain link security fence, a 6-foot solid redwood fence with a lattice top will surround the equipment cabinet and water tower base. Additional visual screening will be provided by grape vines to be planted on the north, south and west sides of the site (the sides facing adjacent residential properties).

In comparison to a standard monopole where the antennas are fully exposed to view, or the "monopine" design option intended to appear as a tree, the proposed water tower structure is designed and uses materials and colors intended to blend with the more rural residential nature of the property and immediate area. Operation of the site would be performed remotely, except for testing the on-site generator. Approximately one trip per month would be required for routine maintenance. The facility will be accessed by an extension of the existing driveway at the end of Pfeiffer Lane that currently serves as access to the existing residence and garage of the property owners.

BACKGROUND

Prior to choosing the site at 2518 Pfeiffer Lane, the applicant had identified the need for an additional wireless communications facility in the Pinole Valley Park vicinity to improve network service coverage and capacity along the southern portion of Pinole Valley Road. The applicant selected this site after considering several other potential sites within Pinole Valley Park in

conjunction with staff and the Planning Commission Development Review Sub-Committee. The criteria for establishing new wireless communication facility sites are very exacting as far as both the height and location of equipment.

The applicant submitted a Conditional Use Permit application in September 2011. Property lease negotiations between the City and Verizon took place during late 2011 and much of 2012. In August and October of 2012, the applicant provided further information to address outstanding incompleteness items. An Initial Study/Mitigated Negative Declaration (IS/MND) was prepared to evaluate the potential environmental impacts of the proposed project and circulated for public review and comment from February 13 to March 6, 2013. On March 25, 2013, the Planning Commission approved the Mitigated Negative Declaration and the Conditional Use Permit. In response to community concerns about the City's decision to locate the proposed facility in a City park, the City and Verizon negotiated a settlement agreement that terminated the lease of the park site and allowed the approved Conditional Use Permit to expire. The agreement contemplated that Verizon would pursue an application for a replacement facility on private property and that the City would process the application in accordance with all applicable laws. The City Council approved the settlement agreement on June 2, 2015 and the agreement was finalized and executed on July 22, 2015.

In December 2014 the applicant filed a new application for a Conditional Use Permit and Design Review. Like the previous Verizon application, the proposed project, as described in this report, is also subject to review pursuant to the California Environmental Quality Act (CEQA) and an Initial Study was prepared. The Initial Study, all public comments on the Initial Study, and responses to comments on the Initial Study and the resulting determination that a Mitigated Negative Declaration be prepared are included with this report as Attachment B.

ANALYSIS

General Plan Conformance

The project site is designated as Suburban Residential (SR) in the City's General Plan Land Use Map. As defined on page 5.0-19 of the Land Use and Economic Development Element of the General Plan, this designation is intended "for single-family development that is typical of most residential areas of the city. This is the single largest residential category. One dwelling unit per parcel, with the potential for a secondary dwelling unit. Other uses which may be considered potentially compatible with single- family neighborhoods include, but are not limited to, religious facilities, daycare and group care facilities, schools, cemeteries and home occupations subject to compliance with City standards."

The General Plan Community Services and Facilities Element includes policy language which supports improvements to wireless communication infrastructure within the City to help respond and recover in the event of an emergency; to provide easily accessible information about City actions, activities, and services; and to help conduct City business in an open, transparent, and efficient fashion. Relevant policy language is provided below which supports improvements to existing wireless communication networks within the City.

Policy CS.2.5 The City, its citizens, businesses and services will be prepared for effective response and recovery in the event of emergencies or disasters.

Action CS.2.5.4	Locate and design emergency buildings and vital utilities, communication systems and other public facilities so that they can remain operational during and after an emergency or disaster.
GOAL CS.11	Provide reliable communication and information management services to provide timely, easily accessible information about City actions, activities, programs and services.
Policy CS.11.2	The City will optimize Internet communication and other available media communication methods as a sustainable way to provide and receive information from Pinole citizens and as a means of conducting City business in an open, transparent and efficient fashion.
Policy CS.11.4	The City will strive to ensure reliable communications systems during natural and man-made emergencies.

Although the proposed project is intended to improve wireless communication only for Verizon customers, the site was selected and the proposed facility was designed in a manner that will close gaps in the existing wireless network and handle additional electronic data transmission demand in this portion of the City.

Zoning Conformance

The project site is also zoned Suburban Residential (R-1) on the City's Zoning Map. The proposed use is a conditionally permitted use in the R-1 Zone. Chapter 17.76 of the Zoning Code regulates development of wireless communications facilities within the City. This Chapter includes development standards by which to evaluate new wireless communications facilities. The pertinent development standards are provided and discussed below.

1. All wireless telecommunication facilities shall comply with all applicable requirements of the current uniform codes as adopted by the city and shall be consistent with the general plan and this code, as well as other standards and guidelines adopted by the city, and all applicable state and federal law.

   A draft condition of approval has been included to assure that this standard is satisfied.

2. All wireless telecommunication facilities shall comply at all times with the FCC rules, regulations, and standards, and any other applicable federal, state, or local laws or regulations.

   A draft condition of approval has been included to assure that this standard is satisfied. The Federal Communications Commission FCC regulates human exposure to radio frequency radiation. An evaluation of radio frequency radiation has been prepared by Hammett & Edison, Inc. for the proposed project. The evaluation concludes that operation of the base station proposed by Verizon Wireless at 2518 Pfeiffer Lane will comply with prevailing standards limiting public exposure to radio frequency energy. The evaluation also concludes that the highest calculated level in publicly accessible areas is much less than the prevailing standards allow.

3. Sufficient anti-climbing deterrents, including warning signs (ANSI Standards C95.2-1982 Warning Symbol), shall be incorporated into the facility, as needed, to reduce the potential for trespass and injury.

The proposed project includes a combination of chain link and a 6-foot solid redwood fence with lattice on top to discourage trespassing. The facility is also located on private property. A draft condition of approval is included requiring the preparation of a security plan prior to the issuance of a building permit to prevent crime including trespassing both during construction and during the operation of the proposed communications facility.

4. All wireless telecommunication facilities shall be located so as to minimize their visibility and utilize the latest technology available to minimize visual impacts. This site is also limited to serve only Verizon. Co-location of facilities for other wireless carriers is prohibited.

   The proposed facility location and design was selected to help screen ground-based equipment, reduce the overall height of the antennas (34 feet compared to a standard 70+ foot monopole). The proposed antenna structure is designed to appear as a small private water tower and ground-based equipment will be screened by solid redwood fencing and rows of grape vines. A draft condition of approval has been included to prohibit co-location of any other wireless carrier's equipment.

5. Wireless telecommunication facilities shall be located, designed, and screened to blend with existing natural or built surroundings so as to reduce visual impacts of the technological requirements of the proposed wireless telecommunication facility and, in so far as possible, appear compatible with neighboring residences and the character of the community.

   The site location and project features are intended to have the site blend in with the existing residential surroundings. The proposed water tower will appear to be slightly taller than the existing nearby garage on the site and the proposed colors and materials are intended to blend with the existing residential development in the immediate area. The project is also subject to Design Review approval in accordance with Section 17.12.150 "Comprehensive Design Review" of the Pinole Municipal Code. The design review analysis of the project, including consistency with the applicable provisions of the Municipal Code, can be found in a later section of this staff report.

6. All related equipment shall have a non-reflective finish and shall be painted or otherwise treated to minimize visual impacts and placed in underground vaults whenever possible. All utilities (i.e., gas, electric, cable, phone, and water) shall be placed underground.

   A draft condition of approval has been included to utilize non-reflective paint finish on proposed equipment.

7. All wireless telecommunication facilities that are not mounted on existing structures shall comply with at least one (1) of the following:

   a. Facilities shall be screened from the view of surrounding properties as much as possible and co-located with existing facilities or structures so as not to create substantial visual, noise, or thermal impacts;

   b. Facilities shall be sited within areas with substantial screening by existing vegetation;

   c. Facilities shall be designed to appear as natural features found in the immediate area, such as trees or rocks, so as to be effectively unnoticeable;

   d. Facilities shall be screened with additional trees and other native or adapted vegetation that shall be planted and maintained around the facility, in the vicinity of the project site, and along access roads in appropriate situations, where such vegetation is required to screen telecommunication facilities. Such landscaping,

including irrigation, shall be installed and maintained by the applicant, as long as the entitlement is in effect; or

e. Existing on-site vegetation shall be preserved or improved and disturbance of the existing topography shall be minimized. Landscaping shall be required in informal natural-looking clusters in the vicinity of any wireless telecommunication facility, in addition to screening of the facility.

The proposed project, as conditioned, includes features that satisfy 8a, 8b, 8d, and 8e above.

9. All proposed equipment cabinets/structures, accessory structures, and other related equipment shall be continuously maintained in good condition. This shall include keeping equipment cabinets and structures graffiti-free and maintaining all security fences and warning signs in good condition.

   A draft condition of approval has been added to satisfy this development standard.

10. The display of signs or advertising on wireless telecommunication facilities is prohibited.

    Display signs or advertising is not proposed.

11. Exterior lighting shall not be allowed on commercial wireless telecommunication facilities except for that required for use of authorized persons on-site during hours of darkness or where the antenna structure owner or registrant is required to light the antenna structure by the terms of the FAA antenna structure registration applicable to the facility.

    No exterior lighting is currently proposed.

12. Freestanding wireless telecommunication facilities shall not be located within the required setback of any residential development and shall be at least one-hundred (100) feet from a pre-existing residential use.

    The proposed facility is not located within required residential development setbacks and is more than 100 feet from the nearest residential use.

13. All freestanding wireless telecommunication facilities shall be designed at the minimum functional height required for the coverage area unless it is determined that additional height is needed for architectural reasons or is part of a city-approved plan to reduce the impact(s) of future installations.

    The proposed 34-foot water tower is the minimum functional height required to serve the coverage area.

14. In appropriate cases, the proposed wireless telecommunication facilities may be located on a city-owned or controlled property or within city rights-of-way, provided the appropriate applications are submitted, easements procured, and any other relevant procedures complied with.

    The proposed project is located on private property.

The Chapter 17.76 of the City's Zoning Code includes development standards that apply specifically to free-standing projects proposed in open space areas. These pertinent development standards and how they relate to the proposed project are discussed below.

1. Wireless telecommunication facilities visible on or above a ridgeline or knoll, as shown on the General Plan Visual Resources Map, shall be prohibited unless, prior to approving the application, the designated approving authority determines that the applicant has demonstrated that there is no feasible alternative.

The proposed project is not on or above a ridgeline or knoll depicted on the General Plan Visual Resources Map.

2. All proposed wireless telecommunication facilities should be located within easy reach of existing access roads, whenever possible. Unless visual impacts can be adequately mitigated, no new access roads on a ridgeline or knoll shall be allowed with any proposed ground-mounted antenna.

   The proposed project site located at the end of Pfeiffer Lane off of Pfeiffer Way. Service vehicles would utilize Pfeiffer Lane and an existing paved driveway (which also serves the existing residence) for periodic site maintenance access.

3. All proposed wireless telecommunication facilities shall incorporate techniques and be designed as a stealth facility. Such techniques include camouflaging facilities to disguise and/or blend into the surrounding environment, or to disguise facilities as pieces of art or sculptures, flag poles, telephone poles, light standards, or other visual forms to avoid an adverse visual impact.

   The applicant is proposing to contain the antennas in a water tower structure designed to appear as an accessory structure of the existing residential use.

4. All related equipment shall be designed and located so as to minimize visual impacts and/or to be screened from public view. Screening techniques may include landscaping and/or architectural treatment to make them compatible with existing buildings and/or a partial or complete burial of the equipment.

   In addition to the proposed water tower, the proposed project would utilize a solid redwood fence and rows of grape vines to help minimize visual impacts. The project location also reduces the overall height of the structure to 34 feet, which is slightly taller than the existing garage on the site, but within the maximum height limit of the R-1 zone.

5. 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 proposed project is more than 1,000 horizontal feet from a major or minor ridgeline as shown on Figure 10.4 of the General Plan. The proposed project is also well over 100 vertical feet of both the nearest major or minor ridgeline shown on Figure 10.4.

6. Development of a wireless telecommunication facility shall conform generally with the natural contours to avoid excessive grading.

   The proposed project site / lease area was selected in large part due to the availability of an existing flat building pad for the tower and equipment. Only minimal site grading is required and most of that related to extending the existing driveway in order to serve the site. A draft condition of approval has been added to the accompanying draft resolution requiring submittal of a detailed grading plan for review and approval prior to obtaining a building permit.

The proposed project, as conditioned, satisfies the pertinent development standards within the Zoning Code.

DESIGN REVIEW

Section 17.12.150 (A) of the Pinole Municipal Codes states that "comprehensive design review is intended to . . . encourage development in keeping with the desired character of the city, and to ensure physical and functional compatibility between uses." In addition, Chapter 17.76, which sets forth the requirements for wireless facilities, states that "wireless telecommunication facilities shall be located, designed, and screened to blend with existing natural or built surroundings so as to reduce visual impacts of the technological requirements of the proposed wireless telecommunication facility and, in so far as possible, appear compatible with neighboring residences and the character of the community." To comply with these requirements, the applicant has proposed to enclose the wireless antenna array within a water tower designed to appear as an accessory structure serving the existing single-family residence. The ground-mounted equipment cabinet, generator and fuel tank will be screened by a 6-foot solid redwood fence topped with lattice typically found on many residential properties. Additional screening will be provided by existing trees on the site and newly planted rows of grapevines.

Wireless carriers typically have three design options for their antennas and equipment depending on a given site: an unadorned monopole (a single, tall steel pole on which the antennas are directly mounted), a "monopine", or faux tree intended to disguise the pole and the antennas, or integrating the antennas and equipment into an existing or new structure that is more design compatible with the surroundings. The applicant has chosen the third option. The existing elevation of the project site gives the wireless carrier the ability to reduce the overall height of antennas and still provide the desired coverage area. As such, the proposed water tower structure is 34 feet tall at the tip of the roof when measured from the finished grade. That height is within the 35-foot maximum height limit in the R-1 zone and will be 16 feet taller than the ridgeline of the adjacent existing garage on the property. The diameter of the tank structure is 13 feet. While there are no similarly appearing structures in the vicinity, the overall height, design details, materials and landscaping are intended to reflect the character of the surrounding residential neighborhood. The most visible elements of the project – the water tank and surrounding fencing are of painted wood panels and natural redwood, respectively. The open structure supporting the tank is painted steel. A portion of the concrete block wall providing a noise barrier for the generator and concrete retaining walls visible above finished grade will be screened by existing trees (north elevation) and two rows of proposed grape vines to be planted on the north, west and south sides of the site. All of the required equipment, including the generator and fuel tank will be completely screened from any adjacent views by the proposed redwood fence, concrete block wall and the existing and proposed landscaping.

Section 17.12.150 (H) identifies four criteria that must be considered by the Planning Commission "in conducting comprehensive design review." They are as follows:

1. Considerations relating to site layout, the orientation and location of building, signs, other structures, open spaces, landscaping, and other development features in relation to the physical characteristics, zoning, and land use of the site and surrounding properties.

The project site is located on an undeveloped portion of an existing hilltop single family residential lot. The proposed water tower structure and related equipment and facilities are located and oriented to appear as an accessory structure to the existing single family residence and garage. The wireless facility is fully screened from view by the water tower design and by a

solid redwood fence with a lattice top and all of the facilities and structures meet R-1standards for setbacks and height. Access to the site is provided by an extension of the existing driveway serving the property and will be constructed with pervious pavers. Site drainage will include a vegetated bio-swale on the south side of the site and the overall site design includes retaining walls and other erosion control measures.

2. Considerations relating to traffic, safety, and traffic congestion, including the effect of the development plan on traffic conditions on abutting streets, the layout of the site with respect to locations and dimensions of vehicular and pedestrian entrances, exits, driveways, and walkways, the adequacy of off-street parking facilities to prevent traffic congestion, and the circulation patterns within the boundaries of the development.

The site will be accessed by an existing driveway off of Pfeiffer Lane. The existing residence is one of two single family residences served by Pfeiffer Lane. The project will not generate any significant additional traffic on abutting streets, nor create any safety concerns. The only traffic to the site related to the project will be once a month for a maintenance check. The development of the site does not affect the access or parking serving the existing residence.

3. Considerations necessary to ensure that the proposed development is consistent with the general plan and all applicable specific plans or other city plans, including, but not limited to, the density of residential units.

As discussed previously in this report, the project conforms to the applicable policies of the Pinole General Plan and the applicable provisions of the Zoning Ordinance.

4. Considerations relating to the availability of city services, including, but not limited to, water, sewer, drainage, police and fire, and whether such services are adequate based upon city standards.

Project drainage will be designed and constructed in accordance with City standards. Water service is only required to serve the proposed landscaping on the site. A condition has been applied to the project requiring the preparation and approval of a safety plan in conjunction with the Police Department. The project fuel tank and the concrete pad on which it is located are designed to prevent rupture and contain any potential leakage. A turnaround for emergency vehicles will be constructed on site.

ENVIRONMENTAL REVIEW

An Initial Environmental Study was prepared for the project to satisfy California Environmental Quality Act (CEQA) requirements. Five environmental factors were determined to be potentially impacted by the proposed project. These factors included biological resources, cultural resources, geology and soils, hydrology and water quality, and noise. All of these factors were determined to be less than significant after mitigation measures were applied.

The Initial Study/Mitigated Negative Declaration was made available for public review and comment pursuant to CEQA requirements. The City received 12 comment letters or email messages during the comment period. The comment letters and messages did not result in changes the conclusions of the environmental analysis. The Initial Study/Mitigated Negative and the comment letter and response to the comment are attached to this staff report and hereby incorporated by reference (see Attachment C). A mitigation monitoring and reporting program

(MMRP) has been prepared to help ensure that all mitigation measures are performed during implementation of the project, if approved. The MMRP is included as Exhibit B to the proposed draft resolution. Additionally, a draft condition of approval has been added requiring the MMRP and all proposed conditions of project approval to appear on the construction plans.

A detailed assessment of the potential environmental impacts from radio frequency (RF) radiation was completed as part of the Initial Study by the firm of Hammett & Edison. The assessment is included as Appendix E of the Initial Study. The federal Telecommunications Act of 1996 contains provisions concerning the placement of antenna structures and other facilities for use in providing personal wireless services. As required by this federal law, the Federal Communications Commission (FCC) adopted guidelines for environmental RF emissions. These guidelines apply to all transmitters licensed or authorized by the FCC, including antennas licensed to wireless service providers and the cellular telephones used by subscribers to the service. The guidelines are based upon recommendations of federal agencies with expertise in health and safety issues. As for proximity of nearby residences to the proposed antennas, the Federal Communications Commission (FCC) has created guidelines for human exposure to radio frequency electromagnetic fields. Specifically, the Telecommunications Act of 1996 states, "No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions." As mentioned above a RF radiation evaluation was conducted and concluded that the proposed project complies with FCC emissions guidelines.

CONCLUSION

The proposed project, as conditioned, is consistent with the City's General Plan and will improve wireless communication coverage and capacity within the southern portion of the City. The proposed project is also consistent with the Zoning Code development standards for wireless communications facilities. A Mitigated Negative Declaration has been prepared with an accompanying MMRP to ensure that potential project impacts are less than significant.

ATTACHMENTS

A. Draft Resolution 15-15 with Exhibit A: Conditions of Approval and Exhibit B Mitigation Monitoring and Reporting Program
B. Initial Study / Mitigated Negative Declaration with Response to Comments Received
C. Proposed project plans and Project Description date stamped received June 3, 2015
D. Verizon Wireless Facility sites and coverage maps date stamped received June 3, 2015

PLANNING COMMISSION RESOLUTION 15-15
WITH EXHIBIT A: CONDITIONS OF APPROVAL AND EXHIBIT B: MITIGATION MONITORING AND REPORTING PROGRAM

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF PINOLE APPROVING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING AND REPORTING PROGRAM AND APPROVING A RELATED CONDITIONAL USE PERMIT REQUEST (CUP 14-13) AND A DESIGN REVIEW REQUEST (DR 14-26) FOR A WIRELESS COMMUNICATIONS FACILITY INCLUDING NINE ANTENNAS WITHIN AN APPROXIMATELY 34-FOOT HIGH WATER TOWER STRUCTURE AND AN APPROXIMATELY 653 SQUARE FOOT GROUND-BASED SUPPORT EQUIPMENT AREA AT 2518 PFEIFFER LANE (APN: 360-131-036)

WHEREAS, Verizon Wireless,(hereinafter referred to as applicant) filed an application with the City of Pinole (hereinafter referred to as City) for a conditional use permit (CUP 14-13) and a design review request (DR 14-26) in order to operate a new wireless communications facility located at 2518 Pfeiffer Lane (APN: 360-131-036) in accordance with Title 17 of the Pinole Municipal Code; and

WHEREAS, the applicant has proposed the wireless communication facility to improve wireless communication coverage and capacity along Pinole Valley Road and the southern portion of the City; and

WHEREAS, an Initial Study was prepared and identified potentially significant adverse environmental effects in the areas of biological resources, cultural resources, noise, hydrology and water quality, and geology and soils; and

WHEREAS, mitigation measures have been identified that avoid the effects or mitigate the effects to a point where no significant environmental effects would occur, and the applicant has agreed to implement the proposed mitigation measures; and

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with City regulations and is designed to ensure compliance during project implementation; and

WHEREAS, the City determined that the mitigation measures proposed in the MMRP would reduce project impacts to a less than significant level and a Mitigated Negative Declaration should be prepared; and

WHEREAS, the City distributed the Notice of Intent (NOI) to adopt the Mitigated Negative Declaration on October 1, 2015 and the NOI was posted at the Contra Costa County Clerk's Office and made available at the City offices and the Pinole Library, pursuant to the California Environmental Quality Act (CEQA) Guidelines 15072; and

WHEREAS, a 30-day review and comment period was opened on October 1, 2015 and closed on October 30, 2015, and the City received written comments during the public review period and responded to the comments in the final Mitigated Negative Declaration; and

WHEREAS, the comments received do not alter the conclusions of the Initial Study/Mitigated Negative Declaration; and

WHEREAS, the Planning Commission of the City of Pinole is the appropriate authority to hear and take action on this project; and

WHEREAS, a notice of public hearing was distributed to all property owners of record within at least 500 feet of the project site and a notice was published in the November 6, 2015 edition of the West County Times as required by local and State law; and

WHEREAS, the Planning Commission has conducted a duly noticed public hearing to consider CUP 14-13 and DR 14-26 on November 16, 2015, and

WHEREAS, after the close of a duly noticed public hearing, the Planning Commission considered all public comments received both before and during the public hearing, the presentation by City staff, the staff report, and all other pertinent documents regarding the project Mitigated Negative Declaration and the proposed development project prior to taking action.

NOW, THEREFORE, the Planning Commission of the City of Pinole hereby finds, determines, and resolves as follows:

1. The Planning Commission has considered the full record before it, which may include but is not limited to such information as the staff report, testimony by staff and the public, and other materials and evidence submitted or provided to it. Furthermore the recitals set forth above are found to be true and correct and are incorporated herein by reference.

2. In accordance with the provisions of CEQA, an Initial Study/Mitigated Negative Declaration was prepared and properly circulated for public review wherein it was determined that project environmental impacts could be reduced to a less than significant level through implementation of project requirements and compliance with the MMRP and hereby approves the Mitigated Negative Declaration and the MMRP attached as Exhibit B.

3. The proposed wireless communications facility, as conditioned, is consistent with the City's General Plan and Municipal Code.

4. The establishment, maintenance, and operation of the proposed wireless communications facility, as conditioned, will not be detrimental to the health safety, peace, morals, comfort or general welfare of the persons residing or working in the vicinity of the project site or general welfare of the City of Pinole.

5. The site of the proposed wireless communications facility, as conditioned, is physically suitable for the type, density and intensity of use and related structures being proposed.

6. The proposed project as conditioned will not be contrary to the specific intent clauses, development regulations, or performance standards established for the zoning district in which it is located.

7. The proposed use and related structures as conditioned are compatible with other land uses, transportation and service facilities in the project vicinity.

8. The site layout, as well as the landscaping, lighting, and other development features, are compatible with and complement the existing surrounding environment and ultimate character of the area under the general plan and applicable specific plans.

9. Hereby approves Conditional Use Permit 14-13 and Design Review 14-26 as provided in the staff report, and subject to the Conditions of Approval attached as Exhibit A and the subject to the MMRP attached as Exhibit B to this Resolution.

10. The approval of Conditional Use Permit 14-13 and Design Review 14-26 shall terminate on November 16, 2016, unless exercised and actual construction or alteration under valid permits has begun within said period or a written request has been submitted to the City, prior to the expiration date, for an extension of time as allowed under the Zoning Ordinance.

The above action is final unless an appeal is filed pursuant to Chapter 17.10 of the Pinole Municipal Code within ten (10) calendar days following Planning Commission action.

PASSED AND ADOPTED by the Planning Commission of the City of Pinole on this 16th day of November 2015, by the following vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

_____

Maureen Toms, Chair, 2015-2016

ATTEST:

_____

Winston Rhodes, AICP, Planning Manager

RESOLUTION 15-15 VERIZON WIRELESS COMMUNICATION FACILITY
EXHIBIT A CONDITIONS OF APPROVAL

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
1.	If any of these conditions are found to be disregarded, the use permit for the wireless communication facility will be subject to revocation pursuant to Section 17.10.120 of the Pinole Municipal Code. If necessary, the Planning Commission may modify the use permit or may revoke the use permit after holding a noticed public hearing and making applicable findings.	Ongoing	Development Services	
2.	The project shall be constructed and operated in substantial compliance with the approved wireless facility development plans date stamped received June 3, 2015 and the accompanying project description and material submitted for the Conditional Use Permit and Design Review request unless modified by the conditions of approval below.	Ongoing	Planning	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
3.	The project shall be constructed and operated in a manner which is consistent FCC rules, regulations and standards, and with all applicable federal, State, and local laws. The Applicant shall provide the Development Services Department with monitoring reports, upon request, confirming that facility operations, including radio frequency (RF) emissions, are consistent with FCC requirements.	Ongoing	Planning	
4.	The Applicant shall hold harmless the City, its Council Members, its Planning Commission, officers, agents, employees, and representatives from liability for any award, damages, costs and fees incurred by the City and/or awarded to any plaintiff in an action challenging the validity of this permit or any environmental or other documentation related to approval of this permit. Applicant further agrees to provide a defense for the City in any such action.	Ongoing	Planning	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
5.	All building permit drawings and subsequent construction shall substantially conform to the approved planning application drawings. The Planning Manager shall determine whether the modification requires additional approval of the Planning Commission or City Council.	Ongoing	Planning	
6.	Failure to obtain prior approval to modify the approved plans may result in having to pay double the original planning application permit fee and/or withholding of the final inspection until such time as the modification(s) to the plans has been reviewed and approved by the Planning Manager or the Planning Commission.	Ongoing	Planning	
7.	If the operation of the use results in conflicts pertaining to parking, noise, nuisance, traffic or other impacts, at the discretion of staff, the use permit may be referred to the Planning Commission for subsequent review at a public hearing and possible revocation in accordance with Title 17 of the Pinole Municipal Code.	Ongoing	Planning	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
8.	Subsequent facility modifications may be reviewed and approved administratively. The Planning Manager shall review plans and determine if an amendment to the Use Permit is required.	Ongoing	Planning	
9.	The applicant and property owner shall work cooperatively with the Police Department on an ongoing basis to establish an effective crime prevention strategy and implement security measures as needed.	Ongoing	Police	
10.	The project site shall include clearly displayed address signage information to facilitate timely emergency response.	Ongoing	Development Services, Fire and Police	
11.	The applicant shall keep the site clear of graffiti and repair any vandalism damage on a regular and continuous basis.	Ongoing	Development Services and Police	
12.	The applicant and property owner shall ensure that landscape material located in the vicinity of the tower is well-maintained. Any landscaping planting material that dies shall be promptly replaced.	Ongoing	Development Services	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
13.	All proposed lease area fencing, equipment cabinets/structures and other related equipment shall be continuously maintained in good condition. This shall include keeping the tower structure and equipment cabinets graffiti-free and maintaining all warning signs in good condition.	Ongoing	Development Services	
	Prior to Issuance of Building Permit			
14.	The building construction plans shall reflect the architectural details described in the project design plans and shall be subject to review and approval of staff with concurrence of the Planning Commission Development Review Subcommittee as needed; should discrepancies exist between the construction plans and the approved project design plans the matter shall be referred to the Planning Commission for approval.	Prior to Issuance of Building Permit and Ongoing	Development Services	
15.	The applicant shall submit a final drainage plan to the satisfaction of the City Engineer as part of the building construction plans.	Prior to Issuance of Building Permit	Development Services	
16.	The applicant shall submit a detailed landscaping plan for review and approval. The landscaping plan shall identify the vine types and sizes, irrigation details, as well as fencing details.	Prior to Issuance of Building Permit	Development Services and Fire	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
17.	All project conditions of approval and mitigation measures contained in the Mitigation Monitoring and Reporting Program (MMRP) as well as the timing of the conditions of approval and mitigation measures shall be listed in the project construction plans to help ensure that conditions imposed by the City are completed at the appropriate time in the development process.	Prior to Issuance of Building Permit	Development Services	
18.	The applicant shall submit precise color and material samples for review and approval by the Development Services Department. The color and material specifications shall be included on the building permit drawings.	Prior to Issuance of Building Permit	Planning	
19.	The applicant and property owner shall provide the City with written confirmation, to the satisfaction of the Planning Manager, that the private lease allows for the exclusive use of the site by Verizon thus prohibiting the possibility of future antenna co-location by a second carrier without required City review.	Prior to Issuance of Building Permit	Planning	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
21.	The holder of the use permit shall prepare a security plan for review and approval by the Police Department to help prevent crime on-site during construction and during operations. The security plan shall include emergency contact information, construction staging area information, construction site addressing, and crime prevention measures.	Prior to Issuance of Building Permit	Development Services and Police	
22.	The applicant shall complete and place on file a Police Department Business Emergency Information Form.	Prior to Issuance of Building Permit and Ongoing	Police	
23.	The applicant and property owner shall prepare a site development construction safety plan that shall be provided for review and approval describing the steps to be taken by building contractor(s) to maintain public safety during all phases of construction.	Prior to Issuance of Building Permit	Development Services	

		Timing/ Implementation	Monitoring Department /Division	Verification (date and Signature)
	During Construction			
24.	A copy of the site development construction safety plan, once approved, shall be kept at the project site and made available upon request.	During Construction	Development Services	
25.	The construction site shall be cleaned of garbage and debris on a daily basis and maintained in an orderly fashion. All construction equipment shall be secured at the end of each day of construction.	During Construction	Development Services	
	Prior to Final Inspection			
26.	The applicant shall provide a RF report providing actual RF emission levels at maximum power levels to confirm compliance with FCC safety thresholds.	Prior to Final Inspection & Facility Power Up	Planning	
27.	The facility shall be reviewed for consistency with the approved building plans by the Planning Manager and affected City staff.	Prior to Final Inspection & Facility Power Up	Planning	

EXHIBIT B

Pinole Verizon Wireless Facility Project Site Project Mitigation Monitoring and Reporting Program

November 2015

The California Environmental Quality Act (CEQA) and CEQA Guidelines require Lead Agencies to adopt a program for monitoring the mitigation measures required to avoid the significant environmental impacts of a project. The Mitigation Monitoring and Reporting Program (MMRP) ensures that mitigation measures imposed by the City are completed at the appropriate time in the development process.

The mitigation measures identified in the Initial Study/Mitigated Negative Declaration for the Pinole Verizon Wireless Facility Project Site Project are listed in the MMRP along with the party responsible for monitoring implementation of the mitigation measure, the milestones for implementation and monitoring, and a sign-off that the mitigation measure has been implemented.

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
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.*	Prior to the initiation of construction activities beginning during the breeding season (February through August)	Development Services Department	
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.*	During construction, if nesting raptor or migratory bird are detected during the nesting bird survey	Development Services Department	
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:*	Prior to approval of construction drawings, the applicant shall submit a design-level erosion control plan sheet showing BMPs.	Development Services Department	

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
○ *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.	Prior to initiation of construction activities, construction BMPs shall be installed.		
• *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.	Prior to operation of wireless facilities, operational BMPs shall be installed.		
• *Construction Monitoring: After the fiber rolls are installed and prior to the start of construction, a*			

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
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. • *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*			

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	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.			
IV-4.	*Implement Mitigation Measure IV-3.*	See Mitigation Measure IV-3.	See Mitigation Measure IV-3.	
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.*	Prior to and during construction	Development Services Department	

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
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.* *<u>Pruning</u>* 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.* *<u>Landscape Construction</u>* 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*			

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
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*			

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	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.* *<u>Damage to a Protected Tree</u>* 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*	Prior to the issuance of any grading or building permits	Development Services Department	

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	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.*	During pruning of any protected trees	Development Services Department	
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.*	Prior to the issuance of a grading permit for any construction activities	Development Services Department	
V-2.	*Pursuant to State Health and Safety Code §7050.5 (c) State Public Resources Code §5097.98, if human bone or bone of*	If human bone or bone of unknown origin is found	Development Services Department	

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	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.	during construction activities within the project area	Contra Costa County Coroner Native American Heritage Commission	
VI-1(a).	*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 verify field conditions, and the pier recommendations in the "Geotechnical Investigation Report, Proposed Telecommunications Facility," dated February 4, 2015, prepared for the proposed project. The cast-in-place concrete pier foundation recommendations presented in the February 4, 2015 Geotechnical Investigation Report, coupled with engineering design by the project Structural Engineer, shall be utilized to mitigate the potential effects of shallow instabilities associated with the on-site artificial fill soils encountered at the site.* *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*	In conjunction with submittal of construction drawings	Development Services Department	

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	and utilized in the design.			
VI-1(b).	*During construction, the project geotechnical engineer shall be retained by the applicant to observe drilled pier construction in order to verify that the construction is completed in compliance with the recommendations in the geotechnical reports.*	During construction	Public Works Department	
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.*	Prior to approval of construction drawings, the applicant shall submit a design-level erosion control plan sheet showing BMPs.	Development Services Department	
	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*	Prior to initiation of construction activities, construction BMPs shall be installed.		

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
and approval. The stormwater control plan shall include, at a minimum, the following operational BMPs: o *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.* o *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.*	Prior to operation of wireless facilities, operational BMPs shall be installed.		
• *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*			

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	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.*			
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*	Prior to approval of construction drawings, the applicant shall submit a design-level erosion control plan sheet showing BMPs.	Development Services Department	

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
erosion control plan shall include, at a minimum, the following construction BMPs: o *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.* o *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.	Prior to initiation of construction activities, construction BMPs shall be installed.		
• <u>Operational BMPs</u>: *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:* o *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.* o *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.	Prior to operation of wireless facilities, operational BMPs shall be installed.		

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT			
Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
• *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*			

MITIGATION MONITORING AND REPORTING PROGRAM PINOLE VERIZON WIRELESS FACILITY PROJECT SITE PROJECT				
	Mitigation Measure	**Implementation Schedule**	**Monitoring Agency**	**Sign-Off**
	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.			
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.*	During construction	Development Services Department	

ATTACHMENT B

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

RANEY
1501 SPORTS DRIVE • SUITE A • SACRAMENTO • CA • 95834
OFFICE 916.372.6100 • FAX 916.419.6108

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APPENDICES

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.

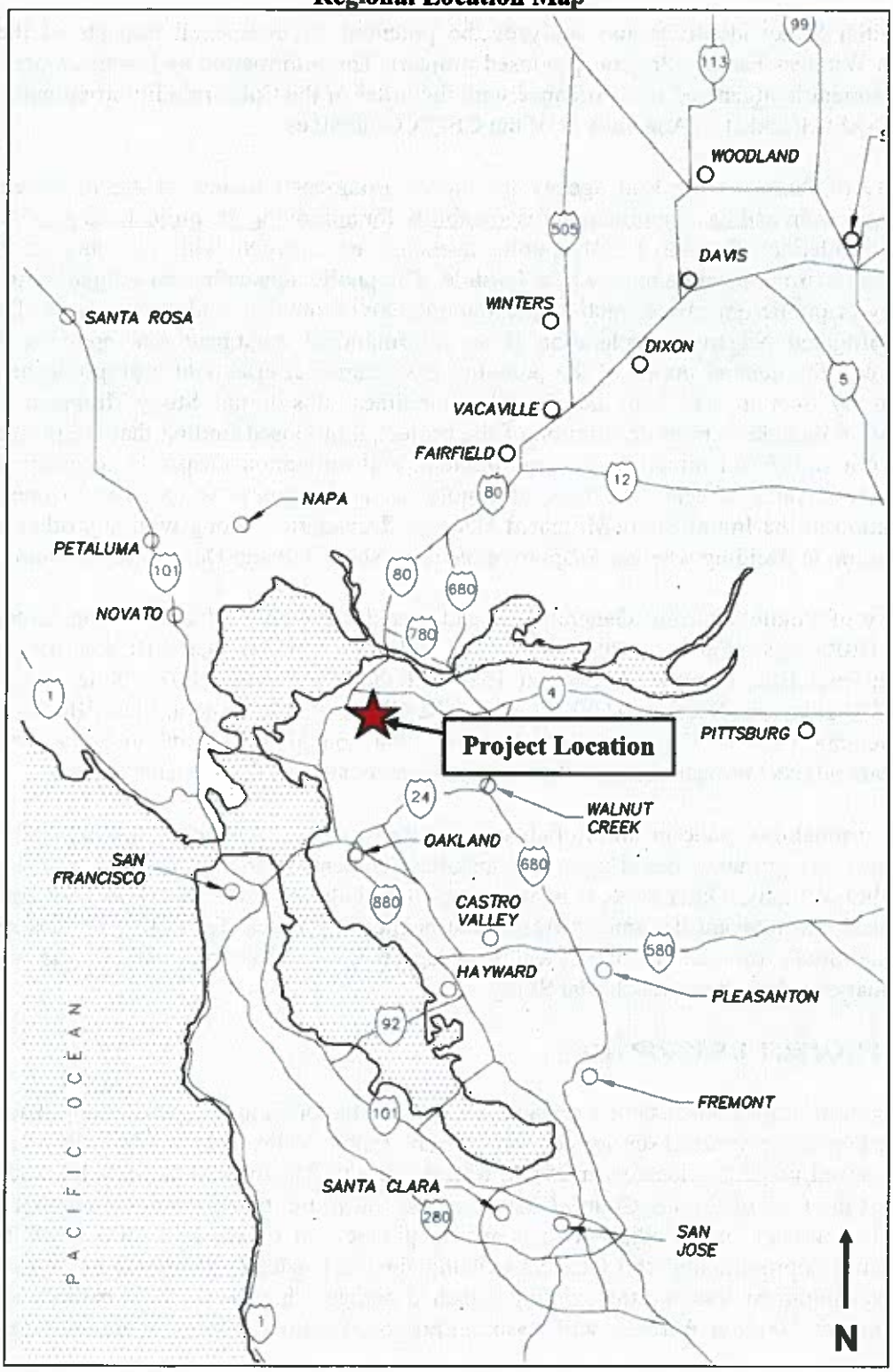
The City of Pinole's current General Plan and associated General Plan Environmental Impact Report (EIR) was adopted in 2010. The City of Pinole General Plan EIR was prepared as a program-level EIR, pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations, Sections 15000 *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

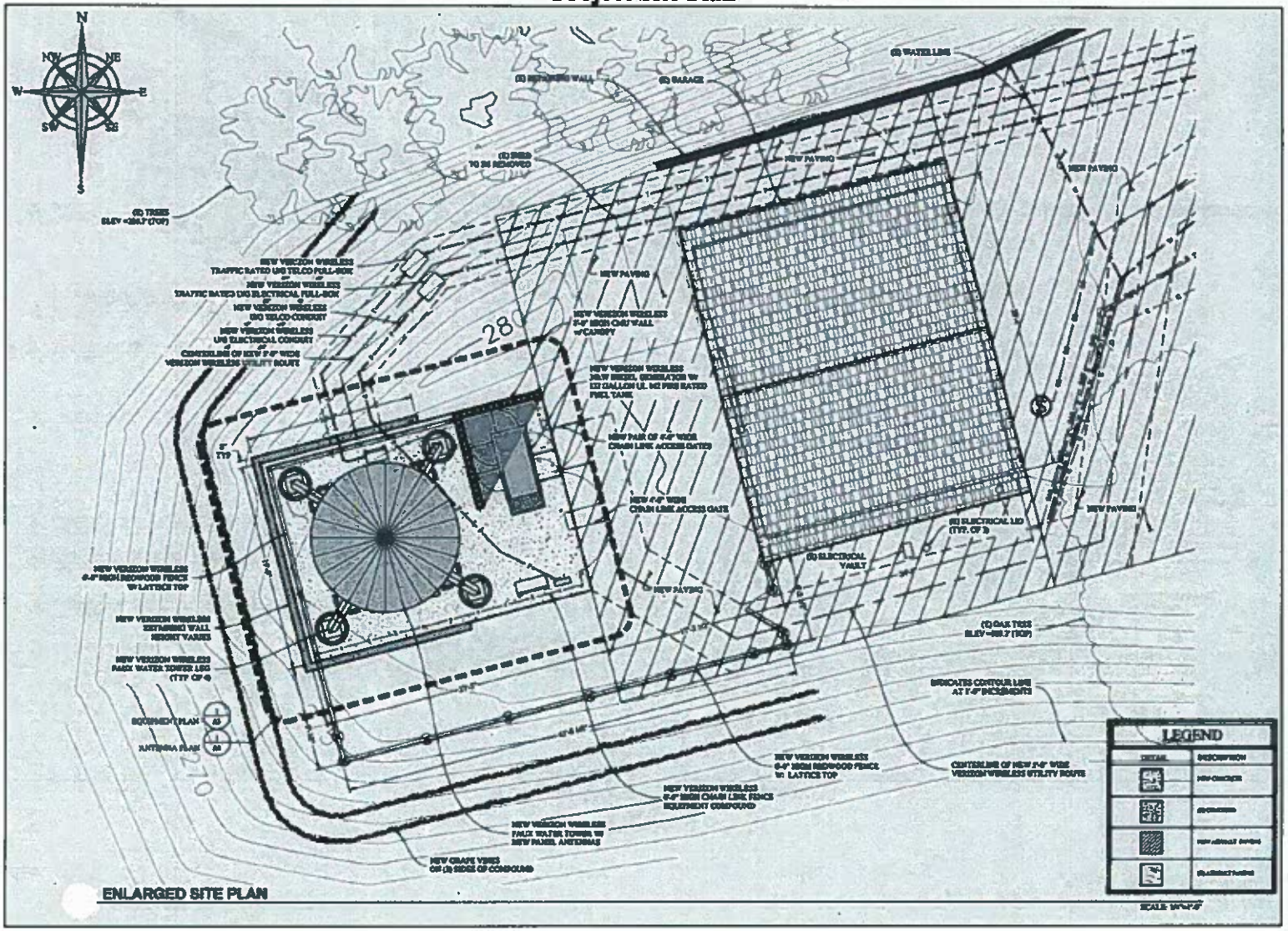
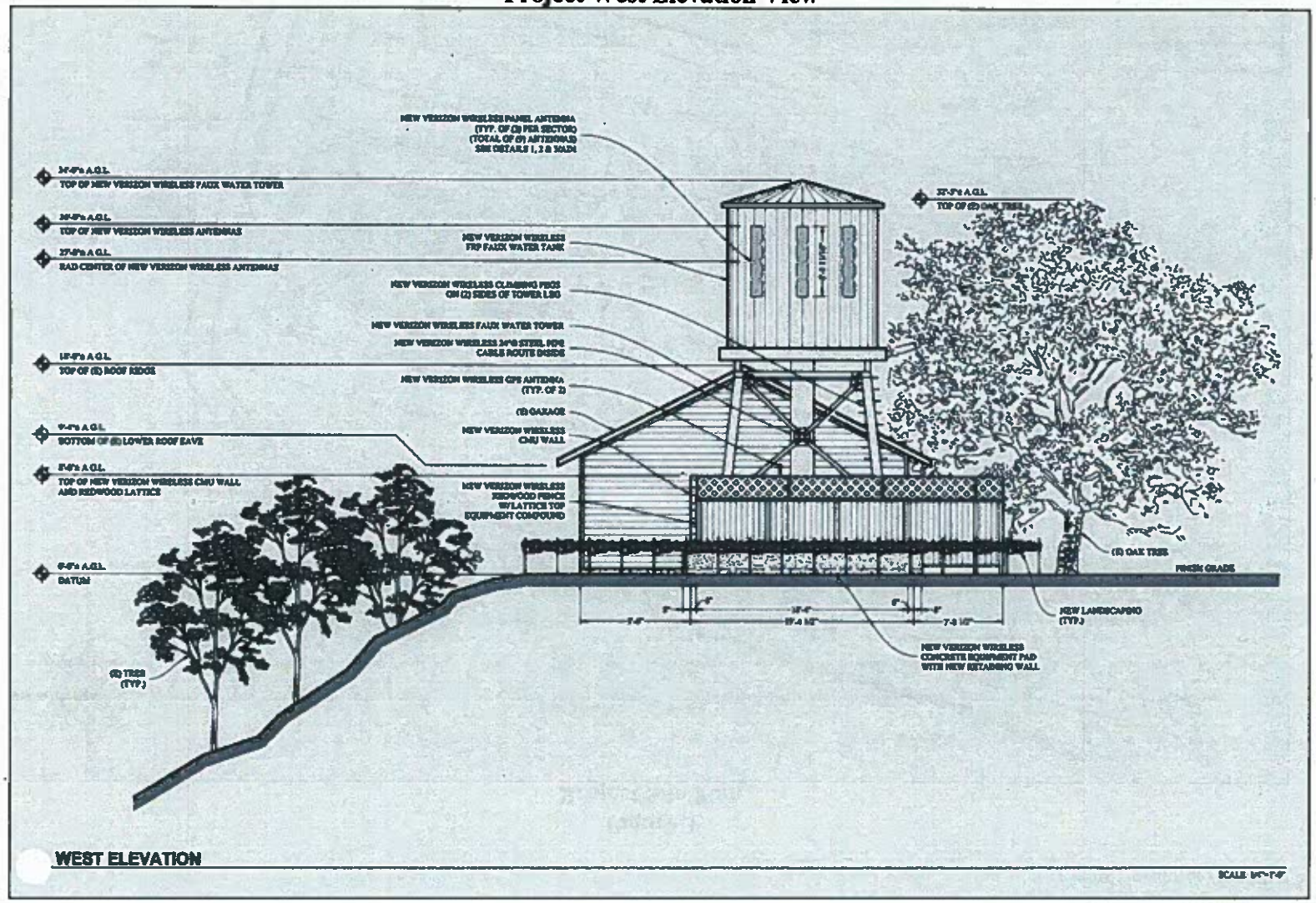


Figure 4
Project West Elevation View



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

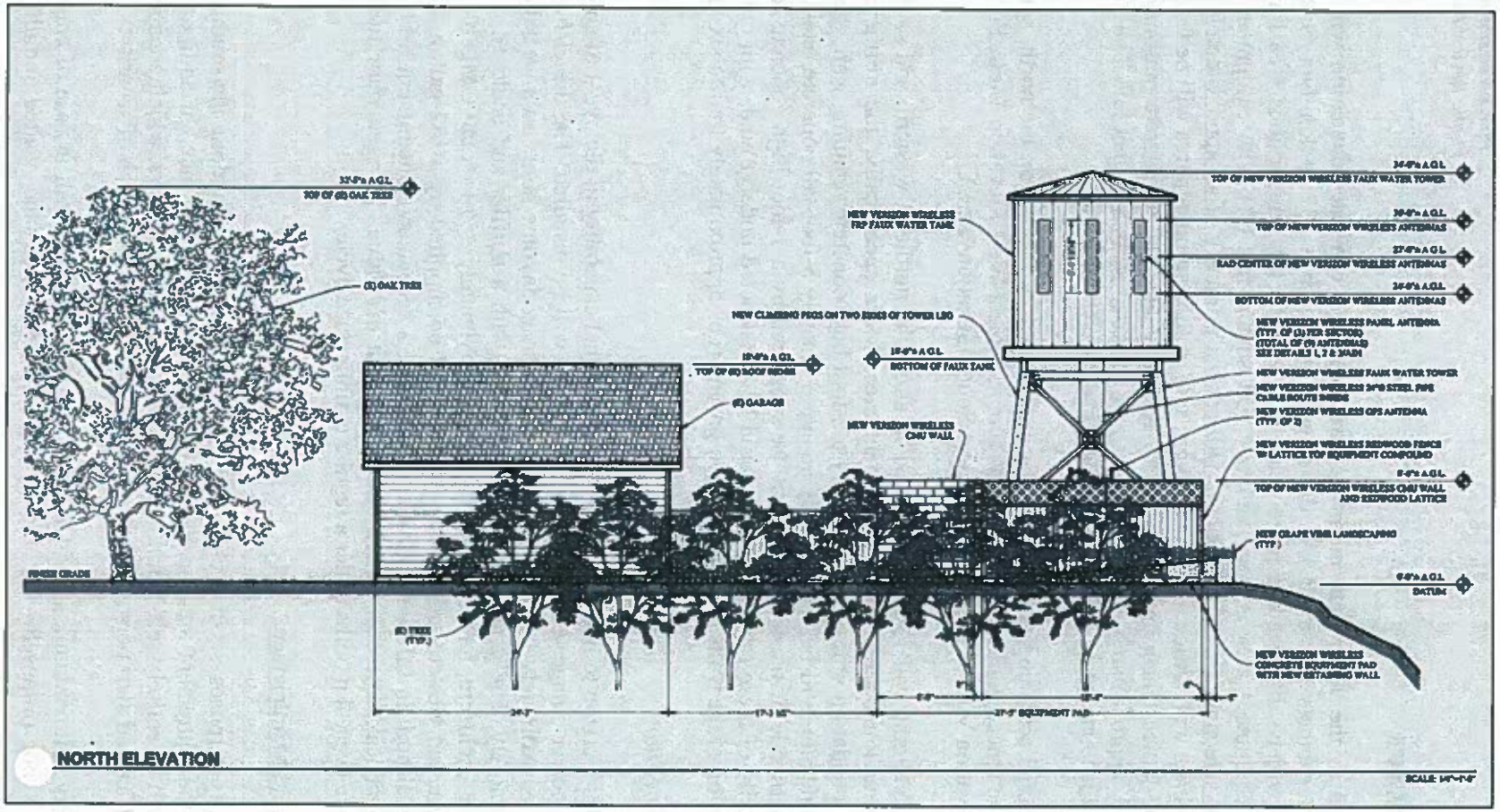
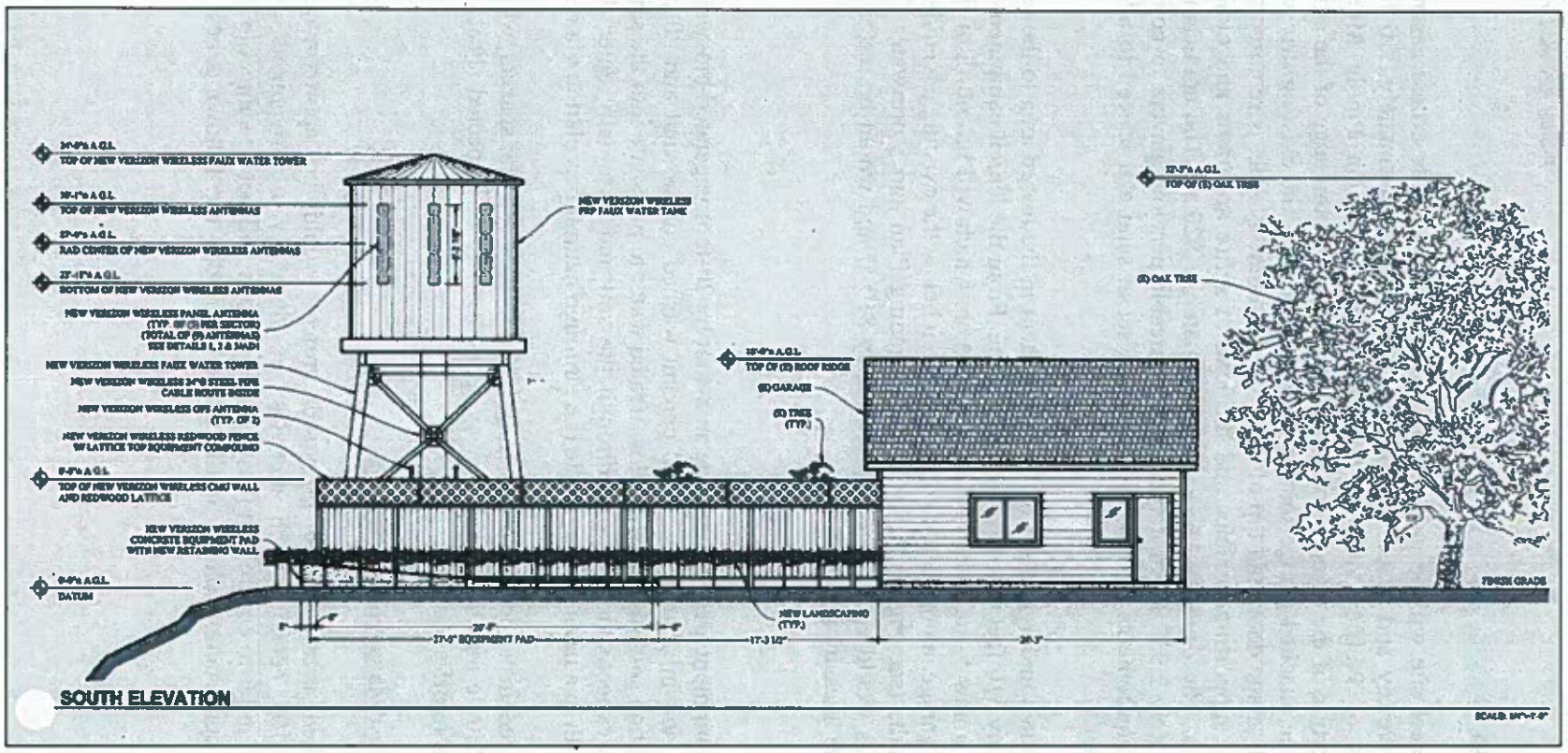


Figure 6
Project South Elevation View



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

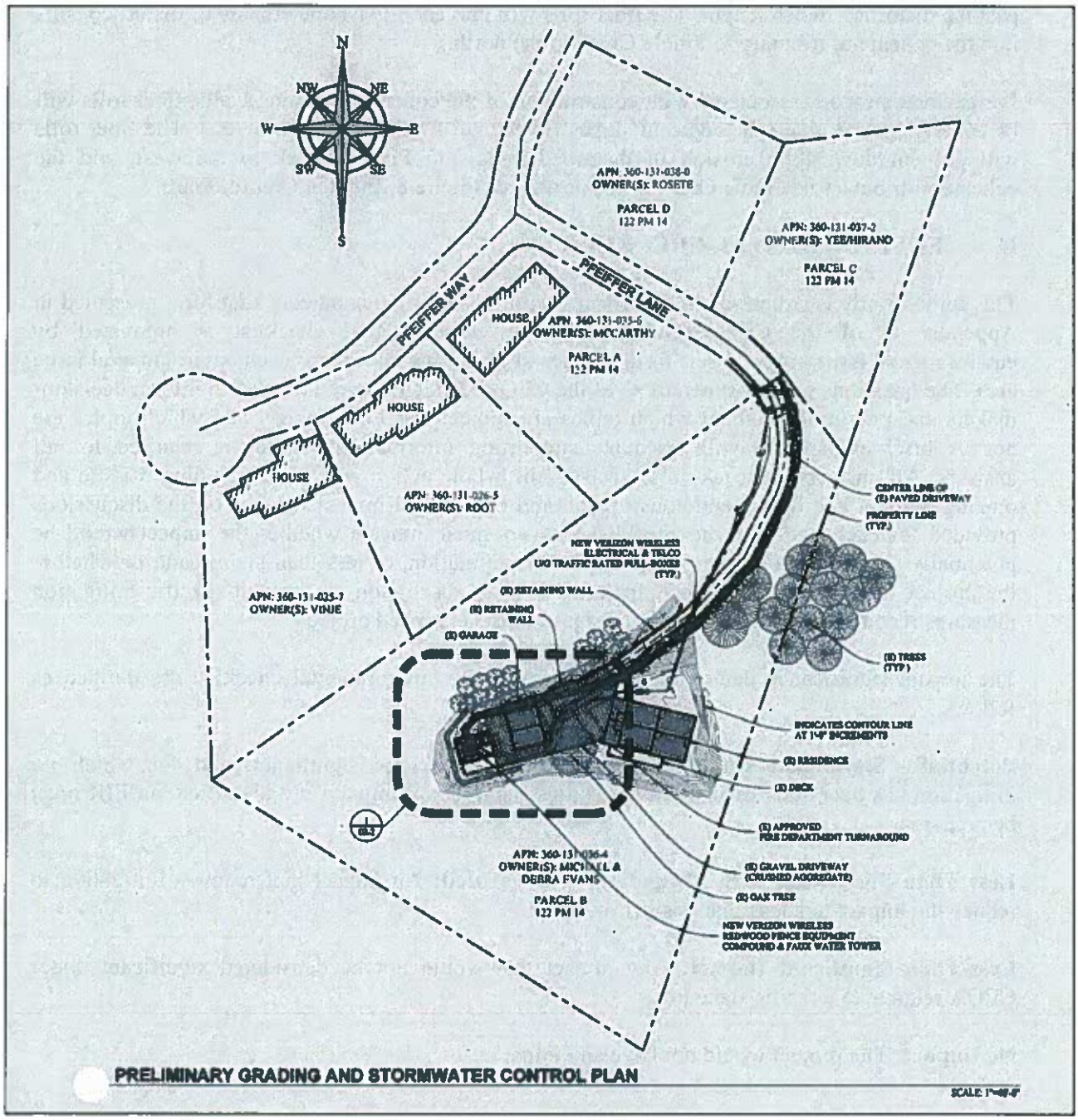
The impervious equipment area will include an 8-foot by 20-foot vegetated bioswale constructed with an approved soil mixture blend of 80 percent washed coarse sand and 20 percent sandy loam. The bioretention soil mixture will allow treated water to percolate into the soil. The treated drainage water 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:

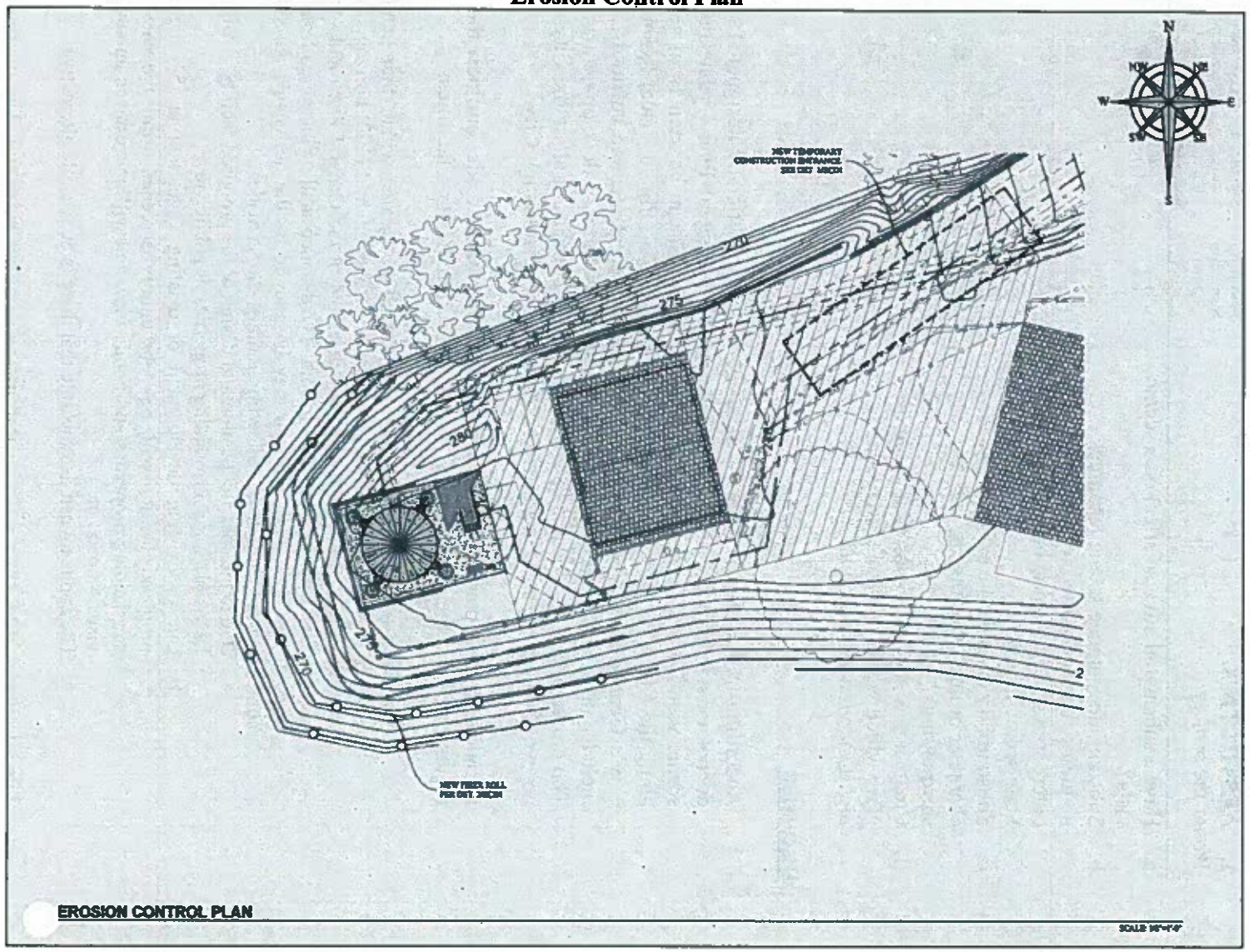
Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

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

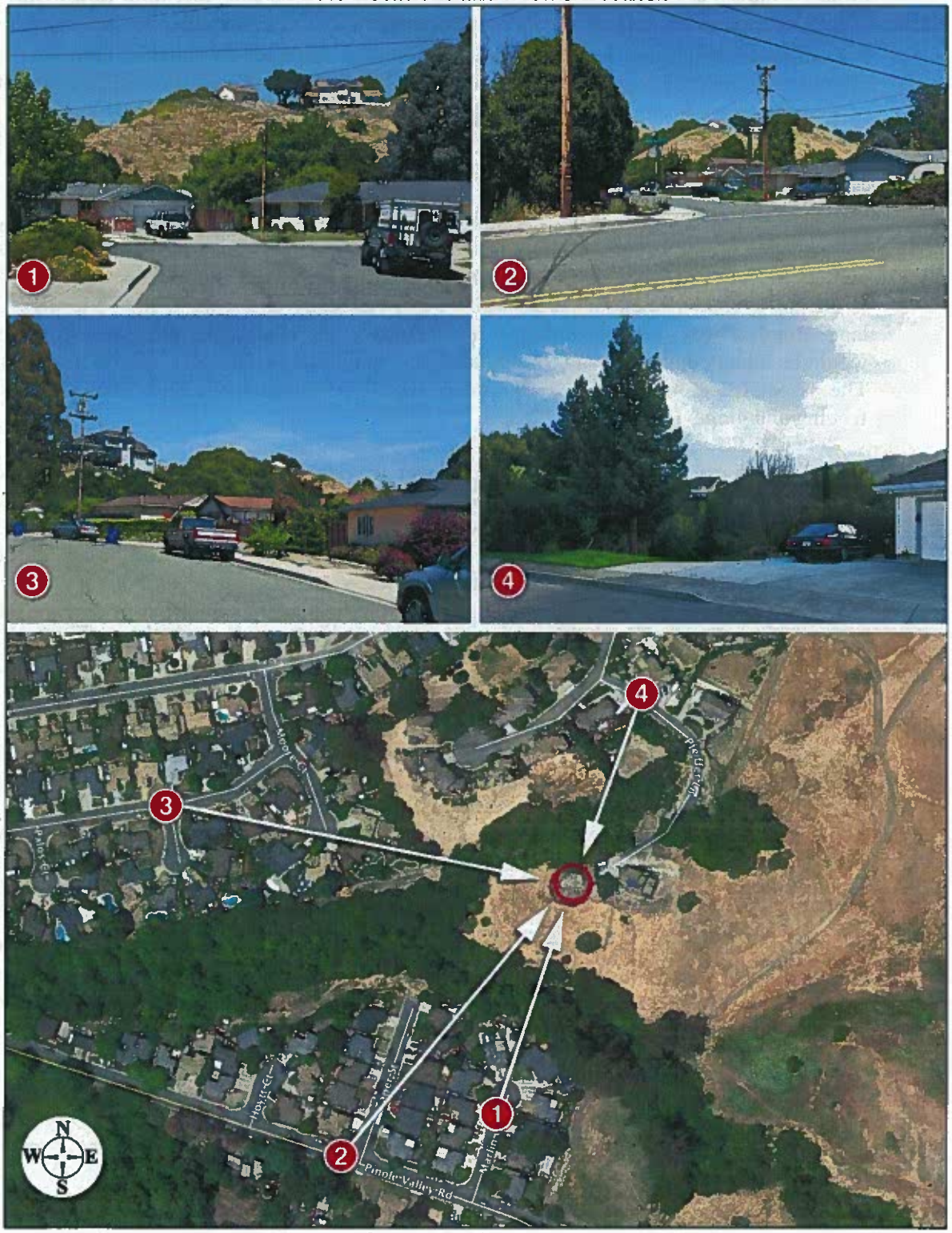


Figure 10
View of Project Site From Location #1 Looking Northeast From Martin Court

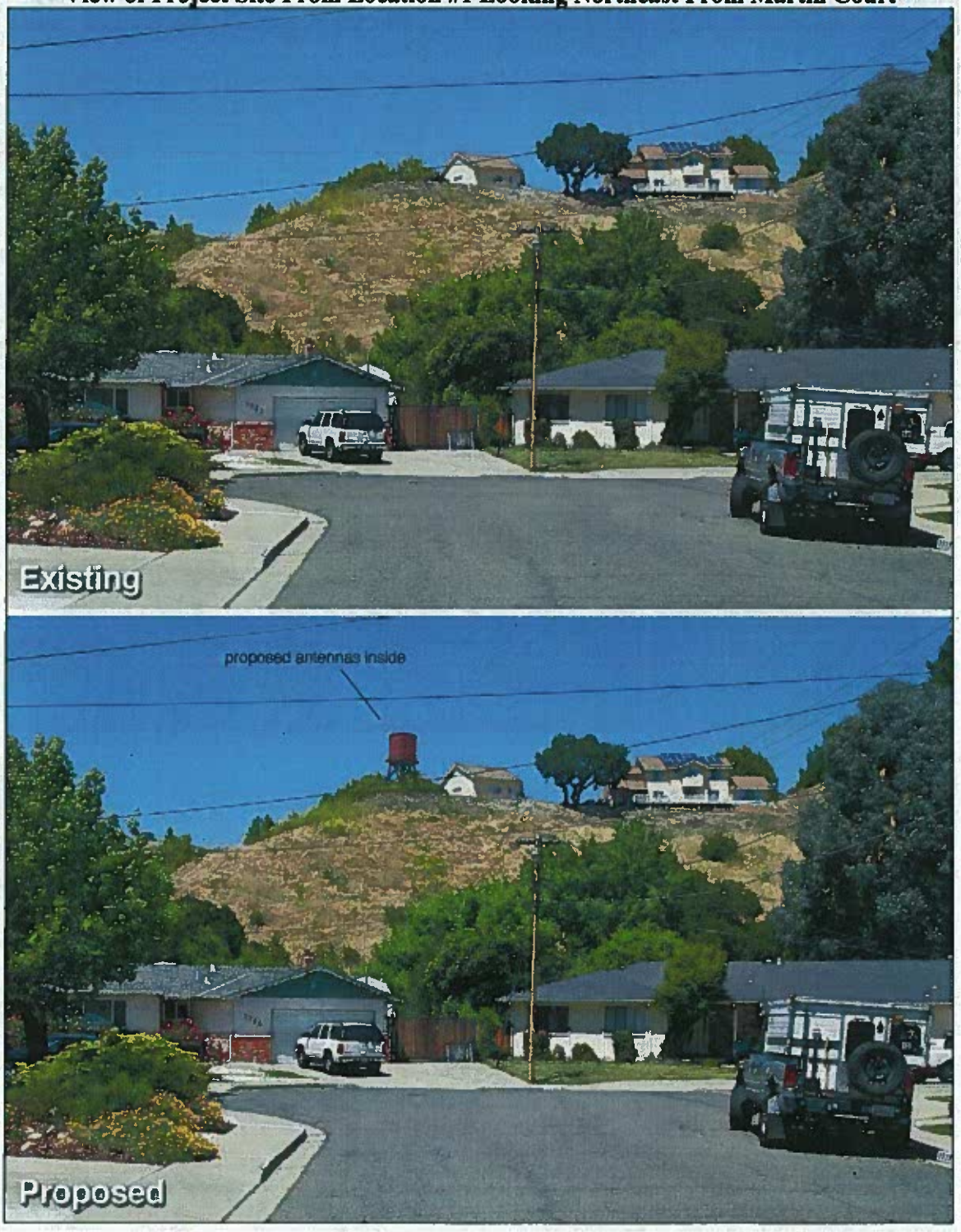


Figure 11
View of Project Site From Location #2 Looking Northeast From Pinole Valley Road

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

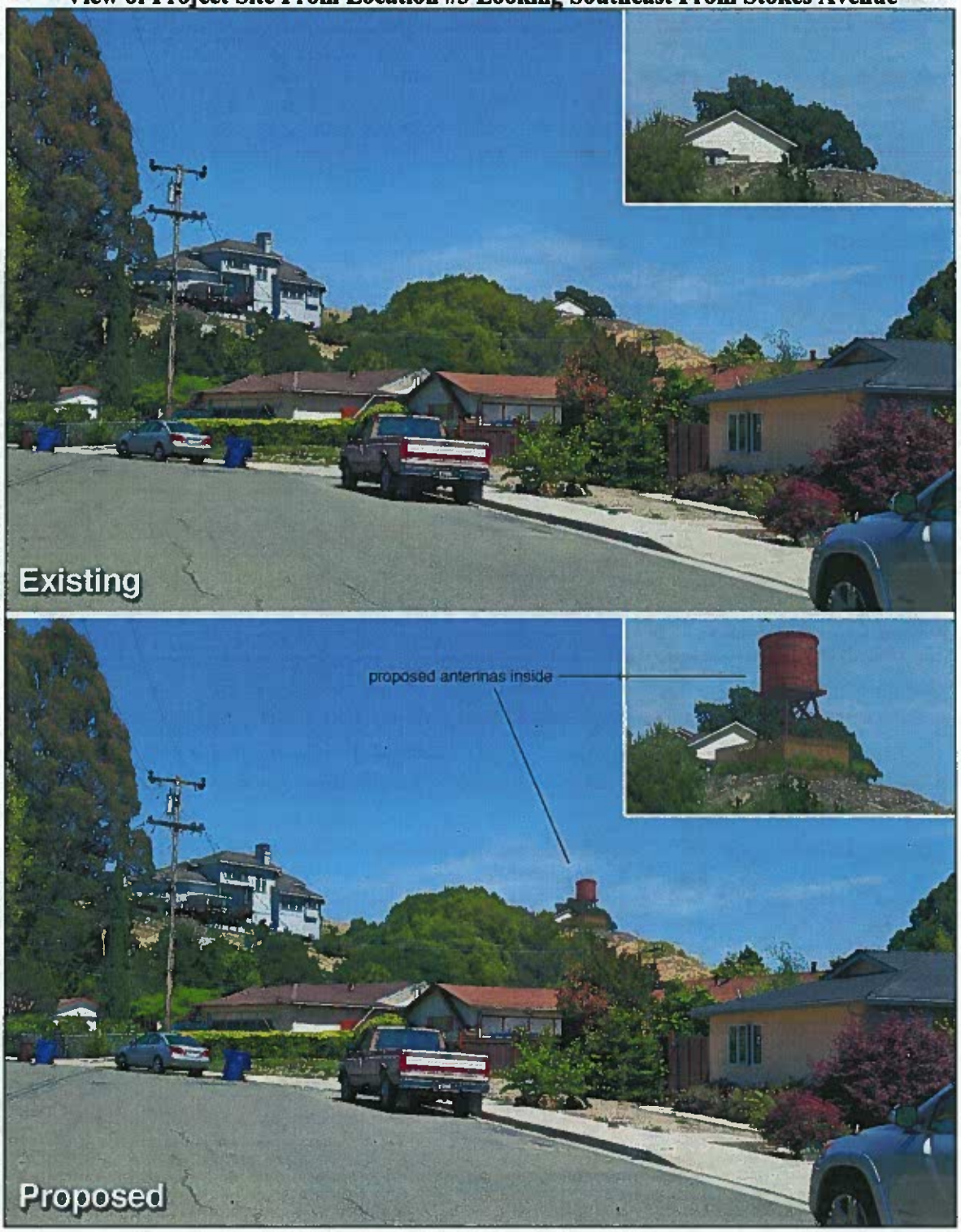


Figure 13
View of Project Site From Location #4 Looking South From Pfeiffer Lane

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.

Special-Status Plants

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.

Conclusion

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.*

- *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 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***.

Mitigation Measure(s)

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:*

Root Zone Protection, Demolition, and Construction

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***.

Mitigation Measure(s)

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***.

Mitigation Measure(s)
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

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

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
Rick Hopkins, Ph.D., Principal and Senior Wildlife Ecologist

Prepared for

Nick Pappani
Raney Planning & Management, Inc.
1501 Sports Drive, Suite A
Sacramento, CA 95834

August 20, 2015 PN 1963-01

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.

TABLE OF CONTENTS

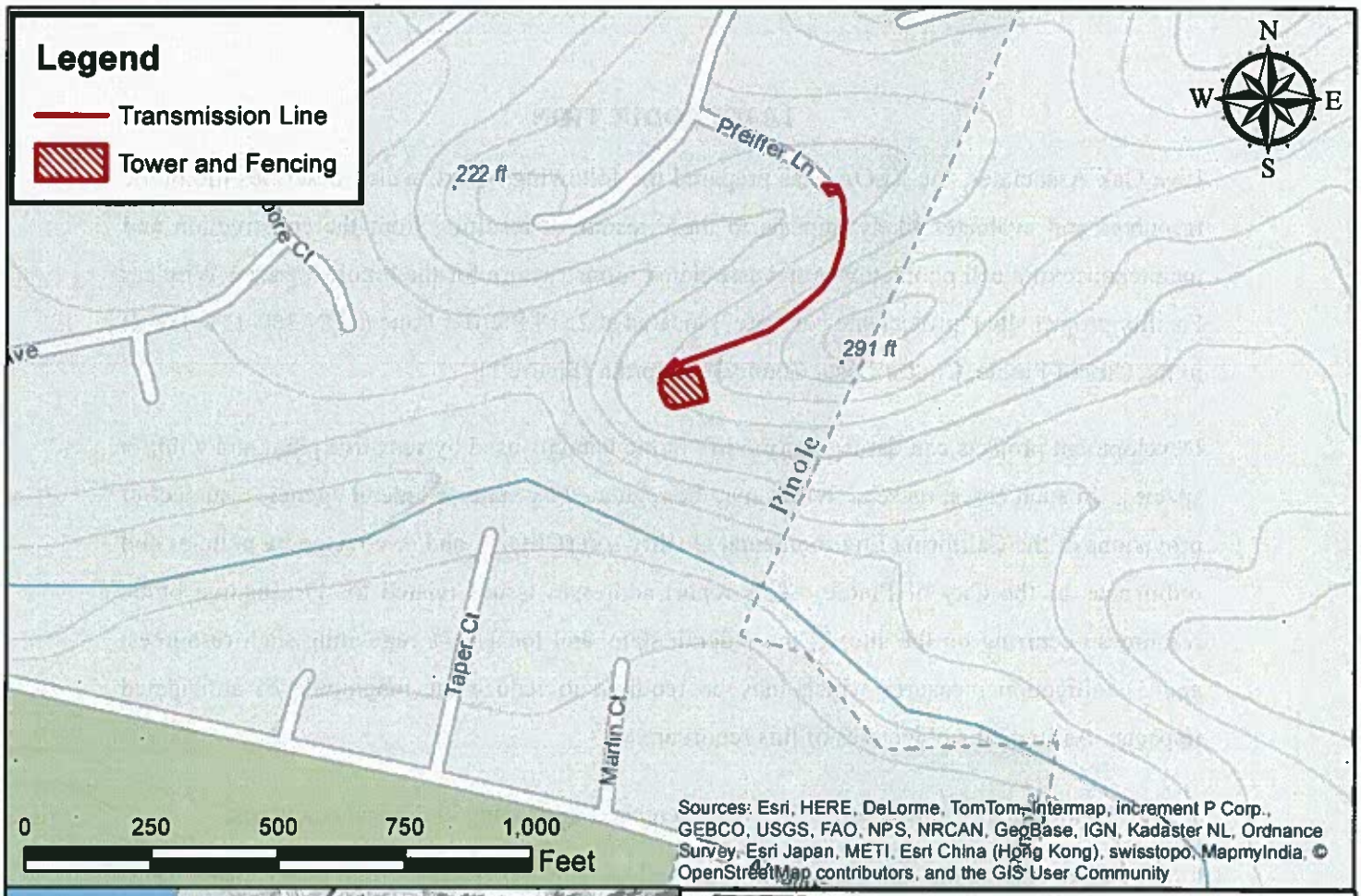
1.0 INTRODUCTION

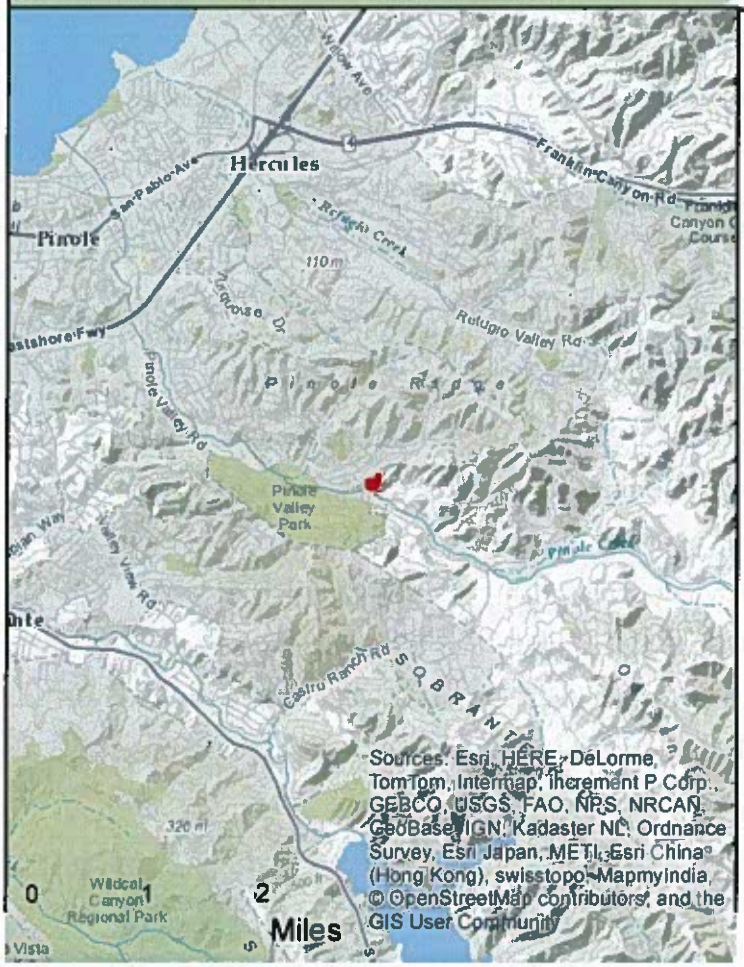
Live Oak Associates, Inc. (LOA) has prepared the following report, which describes the biotic resources and evaluates likely impacts to these resources resulting from the construction and maintenance of a cell phone tower and associated infrastructure for the Pinole Verizon Wireless Facility project 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

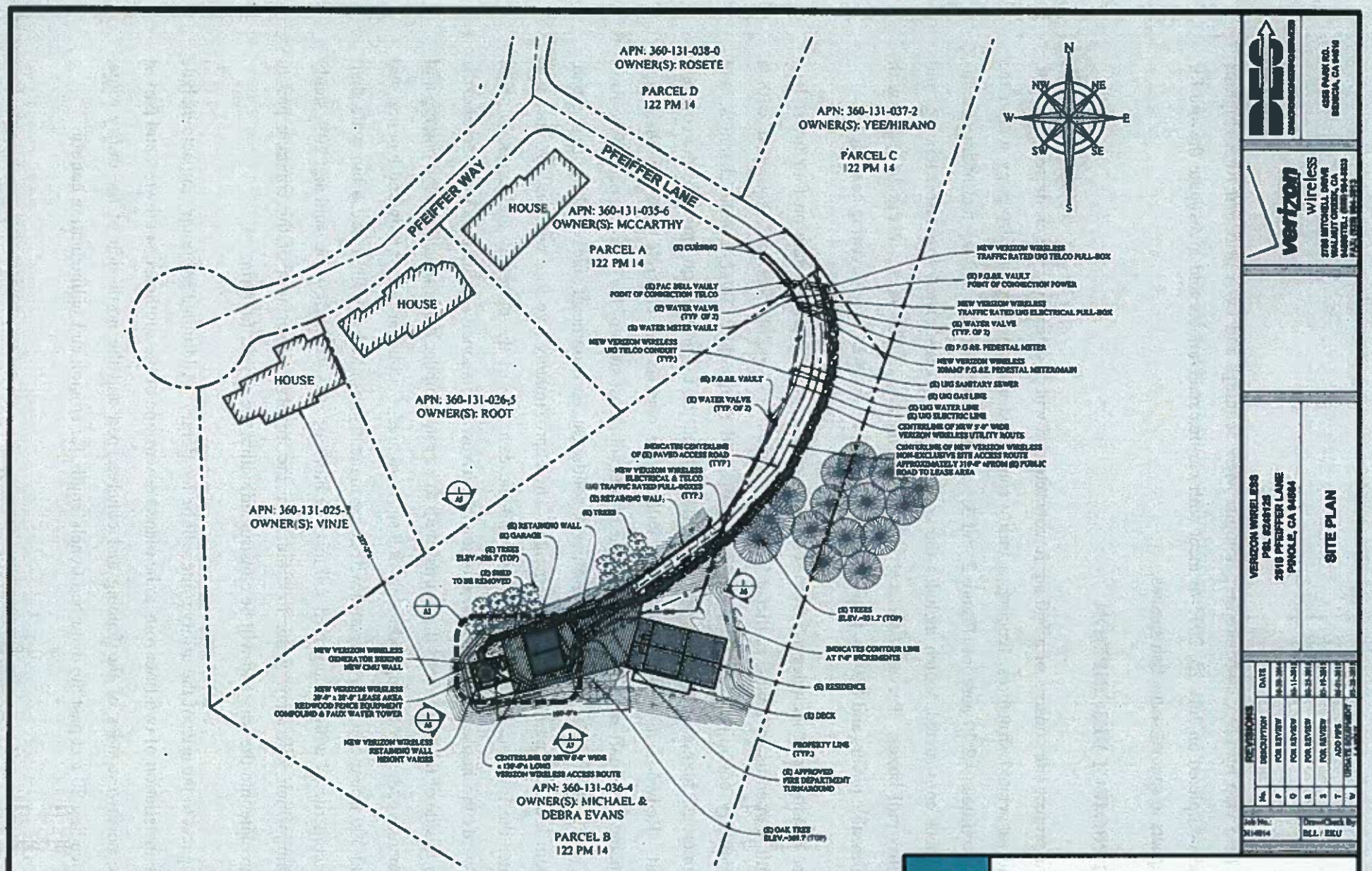
A field visit by LOA associate herpetologist Mark Jennings and LOA principal Rick Hopkins was completed on July 23, 2015 to meet with various stakeholders and investigate the site for impacts to special status fish species.

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.

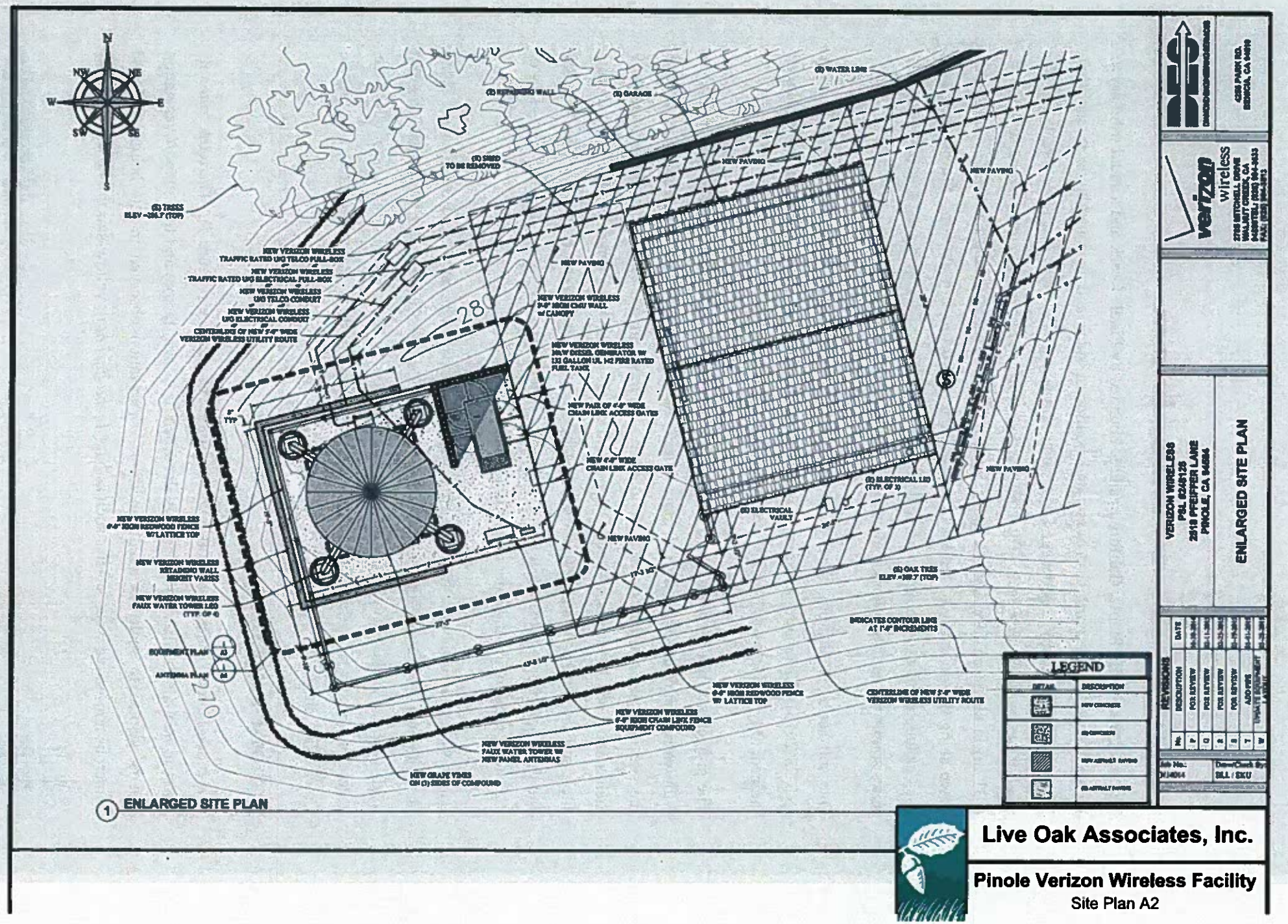
Impacts to the area of the utility route will be temporary. Additional temporary impacts include the installation of two fiber rolls to be placed downslope of the southeast, southwest, and part of the northwest sides of the fencing and concrete pad and the north side of the utility route, extending 20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



1 SITE PLAN

Live Oak Associates, Inc.

Pinole Verizon Wireless Facility
Site Plan A1



1 ENLARGED SITE PLAN

Live Oak Associates, Inc.

Pinole Verizon Wireless Facility

Site Plan A2

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*


Legend
Project Site and Ruderal Habitat
N
W
E
S
Live Oak Associates, Inc.
Pinole Verizon Wireless Facility
Habitats Map
Date
Project #
Figure #
0
50
100
150
200
Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

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.

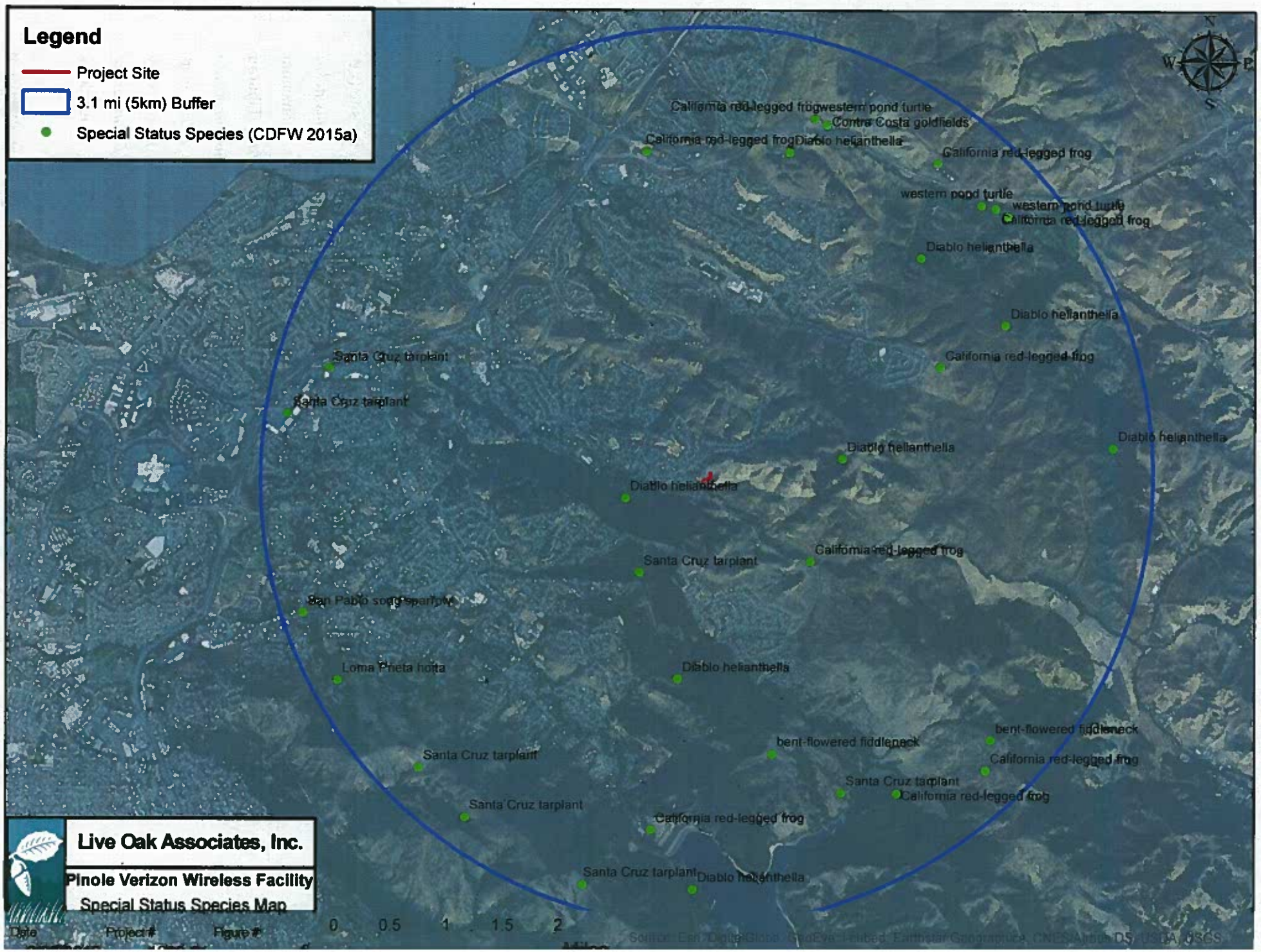
Animal species observed during the August 2015 survey are common to ruderal habitats of the East Bay and included species such as western fence lizard (*Sceloporus occidentalis*), turkey vultures (*Cathartes aura*), and eastern fox squirrel (*Sciurus niger*), among others.

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*


Legend
Project Site
3.1 mi (5km) Buffer
Special Status Species (CDFW 2015a)
California red-legged frog
western pond turtle
Contra Costa goldfields
California red-legged frog
Diablo helianthella
California red-legged frog
western pond turtle
western pond turtle
California red-legged frog
Diablo helianthella
Diablo helianthella
Santa Cruz tarplant
California red-legged frog
Santa Cruz tarplant
Diablo helianthella
Diablo helianthella
Diablo helianthella
California red-legged frog
Santa Cruz tarplant
San Pablo song sparrow
Loma Prieta hoita
Diablo helianthella
bent-flowered fiddleneck
bent-flowered fiddleneck
California red-legged frog
Santa Cruz tarplant
Santa Cruz tarplant
California red-legged frog
Santa Cruz tarplant
California red-legged frog
Santa Cruz tarplant
Diablo helianthella
Live Oak Associates, Inc.
Pinole Verizon Wireless Facility
Special Status Species Map
Date
Project #
Figure #
0
0.5
1
1.5
2
Miles
N
W
E
S

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. *congesta*)	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.

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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

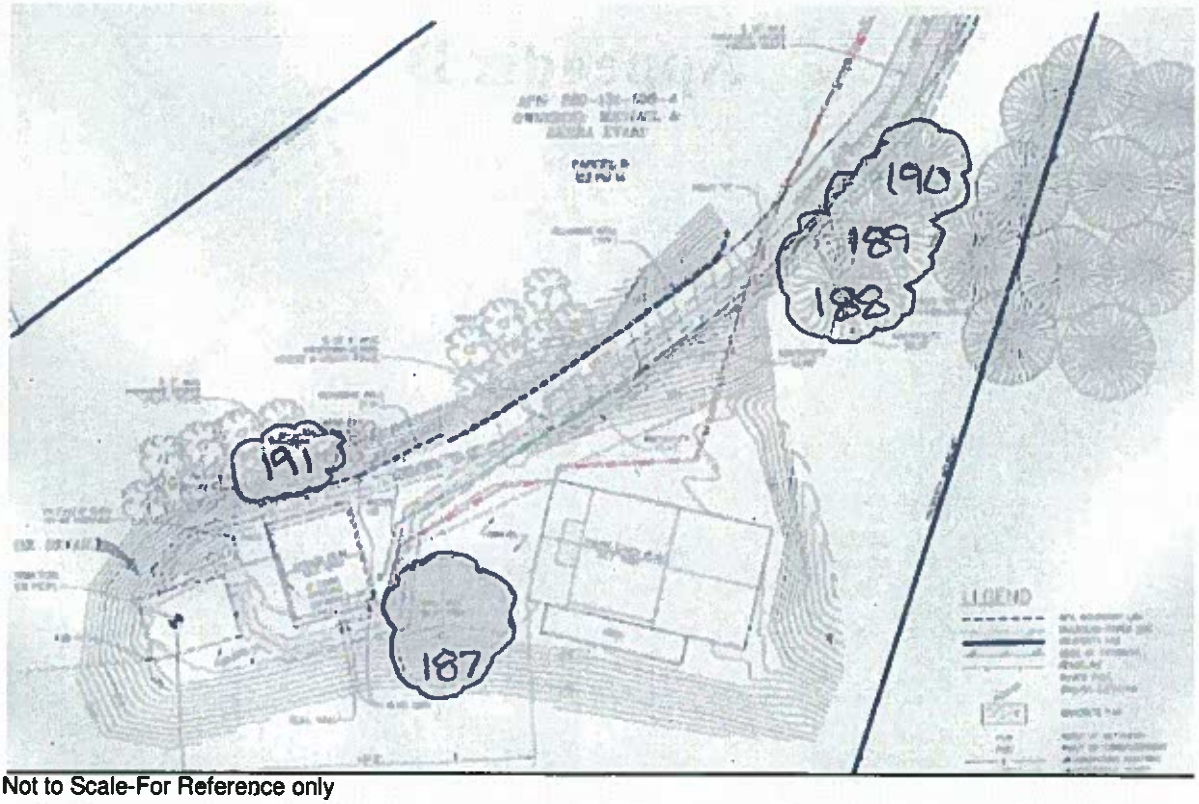
Excellent	Ideal specimen both functionally and aesthetically with good health and longevity.
Good	Tree suited to retention for the long term. Individual characteristics are weighed. Any health or structural concerns are manageable with reasonable care.
Fair	Tree may have age, health, and/or structural 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

MPE

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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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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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.

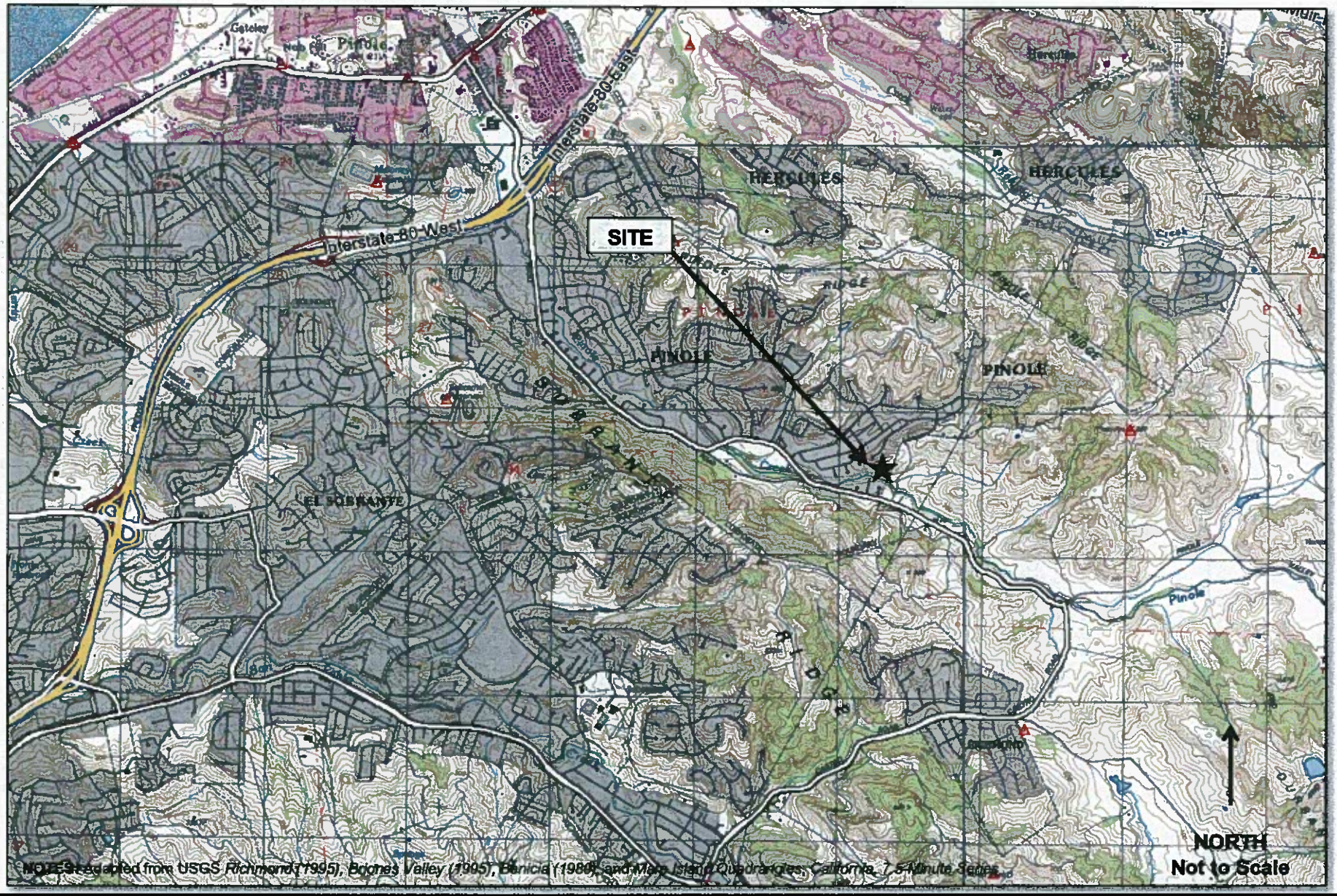
Conclusions and recommendations contained in this report were based on the conditions encountered during our field investigation and are applicable only to those project features described above (see section titled "PROPOSED CONSTRUCTION"). It is possible subsurface conditions could vary beyond the point 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.



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

MPE
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VICINITY MAP

PROPOSED TELECOMMUNICATIONS FACILITY

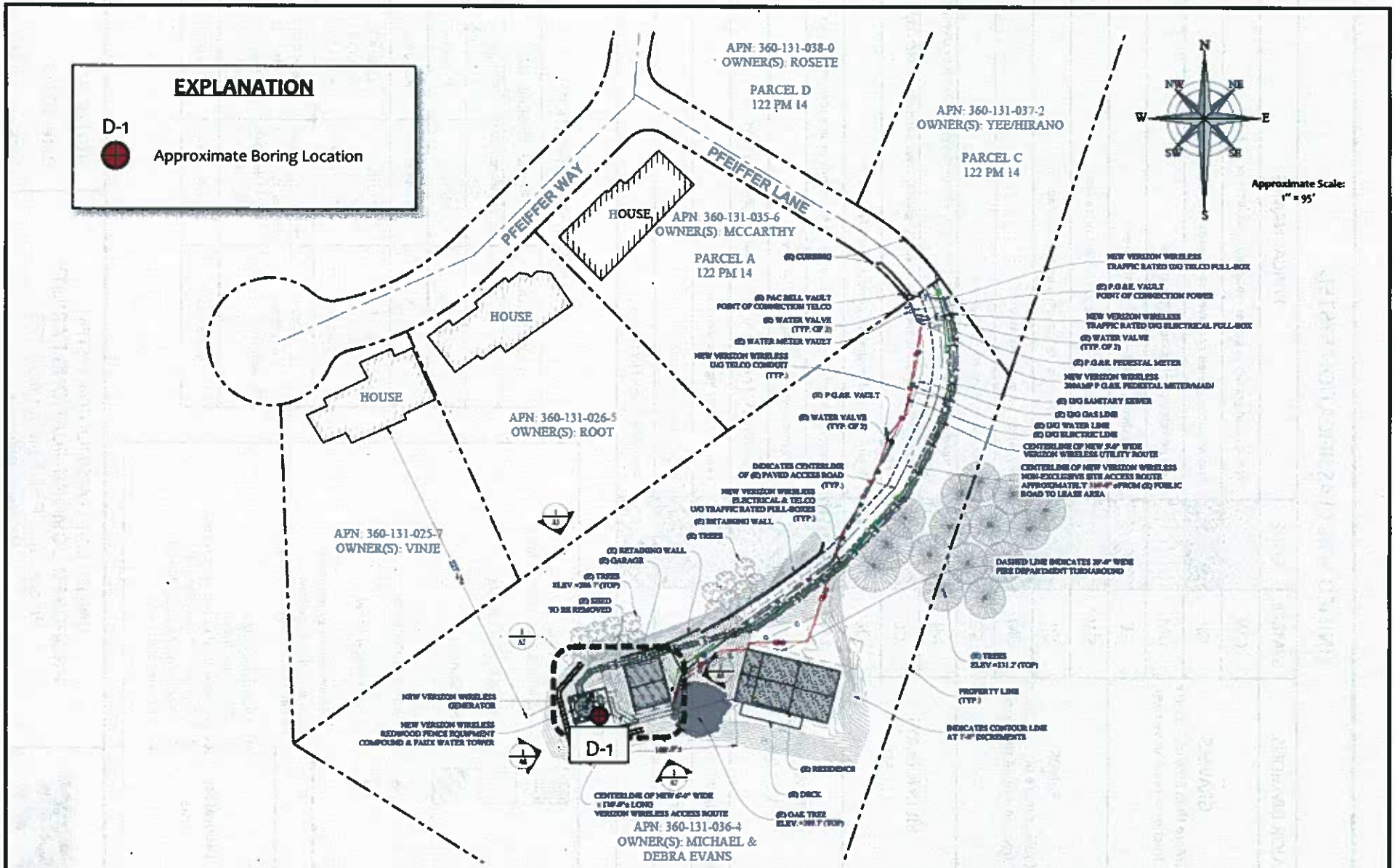
Pinole Park, PSL Number: 248125

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	LOG OF SOIL BORING D-1
Project Location: 2518 Pfeiffer Lane, Pinole, CA	
MPE Number: 02314-01	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

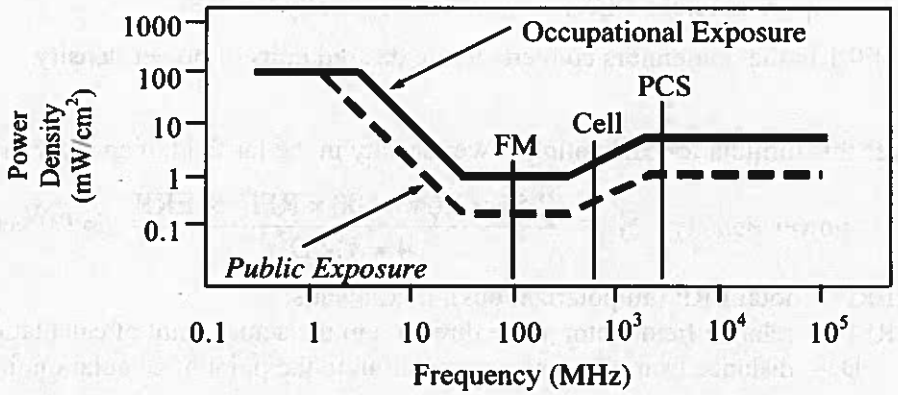
November 4, 2014

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:

$$\text{power density } S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in } mW/cm^2,$$

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

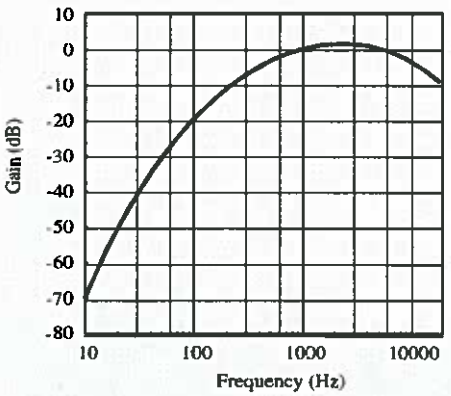
The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2015. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

William F. Hammett, P.E.
707/996-5200

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:

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

$$L_T = 10 \log \left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

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.

ATTACHMENT B

RESPONSES TO COMMENTS

This document contains written responses to the comments received during the 30-day public review period of the Pinole Verizon Wireless Facility Project Site Project (proposed project) Initial Study/Mitigated Negative Declaration (MND). According to CEQA Guidelines Section 15074, the Planning Commission, as decisionmaker for the project, must consider the MND as well as the comments received during the public review process, before it takes action on the project. This requirement reflects CEQA's intent that decisionmakers take environmental consequences into account when deciding whether or under what conditions to approve a project. However, neither CEQA, nor the CEQA Guidelines, requires the City to provide written responses to public comments on an MND. Nonetheless, the City received a number of comments on the MND and has chosen to provide responses to the comments given the public interest in the project and its potential impacts.

The City carefully reviewed each of the public comments submitted during the public review period. Many of the comments addressed environmental issues, in accordance with the purpose of CEQA review. The written responses will similarly address the environmental issues raised in the comments, and provide the City's good faith, reasoned analysis of the issues. In some cases where the comments are critical of the MND analysis, the responses will attempt to resolve the areas of disagreement. This resolution may take the form of more detailed explanation of the MND discussions, and may include additional information that is relevant to the issue. The City also carefully reviewed the comments received as well as any new information developed in preparing written responses and considered the recirculation standards in CEQA Guidelines Section 15073.5. Based on this review, the City has determined that any new information in the comments or responses clarifies or amplifies the MND analyses and does not otherwise trigger recirculation under the applicable Guidelines.

Many of the public comments addressed environmental issues, however, many of the comments expressed opinions about the merits of the project and whether it should be approved or not. Other comments addressed non-environmental issues such as property values. Because these comments do not address environmental issues, no substantive response is provided. However, these and all the comments are part of the record for the project and are available for consideration by the decisionmaker. The written response will so note.

BACKGROUND

The City of Pinole, as lead agency, released the IS/MND for public review beginning on Thursday October 1, 2015 and ending on Friday October 30, 2015, pursuant to CEQA Guidelines Section 15105. The IS/MND and supporting documents were made available at the City Clerk's Office, as well as the Development Services Department, located at 2131 Pear Street in Pinole, CA. In addition, the Pinole Library, located at 2935 Pinole Valley Road in Pinole, CA, had a copy available for public review.

LIST OF COMMENTERS

The City of Pinole received 12 comment letters or email messages during the public comment period on the IS/MND for the proposed project. The comments and messages were authored by the following agencies and individuals:

Agencies

Letter 1 ..... David Rehnstrom, East Bay Municipal Utility District

Individuals

Letter 2 ..... Venus Berdan, Law Offices of Dana Dean
Letter 3 ..... Ben Anderson
Letter 4 ..... Matt Bielby
Letter 5 ..... Anthony Gutierrez
Letter 6 ..... Elaine Jaymot
Letter 7 ..... Julie Maier
Letter 8 ..... Soon-Young Namgoong
Letter 9 ..... Denise Root
Letter 10 ..... Sal Spataro
Letter 11 ..... Susan Varela
Letter 12 ..... Vanessa Wilke

Letter Attachments

Letters 5 and 6 include several attachments. These attachments have been reviewed by the City and are included as Appendices to this responses to comments document.

MASTER RESPONSES

Many of the commenters raised similar concerns. For these concerns, the City has prepared master responses. Through master responses, the City can address the common topics in a comprehensive manner and without duplication in the individual responses. Two topics in particular were raised by several commenters: the first is the potential health impacts of radiofrequency (RF) exposure on humans and animal species; the second is related to soils and geotechnical conditions. The following master responses address these two concerns. Other comments are addressed in individual responses.

Master Response #1 - RF Exposure

Many commenters assert that the MND does not adequately assess or identify the potential health risks of RF exposure to people or to wildlife. Impacts related to RF exposure were analyzed on pages 60 through 61 of the MND, as well as in the Appendix B biological study and Appendix E RF study, prepared specifically for the proposed project. In Appendix E, the proposed project's compliance with the guidelines outlined by the Federal Communications Commission (FCC)

limiting human exposure to RF electromagnetic fields was evaluated by Hammett & Edison, Inc.

RF Exposure - Humans

As discussed in the MND, the FCC sets human 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 (MND p. 60). In 1985, the FCC first adopted guidelines to be used for evaluating human exposure to RF emissions. The FCC revised and updated these guidelines on August 1, 1996, as a result of a rule-making proceeding initiated in 1993.[1]

FCC exposure guidelines

In reaching its decision on adopting exposure guidelines the FCC carefully considered the large number of comments submitted in its rule-making proceeding, and particularly those submitted by the U.S. Environmental Protection Agency (EPA), the Food and Drug Administration (FDA) and other federal health and safety agencies. The guidelines are based substantially on the recommendations of those agencies, and it is the FCC's belief that they represent a consensus view of the federal agencies responsible for matters relating to public safety and health.[2]

The FCC's limits, and the NCRP and ANSI/IEEE limits on which they are based, are derived from exposure criteria quantified in terms of specific absorption rate (SAR). The basis for these limits is a whole-body averaged SAR threshold level of 4 watts per kilogram (W/kg), as averaged over the entire mass of the body, above which expert organizations have determined that potentially hazardous exposures may occur. The 1996 MPE limits are derived by incorporating safety factors that lead, in some cases, to limits that are more conservative than the limits originally adopted by the FCC in 1985. Where more conservative limits exist they do not arise from a fundamental change in the RF safety criteria for whole-body averaged SAR, but from a precautionary desire to protect subgroups of the general population who, potentially, may be more at risk.

The 1996 FCC exposure limits are also based on data showing that the human body absorbs RF energy at some frequencies more efficiently than at others. As indicated by the above table, the most restrictive limits occur in the frequency range of 30 to 300 MHz where whole-body absorption of RF energy by human beings is most efficient. At other frequencies whole-body absorption is less efficient, and, consequently, the MPE limits are less restrictive.

The FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure. The applicable tier for the proposed Verizon Wireless Facility Project is the General Population/Uncontrolled tier, i.e., "public limit" shown in the table on p. 60 of the MND (see the "WCS (Wireless Communication)" row).

[1] The guidelines incorporate limits for Maximum Permissible Exposure (MPE) in terms of electric and magnetic field strength and power density for transmitters operating at frequencies between 300 kilohertz (kHz) and 100 gigahertz (GHz). The FCC's MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

[2] Federal Communications Commission, Office of Engineering & Technology. *Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*. OET Bulletin 65. August 1997, p. 8.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related. These limits apply for a telecommunications tower, such as that proposed, which is located near a residential area. The MND table shows that the FCC's public exposure limits of 0.20 to 1.00 mW/cm^2 are much lower than the occupational limits, which range from 1.00 to 5.00 mW/cm^2.

The FCC's exposure limits are designed to ensure that FCC-regulated transmitters do not expose the public or workers to levels of RF radiation that are considered by expert organizations to be potentially harmful.[3] Therefore, if a transmitter and its associated antenna are regulated by the FCC, as the project would be, they must comply with provisions of the FCC's rules regarding human exposure to RF radiation. Under these circumstances, the MND examines whether the project shows compliance with the applicable limits.

Project Compliance with FCC Exposure limits

According to the RF exposure study prepared specifically for the project, 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.[4] For the purposes of this response, the City's consultant prepared Figure 1 below to show the estimated exposure levels summarized in the MND discussion. The exposures range from 0.44% to 2.8% of the public limit for most of the homes. The highest calculated level of RF exposure at any nearby residence is 13.0 percent of the public exposure limit, for the residence adjacent to the cellular site, at 2518 Pfeiffer Lane. The maximum calculated levels at the remaining nearby residences are predicted to range from 0.44 percent to 2.8 percent of the public exposure limit. These levels represent the predicted RF exposure levels at the exterior façade of the homes' second-story, and all, including the closest adjacent home, are well below the public limit, even with the worst-case assumptions identified on p. 61 of the MND.

[3] Federal Communications Commission, Office of Engineering & Technology. *Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields*. OET Bulletin 56. August 1999, p. 17.

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

Figure 1
Representative Calculated Maximum RF Exposure Levels at Nearby Residences

Note: Results expressed as percentage of applicable FCC public limit. Calculations performed according to OET Bulleting 65, August 1997. Based on proposed operating conditions.
Source: Hammet & Edison, Inc. *Supplemental Figure – Verizon Wireless – Proposed Base Station (Site No. 248125), 2518 Pfeiffer Lane, Pinole, Ca.* October 2015.

Conclusion

As described in the MND and further discussed above, the project RF study demonstrates that the worst-case estimated potential exposures from the project will be well below the FCC public exposure limits. The comments on RF exposure express general concern about RF emissions but do not provide any evidence that the study was incorrect or misstates the potential exposure estimates. Based on the whole of the record, substantial evidence supports the MND analysis and conclusions; further, there is no substantial evidence that the project will have a significant effect on the environment as to RF emissions.

RF Exposure - Animals

Potential RF exposure to wildlife is addressed in the project-specific biological evaluation (Appendix B to the MND).[5] The project evaluation describes recent research, primarily in Europe,

[5] Live Oak Associates. *Pinole Verizon Wireless Facility Biological Evaluation.* August 31, 2015, p. 27.

on what, if any, effect electromagnetic fields (EMFs)[6] have on plant and animal species. At present, there is a substantial amount of uncertainty related to estimating any effects that EMFs may have on existing biological resources in an area.

One of the sources of uncertainty is the lack of field studies. In the course of preparing this response, the City's consultants reviewed a recent study by S. Cucurachi et al. (2013). Cucurachi carried out a review of scientific, peer-reviewed studies conducted to evaluate ecological effects of RF-EMF. The biggest share of the articles (90 percent) involved laboratory studies, for a total of 106 articles. Field studies comprised only 10 percent of the articles, for a total of eight articles. Cucurachi notes that the information and results on effects gathered in laboratory studies may need to be cautiously handled due to the sheer nature of the laboratory solutions adopted. The conditions applied in the laboratory studies do not always reflect real conditions of exposure, and at times it is important to carefully evaluate the plausibility that biological systems exposed to RF-EMF could likely translate into ecologically relevant effects.[7] Cucurachi noted there are currently no guidelines for the exposure of biodiversity to RF-EMF, including FCC or otherwise.[8]

Many of the comments on the MND cited to studies purporting to show that EMF/RFs may cause negative effects on biological resources. The City's consultants reviewed the referenced studies and determined that they were in fact conducted in laboratory/controlled environments. As Cucurachi noted, it cannot be assumed that the applied conditions reflect real conditions of exposure in the field, i.e., in the project area. To illustrate this point, the study by Putnam et al. (2014) on juvenile steelhead trout, referenced in Comment Letter 5, was conducted in a controlled environment, where steelhead trout were taken as embryos from the Oregon Department of Fish and Wildlife Alsea Hatchery and transported to the Oregon Hatchery Research Center and incubated following routine protocol. Upon hatching, one group of fish was maintained in a fiberglass tank. A second group was maintained in a similar tank but in the vicinity of iron pipes and a concrete floor reinforced with steel rebar to create a distorted magnetic field. Tests were then conducted on both groups to determine their ability to properly orient themselves, when subject to magnetic fields representative of natural steelhead ranges. It was found that fish reared in a distorted magnetic field were randomly oriented, while fish reared in a natural magnetic field were properly oriented. The commenter appears to use this study as support for how EMF from the project will affect the navigational sense of steelhead trout in Pinole Creek. However, Putnam et al did not expose fish to RF from wireless communication facilities, only magnetic forces (iron pipe, steel rebar). Such a controlled experiment, not involving direct RF exposure, cannot be reliably applied to determine whether RF exposure from the proposed Verizon Wireless project can affect steelhead navigation within Pinole Creek. Furthermore, no resource agencies responsible for protection of migratory fish in California have set any thresholds to utilize when evaluating the ecological effects of RF-EMF on migratory steelhead.

With respect to migratory birds, one commenter referenced a 2014 U.S. Department of Interior letter, which acknowledges that while European field and U.S. laboratory evidence suggests that radiation can have adverse effects on migratory birds, independent, third-party peer reviewed

[6] The term "EMF" is often used to refer to electromagnetic fields, in general. It can be used to refer to either power-line frequency fields, radiofrequency (RF) electromagnetic fields, or both.

[7] Cucurachi, S., Tamis, W.L.M., Vijver, M.G., Peijnenburg, W.J.G.M., Bolte, J.F.B., Snoo, G.R., 2013. "A review of the ecological effects of radiofrequency electromagnetic fields (RF-EMF)." *Environ. Int.* 51, 116–140, p. 136.

[8] Cucurachi et al, p. 136.

studies still need to be conducted in the U.S. to begin examining the effects from radiation on migratory birds. Again, there are no conclusive studies to show what, if any, effect RF exposure has on biological resources in real environmental settings.[9] Further, as noted on p. 61 and in Appendix B of the MND, the project site, like other urban settings, is subject to existing sources of EMFs. This makes it difficult to distinguish the effects of the project from existing exposure conditions.

In summary, the effects of RF on animals, including their ability to navigate, are inconclusive; and guidelines or standards have not been established by regulatory agencies or scientific experts for the exposure of biological resources to RF-EMF. Therefore, in accordance with CEQA Guidelines Section 15145, the City of Pinole finds RF effects on animals as too speculative for evaluation.[10]

Master Response #2 - Landslides

A Geotechnical Investigation Report (dated February 4, 2015) was prepared for the proposed project by Mid Pacific Engineering, Inc. and was included as Appendix D to the IS/MND. The results of the February 4, 2015 Geotechnical Investigation are summarized in Section VI, Geology and Soils, of the MND. In responses to public comments related to landslides and slope instability, Mid Pacific Engineering, prepared a supplemental memo, clarifying their on-site soil boring observations and relevant literature review, and the implications of this research for landslide potential. Mid Pacific Engineering's Supplemental Memo is attached to this responses to comments document as Appendix C.

As discussed in Mid Pacific's supplemental memo, review of Chapter 9 of the Pinole General Plan, and specifically the Seismic and Geologic Hazards section, Figure 9.1, indicates the project site lies outside areas mapped as "few landslides" or "many landslides". Mid Pacific's on-site observations, and review of geologic maps and aerial photographs containing the site, did not reveal evidence of slope instability or landsliding within or adjacent to the project site. In addition, Mid Pacific's on-site investigation encountered very dense sandstone at an approximate depth of seven feet below ground surface. Based on review of available documents, and to the best of Mid Pacific's knowledge, the project site is not within an identified seismic or landslide hazard zone.

Mid Pacific has also clarified that, based upon its on-site soil boring, which encountered sandstone bedrock at a depth below 7 feet above ground level, a drilled pier foundation for the proposed cellular facility is a feasible engineering solution.[11] The drilled pier foundation system would adequately address the potential hazards associated with the presence of on-site artificial fill, as

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[9] Another factor that should be considered is that representative samples sizes of the relatively few field studies conducted on EMF effects on animals is typically small. Balmori conducted a study in 2005 to evaluate cellsite RF effects on white stork in Valladolid Spain. The sample size for this study included a relatively small sample size of 60 nests. While nest productivity was less for nests (sample = 30) located closer to the cellsites (within 200 meters), in previous studies in Valladolid, the results of productivity were generally higher than those obtained in Balmori's 2005 study and less nests appeared without young. Therefore, the observed effects of RF on animals in the Valladolid studies were not consistent.

[10] Per CEQA Guidelines Section 15145, "If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact."

[11] Personal communication between Woody Joe Pollard, C.E.G., Project Geologist, Mid Pacific Engineering, and Nick Pappani, Vice President, Raney Planning and Management, Inc., November 10, 2015.

noted in the Geotechnical Investigation Report. As a result, Mitigation Measure VI-1 of the MND has been revised for clarification purposes and in response to public comments related to landslides, as follows:

> *VI-1(a).* *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~~ verify field conditions, and the pier recommendations in ~~. 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. The cast-in-place concrete pier foundation recommendations presented in the February 4, 2015 Geotechnical Investigation Report, coupled with engineering design by the project Structural Engineer, shall be utilized to mitigate the potential effects of shallow instabilities associated with the on-site artificial fill soils encountered at the site.*
>
> *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.*

In response to comments provided in Letter 2, a subcomponent has been added to Mitigation Measure VI-1 of the MND, requiring in-field monitoring by the project geotechnical engineer.

> *VI-1(b).* *During construction, the project geotechnical engineer shall be retained by the applicant to observe drilled pier construction in order to verify that the construction is completed in compliance with the recommendations in the geotechnical reports.*

The changes to Mitigation Measure VI-1 of the MND are provided for clarification purposes and are not considered substantial revisions to the MND, per CEQA Guidelines Section 15073.5(b). As a result, and in accordance with Guidelines Section 15073.5(c), recirculation of the MND is not required.

RESPONSES TO COMMENTS

The Responses to Comments section includes responses to each of the comment letters submitted regarding the MND for proposed project. Each bracketed comment letter is followed by numbered

responses to each bracketed comment. Any changes to the IS/MND text are presented in double-underlined format for new, added text and ~~strikethrough~~ format for deleted text.

Letter 1

EAST BAY MUNICIPAL UTILITY DISTRICT

RECEIVED
OCT 19 2015
CITY OF PINOLE
DEVELOPMENT SERVICES DEPT. / PUBLIC WORKS

October 14, 2015

Winston Rhodes AICP, Planning Manager
City of Pinole Development Services Department
2131 Pear Street
Pinole, CA 94564

Re: Notice of Intent to Adopt a Mitigated Negative Declaration – Pinole Pfeiffer Lane Verizon Wireless Communications Facility in Pinole

Dear Mr. Rhodes:

1-1 East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Mitigated Negative Declaration (MND) for the Pinole Pfeiffer Lane Verizon Wireless Communications Facility located at 2518 Pfeiffer Lane in the City of Pinole (City). EBMUD has the following comments.

WATER SERVICE

1-2 EBMUD's Mendocino Pressure Zone, with a service elevation range between 200 and 400 feet, will serve the proposed project. Separate structures on a single parcel require separate water services. When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions for providing water service to the proposed project. Engineering and installation of water services require substantial lead time, which should be provided for in the project sponsor's development schedule.

WATER CONSERVATION

1-3 The proposed project presents an opportunity to incorporate water conservation measures. EBMUD requests that the City include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495) and "Landscape Water Conservation Section of the Municipal Code of the City of Pinole, Chapter 17.38" adopted by the City Council. The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.

Letter 1
Cont'd

If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

Sincerely,

David J. Rehnstrom
Manager of Water Distribution Planning

DJR:AMM:dks
sb15_163

cc: Pamela Nobel
Verizon Wireless
2010 Crow Canyon Place, Suite 355
San Ramon, CA 94583

LETTER 1: DAVID REHNSTROM, EAST BAY MUNICIPAL UTILITY DISTRICT

Response to Comment 1-1

The comment is an introductory statement and does not address environmental issues or the adequacy of the IS/MND.

Response to Comment 1-2

Comment noted. The comment regarding water services has been forwarded to the project applicant for informational purposes.

Response to Comment 1-3

Comment noted. The project applicant is required to comply with all Pinole Municipal Code requirements, including the water efficient landscape ordinance referenced in the letter and any others related to water conservation.

Letter 2

Law Offices of
DANA DEAN

Dana Dean *Managing Principal*
Amber Kemble *Of Counsel*

Venus Viloria Berdan *Senior Associate*
Felipe Solis *Associate*

October 30, 2015

Winston Rhodes AICP
Planning Manager
City of Pinole Development Services Department
2131 Pear Street
Pinole, California 94564
WRhodes@ci.pinole.ca.us

Sent via electronic mail with hard copy to follow via U.S. mail

Re: *Comments on Draft Mitigated Negative Declaration and Initial Study for the Pinole Pfeiffer Lane Verizon Wireless Communications Facility Project*

Dear Mr. Rhodes:

This office represents Blanca and Steven Vinje ["the Vinjes"] with regards to the proposed Pinole Pfeiffer Lane Verizon Wireless Communications Facility project ["Proposed Project"]. On their behalf, I submit the following comments on the Draft Mitigated Negative Declaration and Initial Study for the Proposed Project [collectively referred to as the "Draft MND/Initial Study"] and respectfully request that you take into account the following issues regarding the Proposed Project.

2-1

At the outset, please note that considering that this is the initial public comment period on the Draft MND/Initial Study, we may also later provide further comments on the Proposed Project as it moves forward for additional review by the City.

As background, the Vinjes are the owners of a residence located on Pfeiffer Way which is directly northwest of the site of the Proposed Project and which has the alleged view depicted as Location #4 (view of Project site looking south from Pfeiffer Lane) in Figures #9 and #13 of the Draft MND/Initial Study.[1] Therefore, because of the Vinjes' close proximity to the

[1] *See* Draft MND/Initial Study, p. 20, 24-25.

Letter 2 Cont'd

2-1 Cont'd

Proposed Project, they are directly affected by the impacts of such Proposed Project as further described herein.

Overall, we disagree with the determination set forth in the Draft MND/Initial Study 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."[2]

2-2

Moreover, the Draft MND/Initial Study explains that there would be potentially significant impacts with regards to the categories of biological resources, cultural resources, geology and soils, hydrology and water quality, and noise, and that such impacts could be mitigated with certain measures (which would have allegedly provided the basis for choosing a mitigated negative declaration instead of an EIR). However, there is substantial evidence that the Proposed Project would have a significant effect on the environment with regards to *other* categories and a more thorough and adequate environmental review is required.

In other words, a more careful review of the issues and impacts indicates that that the Proposed Project will have significant effects on the environment and that some of the proposed mitigations discussed in the Draft MND/Initial Study will not effectively address and remedy such effects as explained below. Accordingly, an Environmental Impact Report ["EIR"] may need to be done if the impacts from the Proposed Project cannot be adequately and effectively mitigated as the Proposed Project will have a significant effect on the environment.[3]

Considering all of these preliminary matters and the issues as detailed below, the City should make sure that its environmental review of the Proposed Project and its decision to rely on a mitigated negative declaration for this Proposed Project is in compliance with CEQA.

Aesthetics

2-3

The Draft MND/Initial Study explains that the impacts related to aesthetics (specifically, with regards to scenic vistas and visual character or quality of the site and its surroundings) would be less than significant. The Draft MND/Initial Study also sets forth that "the proposed project has been designed consistent with the requirements of Chapter 17.76, Wireless Communication Facilities, of the Pinole Municipal Code ["PMC"]."[4] However, after looking more closely at Chapter 17.76 of the PMC we have

[2] *Id.* at p. 4.
[3] *See* Public Resources Code §§21080(d), 21082.2(d); CEQA Guidelines §15064.
[4] Draft MND/Initial Study, p. 26.

determined that it is not accurate for the Draft MND/Initial Study to state that the Proposed Project's design is consistent with such requirements.

First of all, it is important to note that in the discussion on impacts on scenic vistas, the Draft MND/Initial Study inaccurately describes the requirements for the placement of wireless telecommunication facilities by referencing and quoting only PMC Section 17.67.060(F)(1).[5] In actuality, the requirements set forth in PMC Section 17.76.060(F) and subsection (1) apply *only* to the specific category of wireless telecommunication facilities on major or minor ridgelines or open space areas. PMC Section 17.67.060(A)(1)-(15), on the other hand, includes the general development standards (including placement) that apply to *all* wireless telecommunication facilities. Without discussion of the general development standards in PMC Section 17.76.060(A)(1)-(15), it is not accurate to state that "the placement of the proposed wireless telecommunication facility complies with the requirements of Chapter 17.76 of the [PMC]", even if only referring to the impacts on scenic vistas.[6]

2-3 Cont'd

This also means that because the Draft MND/Initial Study does not address or discuss the requisite *general development standards* in PMC Section 17.76.060(A) which do apply to the Proposed Project, the Draft MND/Initial Study also inaccurately concludes that the Proposed Project has been designed consistent with the requirements of Chapter 17.76 when discussing the impacts on the visual character or quality of the site and its surroundings.

For example, this specific section on impacts on aesthetics from the Draft MND/Initial Study does not address the general development standard regarding co-location with existing facilities and with other planned facilities in order to minimize overall visual impact, whenever feasible.[7] Also, there is no discussion about whether the Proposed Project is located so as to minimize its visibility and to utilize the latest technology available to minimize visual impacts.[8]

In addition, given the description of the Proposed Project as set forth in the Draft MND/Initial Study, the Proposed Project may not comply with the general development standards requiring all wireless telecommunication facilities that are not mounted on *existing* structures (as in this case) to comply with at least one (1) of the following:

2-4

[5] *Id.* at p. 18.
[6] *Id.* at p. 18-19.
[7] PMC Section 17.67.060(A)(4).
[8] PMC Section 17.67.060(A)(5).

2-4 Cont'd

a. Facilities shall be screened from the view of surrounding properties as much as possible and co-located with existing facilities or structures so as not to create substantial visual, noise, or thermal impacts;

b. Facilities shall be sited within areas with substantial screening by existing vegetation;

c. Facilities shall be designed to appear as natural features found in the immediate area, such as trees or rocks, so as to be effectively unnoticeable;

d. Facilities shall be screened with additional trees and other native or adapted vegetation that shall be planted and maintained around the facility, in the vicinity of the project site, and along access roads in appropriate situations, where such vegetation is required to screen telecommunication facilities. Such landscaping, including irrigation, shall be installed and maintained by the applicant, as long as the entitlement is in effect; or

e. Existing on-site vegetation shall be preserved or improved and disturbance of the existing topography shall be minimized. Landscaping shall be required in informal natural-looking clusters in the vicinity of any wireless telecommunication facility, in addition to screening of the facility.[9]

Contrary to the findings in the Draft MND/Initial Study, the Proposed Project with its 34-foot tall *faux* water tower will substantially degrade the existing visual character or quality of the site and its surroundings.

2-5

While the Draft MND/Initial Study explains that "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," this 34-foot tall faux water tower even as proposed would be an eyesore because of its height and unnatural appearance. The Proposed Project's design and location is also in direct conflict with the required development standard stated in PMC Section 17.76.060(A)(6) indicating that

> Wireless telecommunication facilities shall be located, designed, and screened to blend with existing natural or built surroundings so as to reduce visual impacts of the technological requirements of the proposed wireless telecommunication

[9] PMC Section 17.67.060(A)(9).

facility and, in so far as possible, appear compatible with neighboring residences and the character of the community.

As seen in Figures 10 to 13 of the Draft MND/Initial Study, the 34-foot tall faux water tower stands out and does not "blend in with the surrounding visual character and semi-rural project property features..."[10] If the Proposed Project is built and installed at the current site atop a hill in this residential neighborhood, residents from adjacent and nearby surrounding properties, as well as the public at large, would then have to always deal with the visual impacts of this huge 34-foot high tower sticking out and ruining their scenic view in an area that is made primarily up of undeveloped land and single-family residences as indicated in the Project Description and Project Vicinity Map for the Proposed Project.[11] This would also have long-term effects on the property values of the surrounding areas as the once scenic vista would now be marred by the presence of this unnatural structure jutting out from atop a hill in this residential area.

2-5 Cont'd

With all of this in mind, the Proposed Project substantially degrades the visual character or quality of the site and its surroundings and directly impacts the Vinjes and other residents who live nearby. Moreover, the Proposed Project is clearly not compatible with the neighboring residences and the character of the community.

Therefore, the review and discussion in the Draft MND/Initial Study on the Proposed Project's impacts on aesthetics is insufficient and needs to be revisited by the City to ensure thorough and adequate environmental review of the Proposed Project.

Air quality

Air quality is another category of impacts that the Draft MND/Initial Study states would result in less than significant impacts based on the conclusion that "the proposed project's operational, construction-related, and cumulative emissions would be well below the applicable BAAQMD thresholds of significance."[12] Also, it was determined that "[a]lthough construction-related activities are short-term and temporary in duration, emissions related to construction vehicles and equipment could contribute to regional air quality [and it] should be noted that all projects are required to comply with [Bay Area Air Quality Management District ("BAAQMD")] rules and regulations."[13]

2-6

[10] Draft MND/Initial Study, p. 21-24
[11] *See* Draft MND/Initial Study, p. 7 and Figure 2 on p. 8.
[12] *Id.* at p. 31.
[13] *Id.* at p. 30.

2-6 Cont'd

However, the discussion in the Draft MND/Initial Study does not adequately describe the potential air quality impacts, especially considering that construction and grading activities for this Proposed Project could still generate air pollutants, objectionable odors, and problems with dust. More detailed information is needed in the Draft MND/Initial Study to determine if compliance with BAAQMD rules and regulations is sufficient to address these air quality impacts. For example, the Draft MND/Initial Study should discuss mitigation measures to implement such as covering haul trucks, minimizing idling, and maintaining construction equipment.

Again, as it stands now, the Draft MND/Initial Study does not adequately address all of the potential and adverse impacts of the Proposed Project.

Geology and Soils

2-7

Because the Vinjes and others live nearby and downhill from the site of the Proposed Project, there are concerns about whether any impacts related to potential landslides and/or substantial soil erosion are adequately addressed and/or mitigated, especially if there appears to be deferral of mitigation.

Deferral of the formulation of mitigation measures to post-approval studies is generally impermissible.[14] An agency may only defer the formulation of mitigation measures when it "recognizes the significance of the potential environmental effect, commits itself to mitigating its impact, and articulates specific performance criteria for the future mitigation."[15] Deferral of mitigation is impermissible if it removes the agency from its decision-making role.[16] Also, deferred mitigation is not allowed with a mitigated negative declaration because an agency must be certain when it concludes that a proposed project will have no significant impacts and such certainty cannot be achieved if relevant information about the affected environment and impacts to it are deferred to the future.[17]

[14] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 308-309.
[15] *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1411 (citing *Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1028-1029).
[16] See *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 302-308 (mitigation scheme improper because applicant, subject only to planning staff approval, would conduct the analysis and to formulate the mitigation measures).
[17] *See e.g., Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296 and *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359.

For example, the focus of the mitigation measure dealing with "the potential for landslides to result in adverse *structural* impacts" is on submitting *in the future* a design-level geotechnical report "which 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...[and if]...a drilled pier foundation is not feasible, the geotechnical report shall specific another acceptable foundation design capable of withstanding geologic hazards, including landslides."[18] Also, "[a]ll 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."[19] For the last portion of this mitigation measure, the specific performance criteria for this future mitigation are not articulated as there is only a general reference to geotechnical recommendations that are to be specified in this future design-level geotechnical report.

2-7 Cont'd

Instead of focusing on the future submission of this design-level geotechnical report and the report's general requirements, more detailed mitigation information is needed in the Draft MND/Initial Study to effectively address the impact of exposing people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. For example, an additional mitigation measure is needed, such as requiring that the project geotechnical engineer provide observation and testing services during site grading, trenching, and foundation-related work in order to ensure that the construction is in compliance with the recommendations in the *existing* geotechnical report that has been already prepared for the Proposed Project (i.e., the Geotechnical Investigation Report, Proposed Telecommunications Facility, dated February 4, 2015 as referenced in and attached to the Draft MND/Initial Study) and/or with specific performance standards that still need to be articulated in the Draft MND/Initial Study.

Again, in order to provide sufficient environmental review of the Proposed Project, the City needs to review the discussion on this specific impact to determine if it meets the requirements for a mitigated negative declaration.

[18] Draft MND/Initial Study, p. 52.
[19] *Id.* at p. 53.

Hazards and Hazardous Materials

While the Draft MND/Initial Study indicates that "[b]ased 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...[and therefore], the proposed project would not create a significant hazard to the public or the environment associated with the RF electromagnet[ic] field," and while the City has set forth its intent "to protect the citizens of Pinole from any possible adverse health effects associated with exposure to high levels of NIER (non-ionizing electromagnetic radiation) to the extent permitted by the Federal Communication Commission (FCC)[,]" there are still concerns over the overall adverse effects of such electromagnetic fields on the environment and on our clients and the public.[20]

2-8

Although regulatory discretion over wireless telecommunications facilities is generally governed by certain federal parameters such as those under the Federal Communication Commission, it is important to note that the City still has the authority to regulate development standards related to wireless telecommunications facilities (as indicated in PMC Chapter 17.76) as well as to ultimately decide and approve of where such facilities are located in the City.

Moreover, it is also important to note and address the concerns of our clients as well as others in the community regarding this matter, including the effects of electromagnetic fields on their (and other residents') health considering their close proximity to the Proposed Project as well as such effects on the vegetation and other biological resources in the surrounding areas.

Biological Resources.

One of the potential impacts on biological resources that is not discussed in the Draft MND/Initial Study is the effects of electromagnetic radiation, including non-thermal effects, and radio frequency on vegetation and wildlife in proximity to the Proposed Project.

2-9

Therefore, as discussed in the above section, the City still has certain authority and discretion on this matter and the Draft MND/Initial Study needs to at least address this matter.

[20] *Id.* at p. 61; *also see* PMC Section 17.76.010.

Land Use and Planning and Other Impacts

One of the most major areas of concern with the environmental review for the Proposed Project and with this Draft MND/Initial Study is that it has been determined that there would be no impacts with regards to land use and planning, including with regards to physically dividing an established community and with being in conflict with applicable land use plans, policies, or regulations.[21] Most striking is the determination that: "Development of the project would not interfere with the existing uses and would not involve any identifiable potential for conflict with surrounding land uses."[22]

As detailed in this comment letter, the Proposed Project will result in a variety of adverse impacts and will interfere and conflict with existing residential uses, including those of our clients and other nearby residents. Not only will the Proposed Project impact the visual quality and character of the surrounding area with its unnatural looking, fake 34-foot water tower that does not blend into the background and environment, but nearby residents also have to deal with the unwanted air pollution and other hazards, noise impacts from the construction activities and diesel generator (regardless of its temporary and/or short duration), traffic impacts, and other adverse effects such as landslides and impacts on water quality. In addition, there is a concern regarding the potential impact on and interruption of existing telephone, wireless, and internet services.

2-10

The bottom line is that the Proposed Project does not belong at the proposed site in a *residential* setting because it conflicts with surrounding residential use. Based on a review of the issues and impacts resulting from the Proposed Project as discussed herein, it may just be that its impacts on the environment cannot be adequately mitigated and the Proposed Project should be relocated elsewhere *away* from residential uses.

Therefore, additional environmental review is required to address the impacts of the Proposed Project on land use and planning as well as on other impacts affecting residents.

Conclusion

2-11

Based on the above concerns regarding the Draft MND/Initial Study and the preliminary review to this point, we request that the City reject the current Mitigated

[21] *See* Draft MND/Initial Study, p. 69.
[22] *Id.*

2-11 Cont'd

Negative Declaration for this Proposed Project and instead direct staff to address the concerns contained herein and/or provide greater detail and discussion regarding the potential impacts and mitigation measures to ensure adequate environmental review of the Proposed Project.

On the other hand, if the impacts from the Proposed Project cannot be adequately and effectively mitigated, then an Environmental Impact Report must be done in order to comply with CEQA.

We appreciate the opportunity to comment on the above-referenced matter and look forward to the City addressing the concerns and issues discussed herein.

Respectfully Submitted,

VENUS VILORIA BERDAN

cc: Clients

LETTER 2: VENUS BERDAN, LAW OFFICES OF DANA DEAN

Response to Comment 2-1

The comment is an introductory statement and does not address the adequacy of the IS/MND.

Response to Comment 2-2

The comment summarizes impacts for which the MND identified mitigation measures but asserts that a more thorough and adequate environmental review is required. The specific concerns summarized in Comment 2-2 are addressed in subsequent comments; similarly, related responses will be addressed in detail below. The MND, together with public comments and these responses, provides a thorough and adequate review of the potential environmental impacts of the proposed project, in full compliance with CEQA and the CEQA Guidelines. No additional review is required.

Response to Comment 2-3

The comment states that the MND aesthetics analysis inaccurately states that it is consistent with the Chapter 17.76 development standards for wireless facilities. The comment appears to assert that all the general development standards, as well as the standards for wireless facilities on ridgelines and in open space, should be analyzed in the aesthetics section. The City agrees that the general development standards in Section 17.76.060.A apply to the project as well as the specialized standards for facilities in subsection F. However, the various standards should be analyzed as appropriate to the topic area. Accordingly, the project's consistency with the requirements in the Pinole Municipal Code (PMC) was analyzed in appropriate locations throughout the MND. For example, the horizontal distance requirements, discussed on p. 18 of the MND, were analyzed because they are directly related to Initial Study checklist item I.a regarding scenic vistas. The MND affirms the project location is consistent with this standard. Similarly, the requirements set by the general development standards in PMC Section 17.76.060.A.5-7 to blend with its surroundings, appear compatible with neighboring residences and the surrounding community, and to minimize visibility, was addressed on page 19 of the MND. The MND states that,

> "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."

Section 17.76.060.A.7 addresses non-reflective finishes, among other things, and is thus also relevant to the issue of potential light and glare. Accordingly, the requirement was also referenced on page 26 of the MND for Initial Study checklist item I.d, regarding light and glare. The IS/MND states that, "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 project has been designed consistent with the requirement set by PMC

Section 17.76.060.A.7.

The commenter requests discussion of co-location of the proposed wireless facility with existing facilities pursuant to Section 17.76.060.A.4, which addresses overall visual impacts. Co-location is not feasible because other existing cell sites that provide the service level needed by the Verizon Wireless carrier do not exist in this portion of the City (i.e., southern Pinole Valley area near Pinole Valley Road); further, the City is not aware of planned facilities, nor does the commenter identify any. The proposed project is intended to provide needed Verizon wireless coverage in the southern Pinole Valley area. In addition, given the topographical setting of the proposed facility, the applicant was able to minimize the height of the proposed facility to comply with Section 17.76.060(A)(14) of the PMC. Although specific subsections of the application development standards were not always cited in the MND, the substantive discussion addressed them where they relate to potential visual impacts. The visual-related standards that were not addressed in the MND are analyzed in these responses.

Response to Comment 2-4

The commenter asserts the project does not comply with any of the requirements of Section 17.76.060.A.9. The MND project description, aesthetics and biology discussions show that the project complies with at least two of the design criteria, even though only one is required. The proposed facilities would be screened from the view of surrounding properties as much as possible and co-located with existing structures, so as to appear appurtenant to the existing detached garage and residence at 2518 Pfeiffer Lane (criteria [a]; see MND p. 19). As discussed on pages 11 and 19 of the IS/MND, for additional screening purposes, grape vines would be planted on the north, south, and west sides of the fenced equipment area. The landscaping would be installed and maintained by the applicant. In addition, 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.

In addition, the area of disturbance has been minimized and on-site vegetation will be preserved, where feasible (criteria [e]). Biology Mitigation Measures IV-5 through IV-7 are included in the MND in order to reduce the potential impact to protected trees to a less-than-significant level. The measures require root protection, pruning, landscape planting, trenching and access guidelines, and performance steps should a protected tree be damaged (MND pp. 43-46). Further, as noted on p. 19 of the MND, the faux tank will be the same approximate height as nearby existing mature oak tree, again, allowing the project to better blend with its surroundings. As can be seen in Figure 13 of the IS/MND, views of the faux water tank from view #4 (i.e., Vinje residence) would be largely screened by existing vegetation.

Response to Comment 2-5

The comment asserts that the faux water tower will be an eyesore because of its height and unnatural appearance, conflicts with Section 17.76.060.A.6, and would have long-term effects on area property values. With respect to the height of the faux water tank, the maximum height of the

faux water tower would be approximately 34 feet above grade level. For the sake of comparison, a house built on the same property could be up to 35 feet (PMC Table 17.24.020-1, R-1 district). 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. 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; this tree will be preserved as part of the project. From certain areas, including Pfeiffer Lane, the tank would also be shielded by the ridgeline in the distance (MND p. 25).

In addition, with respect to the appearance of the faux water tank, the design would comply with the development standards stated in PMC Section 17.76.060.A.6. For example, as stated in the code section, the telecommunication facilities shall be located, design, and screened to blend with existing natural *or built* surroundings (emphasis added). The faux tank would be screened with fencing and vegetation and painted a reddish-brown color. The tank would also blend with the existing *built* surroundings, such as the existing residence and detached garage on the site. Water tanks are common in rural and semi-rural areas. In fact, Section 17.76.060.A.4 identifies water tanks as one of the suggested co-location facilities to minimize visual impacts. While this project does not propose co-location, the proposed water tank design is appropriate for the site and the surrounding area.

Effects on property values is not a CEQA issue, so no response is provided. As to visual impacts, CEQA focuses on a project's effects on public views; it does not protect private views. Accordingly, the MND identifies design features that minimize visual impacts and includes photosimulations to demonstrate and support its analysis and conclusions. The MND adequately supports the conclusion of no substantial degradation of the existing visual character of the site and surroundings. While the project would alter the visual character of the view of the residents represented by the commenter, Figure 13 of the IS/MND shows that the alteration of the view would not be considered "substantial", which is the qualifying term used in Appendix G of the CEQA Guidelines and related Initial Study checklist item I.c.

Response to Comment 2-6

The comment asserts that the project could generate air pollutants, objectionable odors and problems with dust, and the MND does not adequately address potential impacts. Other than these general assertions, the comment does not identify how the analysis is deficient. The City notes that the MND analysis assumes the project will generate air emissions, and quantifies them for construction (Table 2), operations (Table 3) and cumulative (Table 4) scenarios. The comment does not identify any errors in the emissions data. CEQA requires that the emissions be compared to thresholds of significance to determine if the level of emissions is significant. As noted in the MND, the thresholds of significance are based on BAAQMD thresholds, which is appropriate since BAAQMD is the agency for this area that is responsible for managing and regulating air quality. Impacts related to air quality as a result of construction and operation of the project were analyzed on pages 28 through 33 of the IS/MND by comparing the estimated project emissions to the identified thresholds. The IS/MND quantified and discussed the potential air quality impacts

resulting from the construction and operation of the project and determined that all air quality impacts would be less than significant. This is because the quantified emissions would be below the applicable Bay Area Air Quality Management District (BAAQMD) emissions thresholds used by the MND. The analysis adequately supports the conclusion of less than significant impacts.

The analysis on p. 30 of the MND further addresses construction equipment and procedures and states that the project would be required to comply with BAAQMD rules and regulations. This includes the BAAQMD-required Basic Construction Mitigation Measures listed in Table 8-2 of the BAAQMD CEQA Guidelines (May 2010). The measures include, but are not limited to, watering all exposed surfaces, covering haul trucks transporting soil, sand, or other loose material off-site, limiting vehicle speeds on unpaved roads, minimizing idling times, and maintaining construction equipment in accordance with manufacturer's specifications. Thus, the examples cited in the comment are already regulatory requirements for the project and need not be repeated as mitigation measures.

In addition, as discussed on pages 32 and 33 of the IS/MND, the emissions associated with operation of the on-site generator would be relatively low and below applicable District thresholds, 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, outside the City, and zoned for general agricultural uses by Contra Costa County. Potential odor impacts are addressed on MND p. 33. The project is not a manufacturing or other facility that would produce odors, and any temporary odors from diesel exhaust would be minimal and would end after construction. Diesel exhaust and any potential related odor from the generator use would be minimal. Overall, impacts related to odors were determined to be less than significant.

The MND adequately addresses and supports its conclusions that the project would have no significant air quality impacts. The comment offers no evidence that the analysis or conclusions are incorrect or inadequate.

Response to Comment 2-7

The comment asserts that the MND analysis on erosion and landslides is inadequate and defers mitigation of impacts to a future study. Please see Master Response #2 related to landslides and slope stability.

In addition, impacts related to soil erosion were analyzed on pages 53 through 55 of the IS/MND. Mitigation Measure VI-2 would ensure that impacts related to soil erosion during construction and operation of the project would be less than significant. Mitigation Measure VI-2 requires implementation of extensive construction and operational best management practices (BMPs), as well as construction monitoring, revegetation of disturbed soils, and annual bioswale inspection and maintenance. These measures will ensure that erosion is controlled and minimized on-site and off-site.

The MND adequately addresses and supports its conclusions that the project would have no significant landslide or erosion impacts. The comment offers no evidence that the analysis or conclusions are incorrect or inadequate.

Response to Comment 2-8

Please see Master Response #1. The maximum calculated level at the Vinjes residence located to the north of the site, along Pfeiffer Lane (photo location #4 in Figure 9 of the IS/MND), would be approximately 1.6 percent of the established FCC public exposure limit.

Response to Comment 2-9

Please see Master Response #1.

Response to Comment 2-10

The comment reiterates earlier concerns about the MND analyses and concludes with an opinion that the project should not be permitted at the project site. Impacts related to conflicts with any applicable land use plans, policies, or regulations were discussed on page 69 of the IS/MND and no conflicts were identified. According to Table 17.020.030 of the Pinole Municipal Code, a wireless communication facility is permitted within the Suburban Residential designation with a Conditional Use Permit (CUP). The decision whether to approve the CUP is the purview of the Pinole Planning Commission, as is the final determination of the project's consistency with City of Pinole adopted plans, policies, and regulations.

Response to Comment 2-11

The comment requests that additional detail be provided in the MND or that an EIR be prepared. The concerns raised in the comment letter have been adequately addressed in the MND and these responses to comments. The commenter generally makes broad assertions but provides no substantial evidence that the analyses or conclusions in the MND are incorrect or deficient under applicable CEQA standards for a mitigated negative declaration. The commenter may disagree with the conclusions in the MND, but that does not make the document inadequate under CEQA. The analysis and findings contained in the IS/MND remain adequate and preparation of an EIR is not required.

Letter 3

From: Winston Rhodes [mailto:WRhodes@ci.pinole.ca.us]
Sent: Friday, October 30, 2015 8:32 AM
To: Nick Pappani <npappani@raneymanagement.com>
Cc: mikemoore1178@gmail.com
Subject: Fwd: Proposed Cell Tower

FYI

Sent from my iPhone

Begin forwarded message:

From: Ben Anderson <banderson805@gmail.com>
Date: October 30, 2015 at 7:42:13 AM PDT
To: WRhodes@ci.pinole.ca.us
Subject: Proposed Cell Tower

In regards to the proposed cell tower placement in Pinole Valley:

3-1 The city of Pinole owns a lot of open land, including a lot of ridge line. I think it is really irresponsible for the city to NOT be utilizing this space. Instead, homeowners can sell their yards to cell companies? I understand the growing need for these towers, but shouldn't they be placed responsibly? This sounds like a really bad precedent to set.

3-2 Home values go down in proximity to cell towers; see:
"The Impact of Cell Phone Towers on House Prices in Residential Neighborhoods." Bond, Wang.
Is the city prepared to reimburse homeowners for lowered values?

3-3 How will this proposed cell tower impact the creek? There is a long history of land instability in properties adjacent to the creek. Has this been properly assessed? What about impacts to fish and native plant species? Noise impacts?

Ben Anderson
Pinole Valley resident

LETTER 3: BEN ANDERSON

Response to Comment 3-1

The City of Pinole discourages placement of wireless telecommunication facilities on major or minor ridgelines. As discussed on page 18 of the IS/MND, Chapter 17.76.060.F.1 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 proposed location of the facilities comply with all applicable provisions of the City's wireless ordinance in Chapter 17.76.

Response to Comment 3-2

Comment noted. The comment does not address the adequacy of the IS/MND. As noted in the CEQA Guidelines, Section 15131(a), "Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes." In summary, the CEQA Guidelines do not require analysis of impacts on property values.

The comment has been forwarded to the City decisionmakers for their consideration.

Response to Comment 3-3

Pinole Creek is not located on the project site and development of the project would not impact the Creek, which is approximately 200 feet away. The suitability of the site soils was reviewed in Section VI, Geology and Soils, in the MND, and in the project geotechnical report, attached to the MND as Appendix D. The MND analyzes the potential for liquefaction, ground subsidence, landslides, erosion and expansive soils and identifies mitigation measures as appropriate (MND pp. 51-56). See also, Master Response #2 related to landslides.

The comment asks generally about impacts to fish and native plant species, but does not identify a particular issue or identify any incorrect or inadequate analysis in the MND. Biological resources were analyzed in Section IV, Biological Resources, in the MND and in the project biological report attached to the MND as Appendix B. The MND analyzes potential impacts to wildlife species and habitat and identifies mitigation measures as appropriate. The mitigations address direct impacts to species, as well as indirect impacts such as potential erosion in Pinole Creek during construction and operation of the project. For example, Mitigation Measure IV-3 includes measures to avoid indirect impacts to special-status species potentially occurring in Pinole Creek, downslope of the project site. The mitigation requires implementation of best management practices (BMPs) during construction and operation of the project, subject to review and approval by the City's Development Services Department. In addition, the mitigation requires construction monitoring by a Qualified Stormwater Pollution Prevention Plan (SWPPP) Practitioner (QSP), revegetation of disturbed soils, and annual inspections of the on-site bioswale. No special-status plants are anticipated to occur on the site.

The comment asks generally about noise impacts, but does not identify a particular issue or identify any incorrect or inadequate analysis in the MND. Impacts related to noise were analyzed in Section XII, Noise, on pages 72 through 75 of the IS/MND, and in a Noise Statement prepared for the proposed project, and included as Appendix F to the IS/MND. Impacts related to operational noise, associated with periodic testing of the backup generator, were determined to be less than significant because the predicted noise levels for the project would be below the City's adopted noise-level standards for non-transportation/stationary noise sources. Mitigation Measure XII-1 reduces potential construction noise impacts to less than significant and requires construction activities to be limited to the hours of 7:00 AM and 5:00 PM on non-federal holidays, during which time construction noise is exempt from the City's noise standards. In addition, all construction and demolition equipment that utilizes internal combustion engines shall be fitted with manufacturer's mufflers or equivalent.

The MND adequately analyzed impacts related to facility placement, soil instability, biological resources and noise. There is no substantial evidence in this comment or otherwise that the project as mitigated will cause significant environmental impacts in these resource areas.

Letter 4

From: Matt Bielby <thebib@hotmail.com>
Date: October 24, 2015 at 10:16:40 PM PDT
To: "WRhodes@ci.pinole.ca.us" <wrhodes@ci.pinole.ca.us>
Subject: Pinole Pfieffer Lane Verizon Wireless Communications Facility

Winston Rhodes AICP, Planning Manager
City of Pinole Development Services Dept.
2131 Pear St.
Pinole CA 94564

Winston,

4-1 I wanted to make my public comment in disapproval of the proposed Cell Tower on Pfieffer Lane in Pinole. As a resident in the neighborhood immediately below the proposed site I want it to be noted that I am against this tower going up in our neighborhood. I don't feel it is necessary, and I think it will be a major

4-2 eyesore to people on our block. I am worried about the potential negative impacts it will have on home prices in the area, and I am concerned about the location that was chosen. 2518 Pfeiffer Lane is a very large property and I feel

4-3 that Verizon, the resident, and the city could have chosen another site on that property which wouldn't have been so obtrusive to the surrounding neighbors. I think once again a location was chosen that was easiest for Verizon without any thought to the neighbors given.

Thank you

Matt Bielby
2418 Stokes Ave
Pinole CA 94564

LETTER 4: MATT BIELBY

Response to Comment 4-1

The comment expresses disapproval of the project but does not address the adequacy of the IS/MND; therefore, no substantive response is required. The comment has been forwarded to the City decision-makers for their consideration.

Response to Comment 4-2

As discussed on pages 19 through 26 of the IS/MND, although the project would be visible from some of the surrounding areas, the project design includes techniques to blend in with the surrounding visual character and semi-rural project property features, including vegetation, using a faux water tower and screening to camouflage the wireless communication equipment. In addition, the proposed project has been designed consistent with the development standards of Chapter 17.76, Wireless Communication Facilities, of the Pinole Municipal Code. Many of the development standards are intended to address and minimize potential visual impacts of wireless projects. Furthermore, the proposed project is subject to Design Review approval, which would ensure that the project is designed to the satisfaction of the City. See Responses to Comments 2-3 through 2-5.

Response to Comment 4-3

A project's effect on property values is not a CEQA issue and is not required to be addressed in the MND. Please see Responses to Comments 3-2. The comment has been forwarded to the City decision-makers for their consideration.

Letter 5

From: Tony Gutierrez <gutierrez.sounds@sbcglobal.net>
Date: October 27, 2015 at 1:08:46 AM PDT
To: Winston Rhodes <wrhodes@ci.pinole.ca.us>
Cc: Carol Thompson <carol@mamabearsplaycare.com>
Subject: MITIGATED NEGATIVE DECLARATION nor the Environmental Review Document for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036)
Reply-To: Tony Gutierrez <gutierrez.sounds@sbcglobal.net>

October 27, 2015

Anthony Gutierrez
3805 Pinole Valley Road
Pinole, CA 94564

Winston Rhodes AICP, Planning Manager
City of Pinole Development Services Department
2131 Pear Street
Pinole, CA 94564

Dear Mr. Rhodes,

5-1 I am writing to you to inform you that the **MITIGATED NEGATIVE DECLARATION** nor the **Environmental Review Document** for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036) has failed to mention or to account for the upcoming $750,000 Steelhead Trout re-introduction project sponsored by the California Department of Fish and Wildlife (CDFW) and the deleterious effect that a cell tower located 165 feet from the Creek will have on this project

Similarly the **MITIGATED NEGATIVE DECLARATION** nor the **Environmental Review Document** for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036) has failed to mention nor account for the effects of the Magnetic Field Intensities of the EMF from the proposed Cell Tower will have on the "sense" of the Steelhead Trout that will be re-introduced into Pinole Creek in 2016. It is well known that Steelhead Trout use the Earth's Magnetic Field as a navigational tool. It is also well known that very small quantifiable deviations from the Earth's Magnetic Field have a deleterious effect on the sustainability of this species. Please see the enclosed 2014 peer reviewed article from Putman et al (attached).

5-2 Granted the Appendix B of the Environmental Review Document; A report titled, **"PINOLE VERIZON WIRELESS FACILITY BIOLOGICAL EVALUATION PINOLE, CALIFORNIA"**, prepared by LIVE OAK ASSOCIATES, INC. does address the ground-breaking work of 2015 by Balmori et al (attached along with citations), the ERD however does go on to acknowledge the negative effects of EMF field radiation on Steelhead Trout. However, Live Oak Associates also go on to state that these effects are not quantifiable.

This is patently false. Putman et al have measured the effects of the Magnetic Field Strength as well as the Magnetic Field direction of the navigational abilities of Steelhead Trout. Recall that all sources of EMF Radiation are simply oscillating Electric Fields and orthogonally oscillating Magnetic Fields. In the classical regime, i.e. the non-quantum regime the Magnetic Field Strength and the Magnetic Field direction can be both measured and calculated with 100% accuracy. This of course is well documented by the Theory of

Letter 5
Cont'd

Electromagnetic Radiation developed by James Clerk Maxwell in the 19th Century (See Jackson Classical Electrodynamics).

Similarly, neither the **MITIGATED NEGATIVE DECLARATION** nor the **Environmental Review Document** for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036) has failed to mention no account for the recent declarations and written Letter of the Department of Interior's Office of Environmental Policy and Compliance to the FCC in regards to outdated EMF Standards on EMF radiation from both Cell Phones and Cell Towers and the deleterious effect that these have on various protected species as well as other bird and bee species as well as other wildlife (See attached information for your elucidation).

5-2 Cont'd

Similarly, neither the **MITIGATED NEGATIVE DECLARATION** nor the **Environmental Review Document** for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036) has failed to mention or account for the negative effects of radiation from the proposed Cell Tower on the chicken population of the surrounding residences that house this species. As you very well know farm animals are codified in the City of Pinole Ordinances and many residences in the Valley have Chickens. See the information on the Department of Interior for the deleterious effects on Chicken Embryos.

I have also included e-mail correspondence with Mr. Stanley of the California Department of Fish and Wildlife for your edification.

Therefore, the Environmental Review Document is grossly inadequate and I am respectfully requesting a written response on each of these issues per City of Pinole Ordinance.

Also because the gross shortcomings' of the Mitigated Negative Declaration as well as the Environmental Review Document and its failure to adequately mitigate for the negative effects on the current and future Steelhead Trout populations in Pinole Creek I pray that the Mitigated Negative Declaration will not be approved.

Best Regards,

Anthony Gutierrez

Letter 5
Cont'd

From: Tony Gutierrez [mailto:gutierrez.sounds@sbcglobal.net]
Sent: Wednesday, October 28, 2015 8:27 PM
To: Winston Rhodes
Cc: Carol Thompson
Subject: Re: MITIGATED NEGATIVE DECLARATION nor the Environmental Review Document for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036)

October 28, 2015

Anthony Gutierrez
3805 Pinole Valley Road
Pinole, CA 94564

Winston Rhodes AICP, Planning Manager
City of Pinole Development Services Department
2131 Pear Street
Pinole, CA 94564

RE:ADDENDUM TO LETTER WRITTEN ON OCTOBER 27, 2015

Dear Mr. Rhodes,

5-3 In my previous letter I broached the subject of non-ionizing radiation at low levels on the chicken population of Pinole Valley. I wrote:

Letter 5 Cont'd

5-3 Cont'd

Similarly, the **MITIGATED NEGATIVE DECLARATION** nor the **Environmental Review Document** for the Verizon Cell Tower located at 2518 Pfeiffer Lane (APN 360-131-036) has failed to mention or account for the negative effects of radiation from the proposed Cell Tower on the chicken population of the surrounding residences that house this species. As you very well know farm animals are codified in the City of Pinole Ordinances and many residences in the Valley have Chickens. See the information on the Department of Interior for the deleterious effects on Chicken Embryos.

I have included said Department of the Interior Letter which points the inadequacy of the current legislation on the effects of non-ionizing radiation on the wildlife of Pinole Valley. There is a strong need to mitigate for the adverse effects on the chicken population in close proximity to the proposed cell tower. Once again the **MITIGATED NEGATIVE DECLARATION, Environmental Review Document** and the report provided by Live Oak Associates is inadequate with regards to the Chicken Population.

5-4

Not only is it the Chicken population of Pinole Valley at risk with the proposed cell tower but also the native endangered bird populations are at risk due to possible collisions with the proposed water tower as well as due to the non-thermal effects of non-ionizing radiation. The **MITIGATED NEGATIVE DECLARATION and the Environmental Review Document** fail to address either of these two mechanisms which are deleterious to the native endangered bird populations (See Enclosure A of the DOI Letter - attached.

I have included the Department of Interior (DOI) Letter which provides references to the scientific literature on the chicken studies, the collision risk for shorter towers on endangered species, as well as the failure to address non-thermal effects of cell towers in this addendum for your careful consideration and for a written response.

Best Regards,

Anthony Gutierrez

LETTER 5: ANTHONY GUTIERREZ

Response to Comment 5-1

The comment notes the MND does not account for a CDFW steelhead reintroduction project and deleterious effects of the project. The culverts under Interstate 80 (I-80) present the only significant barrier to steelhead migration in Pinole Creek up to the natural falls located on EBMUD lands much higher in the watershed. Removal of the migratory obstacles (i.e., culverts) under I-80 is currently planned to increase passage of anadromous fish within the Pinole Creek corridor in the future. The limits of the fish passage project are located approximately 1.9 miles northwest of the project site; and the proposed project would not interfere with the fish passage improvements either directly or indirectly.

Pinole Creek is not located on the project site and development of the project would not impact the Creek. Potential impacts as a result of project construction and operation related to Steelhead – Central California Coast Distinct Population Segments (DPS) were discussed on pages 37 through 41 of the IS/MND. Mitigation Measures IV-3 includes measures to avoid indirect impacts to special-status species potentially occurring in Pinole Creek, downslope of the project site. The mitigation requires implementation of best management practices (BMPs) during construction and operation of the project, subject to review and approval by the City's Development Services Department. In addition, the mitigation requires construction monitoring by a Qualified Stormwater Pollution Prevention Plan (SWPPP) Practitioner (QSP), revegetation of disturbed soils, and annual inspections of the on-site bioswale.

The comment does not identify any deficiencies in the analysis or identified mitigation measures to protect Pinole Creek and provides no substantial evidence that the project could result in significant impacts on the creek or on steelhead.

Response to Comment 5-2

Please see Master Response #1 regarding RF emissions.

Response to Comment 5-3

The comment reiterates the issues raised in the first comment letter sent on October 27, 2015, which is Letter 5. See Master Response #1 and Responses to Comments 5-1 to 5-4.

Response to Comment 5-4

Please see Master Response #1 and Responses to Comments 5-1 to 5-4.

Letter 6

October 30, 2015

Elaine Jaymot, 2350 Martinez Ct., Pinole, CA 94564

Winston Rhodes, Planning Manager
Pinole Planning Commissioners

SUBJECT: Opposing the proposed cell tower installation on Pfeiffer Lane, Pinole, CA

Dear Mr. Rhodes & Pinole Planning Commissioners::

6-1 I am opposing the proposed cell tower installation on Pfeiffer Lane because:

6-2 (1) Turning a zoned residential area to a commercial business area for a large company to profit and possibly sublease nine (9) panels. There would be a 34 feet cell tower with 9 panel antennas to be placed near residence for a possible 25-30 year lease contract with Verizon and a property owner. You will be making the Valley a mixed region of businesses. This area, from what I see on the Pinole Zoning map, should be residential area, not a business area. We have our set businesses already on Appian Way, i.e., K-Mart, Target and others, and the Pinole Shopping Center where there's Trader Joes, Mechanics Bank and others. And, we should keep the valley by the Pinole Valley Park a residential area, and not a business area. (See attached zoning map.)

6-3 (2) We're having one cell tower built or replaced one after another. We have too many cell towers growing in Pinole in our small town. There was San Pablo Ave. at the church and San Pablo Ave. in the shopping center, i.e. 99 cents store. We need ordinances to limit the amount of cell tower and get rid of some cell towers placements around residential homes in Pinole, and we should limit the antennas placement. As a cell companies technology change, there should be a new application done. There should be a new review done each time. And, not set up nine panel antennas or any panels in advance. On www.antennasearch, we have 12 towers and 156 antennas from 2518 Pfeiffer Lane, Pinole. (See attached.)

6-4 (3) The proximity of the cell tower is too close to residence where people live. Limit the proximity of a cell tower to a residence home, schools, hospital (anywhere where people live).. There already a cell tower near Pfeiffer Lane. And, there should be a limit on how close the cell towers should be from residential homes where people live. We have the young, middle aged, and old living here. Cell tower radiation affects a child's brain significantly more so, than a middle or aged person. We need to protect our families. (See attached.)

6-5 (4) The cell tower being placed 100 feet from residence is too close to people. There are increased dangers to human beings. There would be a constant flow of electromagnetic hitting some homes by this 2518 Pfeiffer Lane. The distance for a cell tower(s) being permitted at 100 feet should be changed back to more than 1,500 feet from residential areas, and this should be reviewed.

6-6 (5) http://www.pressherald.com/2015/06/11/cell-tower-on-deering-high-roof-undergoes-tests-after-fish-die-in-classroom/Cell towers kill birds, bees, and others. There a phenomenon regarding cell towers killing the birds by the cell tower antenna. The U.S. Fish and Wildlife estimates between 5 and 50 million birds killed in the U.S. each year by tower kill. Also, unnatural lights on communication towers disrupt bird migration patterns.

6-7 (6) Increase the risk of harming the protected trees in Pinole Valley Park. You would be increasing the risk of causing deforestation in Pinole Valley Park. Pinole Valley Park is a park to preserve nature and to be used for recreation and enjoyment for all people to enjoy. There are protected trees there. Trees around phone masts have experienced deforestation. There's a cell tower on Appian Way where the trees have turned completely dead after the installation of a cell tower.

6-8 (7) Increase risk of mudslides falling down on the residence home below. Increase the risk of making the ground unstable. Soil around this home had plans for roller paper for erosion control, possible muddy or flooding of fallen trees and/or shrubs. There have been studies where radiation hits the plants, i.e., pine needles. And, the pine needle absorbed the electric currents.

Letter 6
Cont'd

Opposing the proposed cell tower installation on Pfeiffer Lane, Pinole, CA
October 30, 2015
Page 2 of 3

6-8 Cont'd

And, the electric current was channeled into the soil which destroyed the soil. And, seed germination was poor because the soil was not in good growing medium anymore.

(8) Increase my electro sensitivity to me. I recently discovered this when my kids loving gaming. So, my husband and son wanted a stronger modem. They got one, and installed next to my desktop. I discovered my face would heat up by my new stronger modem. I started to wear an aluminum foil hat over my head, like a dunce hat to protect myself the all the electricity. My kids laughed. But, it was no joke to me. My face would burn up, and I would have extreme headaches. It's a nuisance and danger having increasingly all these electromagnetic equipment around me and in my house. I had to order my old model modem. I try to limit myself using my desktop. I rarely use my cell phone. In fact, I have not used my cell phone in months, and I don't want to. And, I tell my kids don't put the cell phone in their pockets. I don't want my kids or myself to get cancer. I'm just hearing about one neighbor after another getting cancer. There have been studies where cell phone radiation causes cancer. I don't need the everyday nuisance of my face heating up around a cell tower. I don't want to hear my friend, my neighbor, my father-in-law getting cancer due to increased risk of cell tower radiation. Don't let that proposed cell tower be installed. The World Health Organization rates radiofrequency electromagnetic fields exposure a Class 2B carcinogen. In the list of class 2 carcinogens are like lead, pesticides, DDT, gasoline fumes, and chloroform and cell towers.

6-9

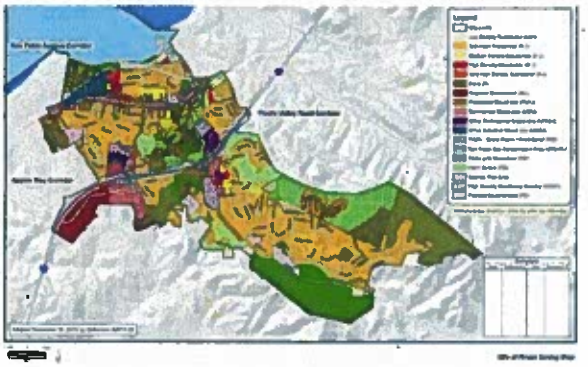
(9) There's no control or monitoring system of the cell tower activities to the town of Pinole. It's all in the hands of the cell tower companies. Will the cell tower company pay for all the damages of mudslides, risk of dangers to homes, damages to trees, underground movements of the ground. As far as I know insurance companies don't pay for damages of underground movements or trees falling. Will Verizon pay out damages out of their money? Will the citizens of Pinole (taxpayers) pay for damages out of their money? Will the City of Pinole pay for the damages though their money? I don't want to see my budgeted spending go up because of a cell tower company moving in and profiting off the citizens of Pinole

6-10

I oppose the Verizon cell tower project because of the negative effects of aggravation of cell tower pollution on the community due to (1) turning a residential area commercial, (2) too many cell towers growing in Pinole, (3) the proximity of the cell tower is too close to residence; (4) the cell tower is being placed 100 feet from residence; (5) the cell tower on Pfeiffer Lane would possibly hurt the Pinole Steelhead Project; (6) cell towers kills wildlife, i.e., bird and bees; (7) increase the risk of harming protected trees in Pinole Valley Park; (8) increasing the risk of mudslide; and (9) increasing my electro sensitivity to electromagnetic equipment. (causing harm to the community of Pinole).

6-11

Elaine Jaymot
Attachments



Refers to (1)

Letter 6 Cont'd

Opposing the proposed cell tower installation on Pfeiffer Lane, Pinole, CA
October 30, 2015

Refer to (2)

6-11 Cont'd

Refer to (3)

http://www.pressherald.com/2015/06/11/cell-tower-on-deering-high-roof-undergoes-tests-after-fish-die-in-classroom/ (Refer to item 5 above.)

Balmori, Alfonso. "Electromagnetic pollution from phone masts. Effects on wildlife"

Dr. Wolfgang Volkrodt, a retired Siemens physicist and engineer, studied deforestation in the German and Swiss Alps. He noticed areas of damage that occurred even where there was no acid rain. He hypothesized the cause was the massive communication between NATO countries and the soviet block. The theory was that the pine needles absorbed electrical current, and channeled this into the soil, which was destroyed. Indeed, U.S. satellites found deforestation in areas with massive communication. Some students built a Faraday cage around whole areas of forest, and those were the areas where the forests started to regenerate

86 http://download.journals.elsevierhealth.com/pdfs/journals/0928-4680/PIIS0928468009000030.pdf

87 B. Blake Levitt, Electromagnetic Fields,

Refers to (7)

LETTER 6: ELAINE JAYMOT

Response to Comment 6-1

The comment is an introductory statement, expressing the commenter's opposition to the project, and does not address the adequacy of the IS/MND; therefore, no substantive response is required.

Response to Comment 6-2

The comment states the commenter's opinion that the project will turn the area into a commercial business area. As noted on page 69 of the IS/MND, the project site is zoned Suburban Residential (R-1). According to Table 17.020.030 of the Pinole Municipal Code, a wireless communication facility is permitted within the Suburban Residential designation with a Conditional Use Permit (CUP). Commercial operations in general are not permittede in this district; uses with a commercial component are permitted only in accordance with the use table. The commenter expresses concerns that this project could lead to inducing growth of businesses within the Pinole Valley area. CEQA typically considers a project to lead to growth inducement if it results in any of the following conditions:

1. Foster population and economic growth and construction of housing.
2. Eliminate obstacles to population growth.
3. Affect service levels, facility capacity, or infrastructure demand.
4. Encourage or facilitate other activities that could significantly affect the environment.

The proposed wireless communications facility project would not result in any of the above conditions and no potential growth inducement was identified in the related discussion in Section XIII.a in the MND (p. 76).

Response to Comment 6-3

Co-location of the proposed Verizon wireless facility with existing facilities is not feasible because other existing cell sites that provide the service level needed by the Verizon Wireless carrier do not exist in this portion of the City (i.e., southern Pinole Valley area near Pinole Valley Road). The proposed project is intended to provide needed Verizon wireless coverage and capacity in the Pinole Valley area. In any case, the City has only limited discretion over cell towers and implements Chapter 17.76 of the PMC to regulate design issues to the extent permitted under applicable law.

Response to Comment 6-4

Please see Master Response #1 concerning RF. The proposed project exposure levels are well below FCC limits.

Response to Comment 6-5

Please see Master Response #1 concerning RF and the City's limited discretion to regulate design issues. The project complies with FCC public exposure limits.

Response to Comment 6-6

Because the project would install the antennas within a new 34-foot tall faux water tank, impacts related to birds colliding with the cellular tower would not be expected to occur. The maximum height of the faux water tower would be approximately 34 feet above grade level, which is similar to existing structures and vegetation on the property. 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. In addition, as noted on page 26 of the IS/MND, 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.

In addition, see Master Response #1 regarding RF effects on animals.

Response to Comment 6-7

The project is not located within Pinole Valley Park. As such, the project would not result in impacts to trees within Pinole Valley Park. Impacts related to the removal of trees as a result of development of the project were analyzed on pages 43 through 46 of the IS/MND. A Tree Survey was prepared for the proposed project by Timothy C. Ghirardelli, Consulting Arborist Services, and was included as Appendix C to the IS/MND. The MND notes that primary construction activities will occur adjacent to one Valley oak where the faux water tower structure is proposed. Installing the proposed utilities and equipment area will require frequent access through the tree canopy during construction, and pruning of the oak tree may be required. Mitigation Measures IV-5 through IV-7 are included in the IS/MND in order to reduce the potential impact to protected trees to a less-than-significant level. The measures require root protection, pruning, landscape planting, trenching and access guidelines, and steps should a protected tree be damaged. The comment does not identify any deficiencies in the MND mitigation measures for tree protection; there is no substantial evidence that the project, as mitigated, will result in significant impacts to protected trees.

Response to Comment 6-8

The comment relates to the effect of RF emissions on fallen plants, soil instability and poor seed germination. The comment does not include any supporting evidence on RF emission effects on plants that the City can review. Further, the comment does not identify any inadequacies in the proposed impact and mitigation analyses addressing mudflows, landslides or soil stability. Impacts related to landslides and slope stability were analyzed on pages 50 through 56 of the IS/MND. A Geotechnical Investigation Report was prepared for the proposed project by Mid Pacific Engineering, Inc. and was included as Appendix D to the IS/MND. See also Master Response #2. The MND analysis adequately analyzes and mitigates soils and geology issues.

Response to Comment 6-9

Please see the Master Response regarding RF. The FCC has established public exposure limits and the project's estimated emissions are well below the regulatory standards.

Response to Comment 6-10

As discussed in the IS/MND and these responses, the proposed project's impacts to the environment, including neighboring land uses, can be mitigated to less-than-significant levels. The applicant is responsible for implementing all mitigation measures if the project is approved, and responsible for maintaining the project in compliance with all applicable federal, state and local laws, including applicable City regulations.

Response to Comment 6-11

The comment includes a summary of the topics discussed previously in the letter and attachments regarding the effects of electromagnetic radiation from phone masts on wildlife. The specific topics have been addressed in responses to comments 6-1 through 6-11. See also the Master Response related to RF effects on animals.

Letter 7

To: Winston Rhodes AICP, Planning Manager
City of Pinole Development Services Department
2131 Pear Street
Pinole, CA 94564

Dear Mr. Rhodes and Planning Commission members,

This is a letter responding to the MND and ERI reports on the Verizon Cell Tower on 2518 Pfeiffer Lane. I have lived in that neighborhood for 16 years in court right below the hill the proposed cell tower. I have read the report and I want to share my serious concerns about construction of this tower and contents of the report. I am writing as concerned homeowner, parent, and citizen and not as an engineer or scientist. I am sharing my concerns about some findings and statements regarding impact of this project included in the report as well as in response to what was not included in the report.

7-1

My first very serious concern is the potential adverse health affects of the radiation emitted from this tower on the local neighbors. In my opinion the report did **not** fully address this potential health risks and only continued to provide results from the research the telecommunication companies are feeding to municipalities across the country. The research findings and FCC guidelines they refer to are 20 years old and do not include more recent findings and Congress is planning hearing to look at new research and modify the FCC guidelines based on more current research. Along with this letter I am including email attachments of several recent research articles regarding neurological and cancer risks to people living close to cell tower bases that I believe the planning commission and city planners must study and analyze more deeply. I also want the city to hire an independent contractor with expertise in this area should do a study and provide findings.

7-2

While I personally cannot being to understand why the homeowners on this property want to live 100 feet from this electromagnetic radiation, I am outraged as a resident of this neighborhood that these homeowners and Verizon feel have they have the legal right to put their immediate neighbors in harm's way. The health affects are significant and long term. It would be highly irresponsible and, perhaps financially dangerous, for this planning commission and city planning department to move forward and not study these health affects further and to determine that the neighbors closest to the site are aware and willing to take on those health risks. Verizon was able to convince the Evans family that the potential long-term neurological and cancer risks associated with cell towers could be ignored. I don't believe that Verizon or the Evans family have convinced their neighbors of the same. The city owes the nearby neighbors that protection.

My second concern is the reports findings of limited impact on the wildlife in the area, which it claims will be avoided though mitigation efforts. As you know Pinole Valley, especially the end of the valley, where this property is located is one of the few

7-3

Letter 7

Cont'd

areas of Pinole that still looks like it did when the city was founded and there are many wildlife residents. My property backs up to Pinole Creek and the wildlife that passes by my back yard everyday includes deer, wild turkeys, foxes, squirrels, skunks, opossum, lizards, salamanders and a variety of migratory birds. There are also cows, horses, and chickens that live ad graze within 1,000 feet of this project. In addition, the creek is filled with other amphibious creatures. Our city is collaborating on a project with the California Dept. of Fish and Game to reintroduce native Steelhead Trout to the creek. I have written to Robert Stanley of CA Fish & Game department to notify him of this proposed cell tower project. That letter is also included as an attachment. There was no mention of this Steelhead Trout reintroduction project in the report and it seems very short-sighted to me that the city would collaborate with the Department of Fish & Game to restore the creek in this way, while at the same time build a cell tower right above the creek with no acknowledgement of the effect of EMR waves on these native fish species. The report also dismisses that any of the other wildlife I mentioned above could be potentially at risk that mitigation efforts such a covering nesting birds' nests with buffers could not address. I found the study of the potential effects on the habitat and wildlife surrounding this proposed tower to be incomplete and limited and I ask the commission to ensure further study is done of the impact of the tower on wildlife and farm animals.

7-3 Cont'd

My third concern is the reports in complete study of the impact of this tower on the natural landscape or views. The report found that the impact on views is not significant and that designing the tower to look like a faux water tower will enhance its aesthetic. I must vehemently disagree on this point. I can see the hill for the proposed tower from the top of my court and from my backyard. The proposed tower is much larger than the garage that currently sits atop the hill and as tall as the home. The authors of the report placed photos of what it will look before and after construction. I live within 1,000 feet of this tower and the view from my home was included in the photos. The simulated photo taken from the top of Delarosa Ct. of the gigantic water tower looks terrible to me. Simply placing simulated photos and stating that the view is not significantly changed or somehow enhanced by design is not representative of what the actual homeowners and residents in the neighborhood may think. Many of us think it looks ugly and much too large for a residential property. Many of us also have real concerns of the affect this large, looming faux water tower will have on our property values due to aesthetics and potential health risks. The report makes no mention of any surveying of responses of what residents actually think of the design and that certainly should occur before the planning commission approves this application. I realize the regulation of the planning code in our city states that offering a 30-day review period to gather information about the concerns of local residents is adequate. However in the case of construction of a large project of such significance the opinions and interests of the private property homeowners should not outweigh the collective opinions and

7-4

Letter 7
Cont'd

7-4 Cont'd

interests of the residents who live closest to the project. I think there must be further diligent study and protection of those homeowners' and residents' rights as well.

Another serious concern that was insufficiently addressed in the report is the great risk for erosion, landslide or slippage of the hill during construction and for years to come as a heavy tower sits on top of a hillside that has eroded and slipped in the past. Our region is expected to have an El Nino winter this year and in the past El Nino years have caused significant damage to the hillsides and banks of the Pinole creek right in the area of this proposed tower. Large portions of people's property have eroded and washed away and the creek has become blocked by fallen trees by these sudden movements and collapses of the banks and hills surrounding the creek. I am not a surveyor or a geologist, but one can look at those hills and see evidence that they have moved in the past. In my opinion it is far too risky to build such a large tower so close to the edge of this hill. It is too risky for the neighbors below the hill who would bear the brunt of any hill slippage or collapse and also also risky to the vegetation and wildlife living near and in the creek. I think much further study needs to be done to explain and ensure that a cell tower with a base this size can safely be constructed and maintained at the edge of that hill and I ask the planning commission to ensure that further study is completed beyond placement of rolls of buffers and reseeding the hillside.

7-5

My next concern is the omission of discussion of the impact on property values of homes adjacent and just below the proposed tower. When Verizon proposed to build a tower in Pinole Valley Park this was a real and significant concern for the property owners who lived closest to that location. Both Verizon and the City Staff and many City Council members dismissed these concerns with no actual data from appraisers or realtors in our area and stated there was no negative impact based upon studies done years ago outside of the Bay Area. I believe that was an inadequate response at the time and it must be addressed with this project. The Bay Area housing market is unique due to the return of high property values, limited available housing, and also the interest and value that many people in the Bay Area place on reducing necessary health risks. Since I am a property owner in view of this site it does have an impact on my future. It affects the property owners on Pfeiffer Way due to health affects and aesthetics, and the courts below the hill off of Pinole Valley Rd. due to erosion and landslide risk even more. Once again, I do not think that Verizon or the Mike and Debbie Evans have the right to move forward with actions that may have such a serious financial consequences for their immediate neighbors without much more study and consideration of the impact on the values of their homes. I urge the planning commission ensure that an independent evaluation and study be completed by an appraiser and realtor familiar with the East Bay housing market to determine potential impact on home value and then share that information with the public and specifically the most affected neighbors before approving this application.

7-6

A final concern is regarding how the tower can be built given the restrictions of

7-7

Letter 7 Cont'd

weight on Pinole Valley Rd. and adjacent streets. The roads were designed for residential vehicles not large 5 axle trucks. Any truck over the 3-ton P.V.R. limit (6,000 lbs.) is restricted use of these roads. Certainly moving large construction vehicles and tower parts up this location will far exceed those weight limits. Are the planning commission and city government planning to waive those restrictions for this project? What impact will those heavy loads have on our residential streets and will it be further cost to the city to have to repair damage to Pinole Valley Rd. or adjacent streets? The report's finding only mentioned the amount of traffic from construction vehicles and workers, but did not discuss this issue of loads that exceed current city limits for weight on our residential roads.

7-7 Cont'd

I appreciate the time and attention that the city staff and planning commission members are giving to my concerns and to any other residents who wrote to you. Our concerns are very significant and should be publicly discussed and addressed at the planning commission meeting when this proposed cell tower project report is presented. I have one final comment that is important to share. I think it highly likely if each of you personally considered your own health and home you would **not** choose to live in the shadow of cell tower, no matter how well camouflaged the telecommunications company promised to make it. I think you need to strongly why consider why it is even an option for cell towers to be placed so close to residences. From a phone conversation I had with Mr. Rhodes earlier this month I learned prior to 2007 the distance of cell towers from residences was 1,000 feet based on the our original ordinance governing the placement of cell towers. From 2007-2010 the distance was modified to 500 feet and until the ordinance was changed once more in 2010 cell towers had to be at least 100 feet from residential zoning areas, which would have made it impossible for this project to even be considered since it is being placed inside of a residential zoning area. This cell tower is a commercial entity and it does not belong in a residential area. If it is needed for increased receptivity, then the city should work with Verizon to help them locate a site far enough away from homes to hold no health risk or risk of damage to other's property or property values.

7-8

I urge the planning department and planning commission to go back and carefully review the ordinance the city adopted in 2010 and in light of new research and the other concerns raised by myself and other concerned residents determine if it is still adequate to for this community. You hold important positions in our city government to ensure the safety and security of the residents of Pinole. I am certain that none of you take that responsibility lightly and that is why I am urging you to take your time and delay action on this CUP and first review and consider changing the ordinance to better protect the homes and health of Pinole residents.

7-9

The city's website currently posts a link to the agreement the city made with with Verizon Wireless earlier this year. Part of the description of the agreement reads, "Since the replacement project will be sited on private property, the City considers this

7-10

Letter 7
Cont'd

7-10 Cont'd

transaction to be one between private parties. As with all wireless telecommunications facilities, the City's regulatory discretion is preempted by the Federal Telecommunications Act of 1996. As such, the City's may only regulate the aesthetics of the project and its proximity to the nearest residence. The City does not have the legal jurisdiction to regulate any wireless telecommunications facility on the basis of electromagnetic frequency emissions or health related reasons." This statement concerns me greatly since it sounds very much like our city government and council has already told Verizon they will not stand in their way. It is now up to the planning commission to diligently consider and respond to each citizen's concerns and to locate any missing or incomplete information from the MND and ERI reports and ensure the report fully discloses all of the adverse risks to the health of neighbors on Pfeiffer Way, the financial risk to local homeowner's property values, the risk to neighbors beneath the hillside bordering the creak, and the risk to the wildlife and farm life in the area.

Respectfully submitted,

Julie Maier

2456 Delarosa Ct.
Pinole, CA. 94564
(510) 912-2613
jmaier@sfsu.edu

cc: Belinda Espinosa, Pinole City Manager
Mayor Peter Murray

LETTER 7: JULIE MAIER

Response to Comment 7-1

The comment is an introductory statement and does not address the adequacy of the IS/MND.

Response to Comment 7-2

Please see Master Response #1. The project's estimated emissions are well below the applicable FCC public exposure standards. As such, the City has limited discretion to regulate the project.

Response to Comment 7-3

Please see Master Response #1 regarding RF emissions impacts and Response to Comment 5-1 regarding the steelhead reintroduction project. With respect to other wildlife species, the MND identifies special-status species in accordance with the Initial Study checklist thresholds in checklist items IV.a, b, and d. The comment provides no evidence that these analyses are incorrect or inadequate. There is no substantial evidence that the project, as mitigated, would have a significant impact on biological resources.

Response to Comment 7-4

The comment expresses the author's opinion that the proposed water tank looks terrible, will degrade property values, and that area residents should be surveyed for their thoughts on the project design. The City acknowledges that visual analysis is subjective and that opinions may vary on the appearance of a project. Nevertheless, the CEQA Guidelines Initial Study checklist provides checklist standards to guide the MND analysis. As noted in the MND on p. 18, the standards are not based solely on a change in the visual setting, but whether the changes are substantial, based on the site and surroundings. The MND analysis addresses the checklist standards and includes several photosimulations to aid the analysis. Based on the details of the project, as proposed, and comparing the project to the checklist standards, the MND concludes that the project will change visual conditions, but the changes will not be substantial under CEQA. Please also see Response to Comment 2-5.

Response to Comment 7-5

The comment asserts that potential erosion, landslide and ground slippage have not been adequately analyzed. For erosion, landslide and soil stability concerns, see Master Response #2 and Response to Comment 2-7.

The MND discussion of soils and geology is based on a project-specific geotechnical study attached to the MND as Appendix D. The MND discussion and mitigations are not limited to "rolls of buffers and reseeding the hillside". For example, impacts related to soil erosion or the loss of topsoil were analyzed on pages 53 through 55 of the IS/MND. Mitigation Measure VI-2 would ensure that impacts related to soil erosion during construction and operation of the project would be less than significant. Mitigation Measure VI-2 requires implementation of extensive

construction and operational best management practices (BMPs), as well as construction monitoring, revegetation of disturbed soils, and annual bioswale inspection and maintenance – all to ensure erosion control during construction of the project and after. There is no substantial evidence that the project, as mitigated, will result in significant soils and geology impacts.

Response to Comment 7-6

As noted in the CEQA Guidelines, Section 15131(a), "Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes." A project's effects on property values is not a CEQA issue; the CEQA Guidelines do not require analysis of impacts on property values. Property values are affected by a variety of factor subject to change; and evaluating the effect of cellsites on property values is speculative, and thus, not required under CEQA.

The commenter also states her opinion that the project proponents do not have the right to move forward with actions that may have serious financial consequences. As noted above, financial consequences is not an environmental issue governed by CEQA. In any case, the proposed project is permitted with a Conditional Use Permit in the Suburban Residential (R-1) zoning district. The submitted application is appropriate to consider the proposed project.

Response to Comment 7-7

According to the City of Pinole's Interim Public Works Director / City Engineer, roadways within the project vicinity are designed for vehicles that are rated 18,000 lbs per axle, in accordance with Caltrans requirements throughout the State of California. Vehicles having a gross weight greater than 18,000 lbs are still allowable on the project area roadways due to the spreading of the load over the appropriate series of axles, such that each axle does not exceed the 18,000 lb maximum. This vehicle weight capacity is sufficient to support the construction and operational vehicles anticipated for the proposed project, which may include but not be limited to a fire truck, shipping truck, concrete mixer, and/or crane.

Response to Comment 7-8

Comment regarding public discussion is noted; the project will be considered by the Planning Commission at a noticed public hearing at which all interested parties may be heard. The comment also notes that distance regulations have changed over the years. The change in regulations has largely resulted from changes in federal regulations which have dramatically reduced local discretion over proposed cell tower facilities. The comment does not address the adequacy of the IS/MND. The comment has been forwarded to the City decision-makers for their consideration.

Response to Comment 7-9

Comment noted. The comment does not address the adequacy of the IS/MND. The comment has been forwarded to the City decision-makers for their consideration. For the project's consistency with the sections of the Pinole Municipal Code governing wireless communication facilities, see the MND and Responses to Comments 2-3 through 2-5.

Response to Comment 7-10

The comment is a conclusion statement and does not address the adequacy of the IS/MND. As noted in the comment, however, the City's discretion to regulate proposed cell towers is extremely limited, especially as to RF emissions. The comment has been forwarded to the City decision-makers for their consideration.

Letter 8

From: Soon-Young Namgoong [mailto:synamgoong@gmail.com]
Sent: Sunday, October 18, 2015 4:22 PM
To: Winston Rhodes
Cc: Stanley, Robert@Wildlife
Subject: Concerns about Proposed Verizon Cell Tower next to Pinole Creek

Dear Mr. Rhodes,

8-1 My name is Soon-Young Namgoong. I am writing to share my concerns about the proposed Verizon Cell Tower at 2518 Pfeiffer Lane next to Pinole Creek. Your letter(attached to this email) mentions that there will be **132 gallons** of diesel tank at the proposed site. My concerns are as follows:

8-2 1) We live in an earthquake zone. If a strong earthquake hits our area, a lot of diesel could potentially leak into the soil and contaminate Pinole Creek Watershed. Your letter also mentions a total of **4,483 sqaure** feet area will be disturbed by this project. Are you aware of Pinole Steelhead Restoration Project? Have you contacted Dept of Wildlife and Fisheries regarding this potential problem to the Creek? I copied Mr. Robert Stanley from Dept of Wildlife and Fisheries on this email.

Mr. Stanely, Are you aware of this Cell Tower Project next to the Creek?

I know Verizon Wireless is very eager to have this cell tower going in the Pinole Valley. I'd hate to see this aggressive Verizon Wireless ruining our beautiful wildlife habitat and the Steelhead restoration project.

8-3 2) My other concern is about the impact of constant radiation on our health. There has been more awareness about the harmful effects of low frequency cell tower radiation. If you need to put a cell tower, please consider a place out of the Pinole Valley Park and away from the Creek and the residents.

8-4 I look forward to hearing from you.

Best regards,

Soon-Young

LETTER 8: SOON-YOUNG NAMGOONG

Response to Comment 8-1

The comment is an introductory statement and does not address the adequacy of the IS/MND.

Response to Comment 8-2

Impacts related to rupture of a known earthquake fault, groundshaking, and ground failure were analyzed beginning on page 50 of the IS/MND and were determined to be less than significant. 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.

In addition, as discussed on page 11 of the IS/MND, 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 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. Therefore, the potential for the diesel fuel tank to leak is highly unlikely. Should any urban pollutants, including diesel fuel, be found in the proposed equipment area; the proposed bioswale, required by Mitigation Measure IV-3, would remove contaminants through natural filtration. 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.

See Response to Comment 5-1 regarding the fish passage project. Pinole Creek is not located on the project site; and development of the project would not impact the Creek. In addition, Steelhead – Central California Coast Distinct Population Segments (DPS) - were discussed on pages 37 through 41 of the IS/MND. The California Department of Fish and Wildlife (CDFW) was informed of this project, and the City did not receive comments from this agency regarding the environmental effects of the project on natural resources within the CDFW's area of responsibility.

Response to Comment 8-3

Please see the Master Response.

Response to Comment 8-4

The comment is a conclusion statement and does not address the adequacy of the IS/MND.

Letter 9

From: Denise Root [mailto:deniserigs@yahoo.com]
Sent: Monday, October 26, 2015 6:19 PM
To: pathenouy@ci.pinole.ca.us; Winston Rhodes
Subject: Verizon Cell Tower @ 2518 Pfeiffer Lane

9-1 We absolutely protest having this tower installed any where near our backyard. The likelihood of property value loss is tremendous. I would certainly never buy a home near a tower. It doesn't matter if they make it look like a nice water tower or not. When I sell my home I have a legal obligation to disclose that the water tower is actually a Verizon wireless communication tower. It's a little like having power lines right next to your property.

9-2 There are groups of people that believe that these towers cause all kinds of health problems. There is no evidence to prove that they are safe. These towers do emit electromagnetic radiation. Take a little survey of a few people and ask them if they would like to buy a home next to a wireless tower.

9-3 Placing a tower in a populated neighborhood is asking way too much. What will I and my neighbors lose in property value..$50,000, $100,000? It doesn't have to go there. Looking out my back window I can see a tower that's disguised as a tree that's about 6 miles away on a hill top in a completely non populated area. I believe that is where all towers should be erected.

9-4 To the City Clerk: Can you send this e-mail to all of the City Council members?

LETTER 9: DENISE ROOT

Response to Comment 9-1

A project's effect on property values is not a CEQA issue and does not require analysis in the MND. Please see Response to Comment 3-2.

Response to Comment 9-2

Please see Master Response #1 regarding RF emissions.

Response to Comment 9-3

Please see Response to Comment 3-2.

Response to Comment 9-4

The comment is a conclusion statement and does not address the adequacy of the IS/MND. The comment has been forwarded to the City decisionmakers for their consideration.

Letter 10

From: KBELLA1SAL@aol.com [mailto:KBELLA1SAL@aol.com]
Sent: Wednesday, October 28, 2015 6:24 PM
To: Winston Rhodes; Winston Rhodes
Subject: Verizon Wireless Cell Tower application 2518 Pfeiffer Lane

Dear Winston and Planning Commission members,

I am writing to express my public comment on this pending application.

I see this application as a proposed Commercial Operation in an R-1 zoning, Suburban Residential area. This project has a very narrow benefit to the residents of Pinole Valley.

10-1 That being the business relationship between Verizon Wireless and their wireless customers. At the same time there is a broad negative exposure to everyone who lives in close proximity to this proposed tower, with no benefit. If Verizon Wireless can operate a Commercial Enterprise in R-1 zoning, it sets a precedent for other applicants to do the same. Perhaps the real issue here is the weakness of Pinole's applicable Ordinance, covering cell towers.

For anyone who has lived in this area, especially those whose property borders Pinole Valley Creek, the prospect of mudslides, flooding and geological slippage is very real. A trip down Pinole Valley Rd with a look at the hillsides will confirm that fact. The hillsides have shown a dangerous propensity for sliding. Pinole Valley Creek has eaten away at its banks during high precipitation events and the cycle of El Nino. If you are aware, the

10-2 prediction for the strongest El Nino ever, shall affect Northern California in 2015-2016. The efforts to protect the hillside under the proposed Cell tower can actually exacerbate and cause major slippage at the constuction site. Add the influence of heavy machinery, excavations, drilling, etc, etc and you have a recipe for disaster. This site borders Pinole Valley Creek and whatever falls on that hill has an excellent chance of blocking and spoiling the Creek. A recent award of a grant to reintroduce Steelhead Trout into the Pinole Creek Watershed is in imminent danger from earth movement and spoilage of the Creek.

The issue of Radiation and EMF danger has been swept under the rug, courtesy of the Telecommunications Act of 1996. The science used in consideration of that Law is now 20 years old. There are new indications and investigations into the long term health

10-3 effects of concentrated radiation on humans, especially more vulnerable humans, like children. Yes there will be cell towers, but they should be sited as far away as possible from dense residential areas. The European standard is one thousand (1000) ft. The Pinole standard is one hundred (100) ft. This is a regrettable error and may very well result in liability for the City of Pinole.

This application for a Verizon Cell Tower may be a separate issue in a technical sense, but to the residents who opposed a similar cell tower, recently and nearby, they are are linked. Verizon Tower #1 was an 85 ft monstrosity that sat nearer to the valley floor in the quiet forest of Pinole Valley Park. The opponents rejected that application due to concerns for radiation safety and the effect on property values. The fact that it was proposed to be sited in the Park was adding insult to injury. The use of parkland for commercial purposes was found to be a violation Federal Law and State Regulations. The resultant rejection of that application led to threats of litigation by Verizon against the

10-4 City of Pinole. A "Tolling Agreement" resulted which had all legal remedies halted. That same Tolling Agreement was undone by a "Settlement" between Verizon and the City of Pinole earlier in 2015. Why did Verizon settle? It is obvious to me and many others that a deal was reached out of the Public purview in "Closed Session" to pave the way for a SLAM DUNK when the new cell tower application came before the city. That is where we are right now. A City Administration and City Council that is prepared to ignore the opposition and approve Verizon's application without any respect for the people they represent. I respectfully ask that you reject this application. Take the time to rewrite the Cell Tower Ordinance and start over.

Respectfully submitted, Sal Spataro

Sal Spataro
2450 Stokes Ave
Pinole, Ca 94564

LETTER 10: SAL SPATARO

Response to Comment 10-1

As discussed on page 69 of the IS/MND, according to Table 17.020.030 of the Pinole Municipal Code, a wireless communications facility is permitted within the Suburban Residential (R-1) designation with a Conditional Use Permit (CUP). The decision whether to approve the CUP is the purview of the Pinole Planning Commission, as is the final determination of the project's consistency with City of Pinole adopted plans, policies, and regulations.

Response to Comment 10-2

Please see Master Response #2 regarding landslide potential. With respect to flooding, the MND confirms that 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.

Response to Comment 10-3

Please see Master Response #1 regarding RF emissions. The project's estimated emissions are well below applicable FCC public exposure standards.

Response to Comment 10-4

Comment noted. The comment does not address the adequacy of the IS/MND. The comment has been forwarded to the City decisionmakers for their consideration.

Letter 11

October 28, 2015

Susan Varela
2330 Martinez Ct.
Pinole, CA 94564

Winston Rhodes AICP, Planning Manager
City of Pinole Development Services Department
2131 Pear Street
Pinole, CA 94564

Re: Opposing the cell tower application on 2518 Pfeiffer Lane, Pinole, CA 94564

Dear Winston Rhodes and the Pinole Planning Commissioner,

11-1 We strongly oppose the cell tower application on 2518 Pfeiffer Lane due to the reasons I have listed below as follows:

11-2 1. Electro sensitivity to radiation frequency from cell towers can effect and damage head tissue to childen, adults, and wildlife. We are affecting the small children and adults at the nearby Ellerhorst Elementary School, Pinole Valley Park, and all of residence in Pinole.

11-3 2. Pinole Valley within the proximity of Pinole Valley Park and Ellerhorst Elementary School is zoned as residential, so placing a cell tower there would turn it into a commercial zone usage and that is not the neighborhood we would like.

11-4 3. There are 12 cell towers and 156 antenna search from 2518 Pfeiffer Lane in Pinole, California. The immediate area should have enough cell phone coverage with the existing cell towers and we don't need more.

11-5 4. The cell tower placed at 100 ft. away from residence is too damaging to humans, all pets, as well as endangered wildlife (fish, birds, reptiles, bee, and plants).

11-6 5. The project of steelhead restoration goal of preservation may just result in project steelhead deformity and death to steelhead embryos. Should the cell tower proceed to be placed at 2518 Pfeiffer Lane, there will be harm to the fish, wildlife, birds and plants in and around Pinole Creek.

11-7 The possibility of mudslides in and around where the cell tower is proposed will cause extensive damage to the area. The erosion will cause a mudslide and the city may not fix it just like the mudslides in Pinole Valley Park where it makes it more difficult to walk on the trails because of the landslides.

11-8 I oppose the cell tower to be placed at Pfeiffer Lane because of all the above reasons and I don't need another property tax bill increase so we can fix all the damages done afterwards. Don't burden the citizens of Pinole with more money we will have to pay because of this.

Sincerely,

Susan Varela
Attachment will be provided upon request.

LETTER 11: SUSAN VARELA

Response to Comment 11-1

The comment is an introductory statement and does not address the adequacy of the IS/MND.

Response to Comment 11-2

Please see Master Response #1 regarding RF emissions.

Response to Comment 11-3

Please see Response to Comment 10-1.

Response to Comment 11-4

The comment does not address the adequacy of the IS/MND. Please see Response to Comment 6-3.

Response to Comment 11-5

Please see Master Response #1 regarding RF emissions.

Response to Comment 11-6

Please see the Master Response.

Response to Comment 11-7

Please see Response to Comment 2-7.

Response to Comment 11-8

The comment is a conclusion statement and does not address the adequacy of the IS/MND. The comment has been forwarded to the City decision-makers for their consideration.

Letter 12

From: Wilke Vanessa <xstitching54@yahoo.com>
Date: October 26, 2015 at 10:57:13 PM PDT
To: Winston Rhodes <wrhodes@ci.pinole.ca.us>, Tim Banuelos <tbanuelos@ci.pinole.ca.us>, PMurray <pmurray@ci.pinole.ca.us>, Debbie Long <dlong@ci.pinole.ca.us>, Roy Swearingen <rswearingen@ci.pinole.ca.us>, Dean Allison <dallison@ci.pinole.ca.us>
Subject: Pinole Valley Creek & Cell Tower in the Valley
Reply-To: Wilke Vanessa <xstitching54@yahoo.com>

I am writing to share my concerns re: the proposed cell tower in Pinole Valley to be located above the creek.
I understand the council will be meeting about this in November.

12-1 My first concern is the roads, Pinole Valley Rd, Wright Ave, Doidge..any other roads that equipment vehicles will need to travel to haul material. These roads are not rated to support the weight of those vehicles.
The roads were designed for residential vehicles not a 5 axle truck. Any truck over the 3 ton P.V.R. limit (6,000 lbs.) like drilling equipment.

12-2 My second concern is the stability of the hill on which they want to put the tower. I live across the creek, 2325 Hoytt Court..my backyard is the hill above the creek. In 1998, the last Big El Nino, my family lost our

Letter 12
Cont'd

backyard due to a broken City storm drain that runs from the front of our court, under our property and dumps
run-off into the creek. This was discovered in February 1998...the whole hill slide into the creek leaving our
home within 23' of the slide, a 25' drop off. We had to fight the city to get them to accept responsibility for repairing
our yard before the next rains began. At this exact same time we were sliding away, directly across the creek,
not far from the Tower site, the Wilbur family backyard was also sliding badly "without" our storm drain problem.
Their back hill above the creek was also covered in plastic tarps as were several other homes along Pinole Creek

12-2
Cont'd

that winter from the terrible rain soaked unstable land above the creek, praying each day no more would drop off!
That August we had been told the City would NOT fund the repair...meeting in closed sessions to discuss other choices.
The city called FEMA who took the project because 1. our home was in eminent danger & 2. FEMA had paid for slide repair in the same area in 1986...we moved in in 1981. The city had to front the money as it was an Audited project & would get paid when it was done. Thank goodness FEMA stepped in or we would have "washed away"! Remember all this started in February..repair on the property / drain didn't begin until Sept. 98'. Kind of amazing still all these years
later that it was a "city drain" that broke on our side of the creek causing all this damage, yet the "City" would not accept
responsibility immediately. Once the work by FEMA began they worked 7 days a week to beat the next rainy season.

How does this History Lesson have relevance re: the Tower? I am worried that NO ONE, the City, Fish & Game, &
highly doubtful Verizon.. have any knowledge of the severe problems of land movement in the Valley, especially near
& above the creek. Four years of drought..Do you think that means the creek is a bare empty creek-bed waiting to
fill up with rain?? Think again...The creek is terribly overgrown, the 17 year old Broken off approx.15 feet of storm drain
culvert from 1998 is still laying down the hill from our yard. The creek is very narrow behind the 2 story wood house on
P.V.Rd.(previous Bundy property)...when the El Nino rains arrive that creek quickly becomes a Swollen, Raging, Rapid River measured in acre feet.
Everything will be swept up in its unstoppable path. Uprooted trees / shrubs from the creek bed, the old culvert, all are prime to become lodged and cause the creek to back up and rise .Due to No preparation to clear the creek this could cause devastating problems that could impact all "creek side" families and, the hill above reserved for the cell tower.
You say, but the Tower will be up on the hill... yes, a hill whose Base, (what is ment to "hold up the hill") is Part of the Creek!

I would appreciate the Council addressing these concerns and sharing the discussion with the Community. You
have been advised of possible serious complications in the next few months due to documented, serious problems along the creek from the valley to the bay, as well as serious flooding problems...

Letter 12
Cont'd

12-2
Cont'd

Don't ignore the warning... Please..
Take Action...Help protect the citizens in the Valley along the Creek. Reconsider the location of a Giant Tower being allowed to be built on potentially seriously unstable land.
Thank you, Vanessa Wilke xstitching54@yahoo.com

LETTER 12: VANESSA WILKE

Response to Comment 12-1

Please see Response to Comment 7-7.

Response to Comment 12-2

Please see Master Response #2 regarding soil stability issues.

APPENDIX A

Letter 5 Attachments

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

FEB - 7 2014

TAKE PRIDE IN AMERICA

In Reply Refer To: (ER 14/0001) (ER 14/0004).

Mr. Eli Veenendaal
National Telecommunications and Information
Administration
U.S. Department of Commerce
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

Dear Mr. Veenendaal:

The Department of the Interior (Department) has reviewed the above referenced proposal and submits the following comments and attachment for consideration. Because the First Responder Network Authority (FirstNet) is a newly created entity, we commend the U.S. Department of Commerce for its timely proposals for NEPA implementing procedures.

The Department believes that some of the proposed procedures are not consistent with Executive Order 13186 Responsibilities of Federal Agencies to Protect Migratory Birds, which specifically requires federal agencies to develop and use principles, standards, and practices that will lessen the amount of unintentional take reasonably attributed to agency actions. The Department, through the Fish and Wildlife Service (FWS), finds that the proposals lack provisions necessary to conserve migratory bird resources, including eagles. The proposals also do not reflect current information regarding the effects of communication towers to birds. Our comments are intended to further clarify specific issues and address provisions in the proposals.

The Department recommends revisions to the proposed procedures to better reflect the impacts to resources under our jurisdiction from communication towers. The placement and operation of communication towers, including un-guyed, unlit, monopole or lattice-designed structures, impact protected migratory birds in two significant ways. The first is by injury, crippling loss, and death from collisions with towers and their supporting guy-wire infrastructure, where present. The second significant issue associated with communication towers involves impacts from non-ionizing electromagnetic radiation emitted by them (See Attachment).

In addition to the 147 Birds of Conservation Concern (BCC) species, the FWS has listed an additional 92 species as endangered or threatened under the Endangered Species Act. Together with the bald and golden eagle, this represents 241 species of birds whose populations are in trouble or otherwise merit special protection, according to the varying criteria of these lists. The Department suggests that FirstNet consider preparing a programmatic environmental impact statement (see attachment) to determine and address cumulative impacts from authorizing FirstNet projects on those 241 species for which the incremental impact of tower mortality, when

added to other past, present, and reasonably foreseeable future actions, is most likely significant, given their overall imperiled status. Notwithstanding the proposed implementing procedures, a programmatic NEPA document might be the most effective and efficient method for establishing best management practices for individual projects, reducing the burden to individual applicants, and addressing cumulative impacts.

Categorical Exclusions
The Department has identified 13 of the proposed categorical exclusions (A-6, A-7, A-8, A-9, A-10, A-11, A-12, A-13, A-14 A-15, A-16, A-17, and A-19) as having the potential to significantly affect wildlife and the biological environment. Given this potential, we want to underscore the importance of our comments on FirstNet's procedural guidance under Environmental Review and Consultation Requirements for NEPA Reviews and its list of extraordinary circumstances in Appendix D.

Environmental Review and Consultation Requirements for NEPA Reviews
To ensure there are no potentially significant impacts on birds from projects that may otherwise be categorically excluded, the Department recommends including the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act to the list of requirements in this section.

Extraordinary Circumstances
To avoid potentially significant impacts on birds from projects that may otherwise be categorically excluded, the Department recommends including species covered under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act to the list of environmentally sensitive resources. Additionally, adding important resources to migratory birds such as sites in the Western Hemisphere Shorebird Reserve Network and Audubon Important Bird Areas to the paragraph on areas having special designation or recognition would help ensure their consideration when contemplating use of a categorical exclusion.

Developing the Purpose and Need
The Department recommends inclusion of language that would ensure consideration of all other authorities to which NEPA is supplemental as opposed to simply the FirstNet mission. As currently written, the procedures are limited to ensuring the purpose and need considers the FirstNet mission. If strictly applied, this approach would severely limit the range of reasonable alternatives, and likely preclude consideration of more environmentally benign locations or construction practices.

Environmental Review Process, Apply NEPA Early in the Process, Where Action is by Non-Federal Entity
The Department recommends that FirstNet be required to coordinate with federal agencies having jurisdiction by law or special expertise on construction and lighting of its network of towers.

Thank you for the opportunity to comment on the draft document. If you have any questions concerning the comments, please contact Diana Whittington, NEPA Migratory Bird lead, at (703) 358-2010. If you have any questions regarding Departmental NEPA procedures, contact Lisa Treichel, Office of Environmental Policy and Compliance at (202) 208-7116.

Sincerely,

Willie R. Taylor
Director, Office of Environmental Policy
and Compliance

Enclosure

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Enclosure A

Background

The placement and operation of communication towers, including un-guyed, unlit, monopole or lattice-designed structures, impact protected migratory birds in two significant ways.

The first is by injury, crippling loss, and death from collisions with towers and their supporting guy-wire infrastructure, where present. Mass mortality events tend to occur during periods of peak spring and fall songbird bird migration when inclement weather events coincide with migration, and frequently where lights (either on the towers and/or on adjacent outbuildings) are also present. This situation has been well documented in the U.S. since 1948 in the published literature (Aronoff 1949, see Manville 2007a for a critique). The tallest communication towers tend to be the most problematic (Gehring *et al.* 2011). However, mid-range (~400-ft) towers as proposed by the First Responder Network Authority (FirstNet, a newly created entity under the Department of Commerce) can also significantly impact protected migratory birds, as can un-guyed and unlit lattice and monopole towers (Gehring *et al.* 2009, Manville 2007a, 2009, 2013a). Mass mortalities (more than several hundred birds per night) at unguyed, unlit monopole and lattice towers were documented in fall 2005 and 2011 in the Northeast and North Central U.S. (*e.g.*, Manville 2007a). It has been argued that communication towers including "short" towers do not impact migratory birds, including at the population level (*e.g.*, Arnold and Zink 2011), but recent findings have contradicted that assertion (Manville 2007a, 2013a, Longcore *et al.* 2012, 2013).

The second significant issue associated with communication towers involves impacts from non-ionizing electromagnetic radiation emitted by these structures. Radiation studies at cellular communication towers were begun circa 2000 in Europe and continue today on wild nesting birds. Study results have documented nest and site abandonment, plumage deterioration, locomotion problems, reduced survivorship, and death (*e.g.*, Balmori 2005, Balmori and Hallberg 2007, and Everaert and Bauwens 2007). Nesting migratory birds and their offspring have apparently been affected by the radiation from cellular phone towers in the 900 and 1800 MHz frequency ranges – 915 MHz is the standard cellular phone frequency used in the United States. However, the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today. This is primarily due to the lower levels of radiation output from microwave-powered communication devices such as cellular telephones and other sources of point-to-point communications; levels typically lower than from microwave ovens. The problem, however, appears to focus on very low levels of non-ionizing electromagnetic radiation. For example, in laboratory studies, T. Litovitz (personal communication) and DiCarlo *et al.* (2002) raised concerns about impacts of low-level, non-thermal electromagnetic radiation from the standard 915 MHz cell phone frequency on domestic chicken embryos – with some lethal results (Manville 2009, 2013a). Radiation at extremely low levels (0.0001 the level emitted by the average digital cellular telephone) caused heart attacks and the deaths of some chicken embryos subjected to hypoxic conditions in the laboratory while controls subjected to hypoxia were unaffected (DiCarlo *et al.* 2002). To date, no independent, third-party field studies have been conducted in North America on impacts of tower electromagnetic radiation on migratory birds. With the European field and U.S. laboratory evidence already available,

independent, third-party peer-reviewed studies need to be conducted in the U.S. to begin examing the effects from radiation on migratory birds and other trust species.

Discussion

Collision Deaths and Categorical Exclusions

Attempts to estimate bird-collision mortality at communication towers in the U.S. resulted in figures of 4-5 million bird deaths per year (Manville 2005, 2009). A meta-review of the published literature now suggests, based on statistically determined parameters, that mortality may be 6.8 million birds per year in Canada and the U.S.; the vast majority in the United States (Longcore *et al.* 2012). Up to 350 species of birds have been killed at communication towers (Manville 2007a, 2009). The Service's Division of Migratory Bird Management has updated its voluntary, 2000 communication tower guidelines to reflect some of the more recent research findings (Manville 2013b). However, the level of estimated mortality alone suggests at a minimum that FirstNet prepare an environmental assessment to estimate and assess the cumulative effects of tower mortality to protected migratory birds.

A second meta-review of the published mortality data from scientific studies conducted in the U.S. and Canada (Longcore *et al.* 2013) strongly correlates population effects to at least 13 species of Birds of Conservation Concern (BCC, USFWS 2008). These are mortalities to BCC species based solely on documented collisions with communication towers in the U.S. and Canada, ranging from estimated annual levels of mortality of 1 to 9% of their estimated total population. Among these where mortality at communication towers was estimated at over 2% annually are the Yellow Rail, Swainson's Warbler, Pied-billed Grebe, Bay-breasted Warbler, Golden-winged Warbler, Prairie Warbler, and Ovenbird. Longcore *et al.* (2013) emphasized that avian mortality associated with anthropogenic sources is almost always reported in the aggregate, *i.e.*, "number of birds killed," which cannot detect species-level effects necessary to make effective and meaningful conservation assessments, including determining cumulative effects. These new findings strongly suggest the need for at least an environmental assessment by FirstNet, or more likely, an environmental impact statement.

Radiation Impacts and Categorical Exclusions

There is a growing level of anecdotal evidence linking effects of non-thermal, non-ionizing electromagnetic radiation from communication towers on nesting and roosting wild birds and other wildlife in the U.S. Independent, third-party studies have yet to be conducted in the U.S. or Canada, although a peer-reviewed research protocol developed for the U.S. Forest Service by the Service's Division of Migratory Bird Management is available to study both collision and radiation impacts (Manville 2002).

As previously mentioned, Balmori (2005) found strong negative correlations between levels of tower-emitted microwave radiation and bird breeding, nesting, and roosting in the vicinity of electromagnetic fields in Spain. He documented nest and site abandonment, plumage deterioration, locomotion problems, reduced survivorship, and death in House Sparrows, White Storks, Rock Doves, Magpies, Collared Doves, and other species. Though these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction and operation of the cellular phone towers. Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations

among male House Sparrows. Under laboratory conditions, DiCarlo *et al.* (2002) raised troubling concerns about impacts of low-level, non-thermal electromagnetic radiation from the standard 915 MHz cell phone frequency on domestic chicken embryos – with some lethal results (Manville 2009). Given the findings of the studies mentioned above, field studies should be conducted in North America to validate potential impacts of communication tower radiation – both direct and indirect – to migratory birds and other trust wildlife species.

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Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation

Alfonso Balmori. Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation. Science of the Total Environment. Volumes 518-519, 15 June 2015, Pages 58-60.

Abstract

The rate of scientific activity regarding the effects of anthropogenic electromagnetic radiation in the radiofrequency (RF) range on animals and plants has been small despite the fact that this topic is relevant to the fields of experimental biology, ecology and conservation due to its remarkable expansion over the past 20 years. Current evidence indicates that exposure at levels that are found in the environment (in urban areas and near base stations) may particularly alter the receptor organs to orient in the magnetic field of the earth. These results could have important implications for migratory birds and insects, especially in urban areas, but could also apply to birds and insects in natural and protected areas where there are powerful base station emitters of radiofrequencies. Therefore, more research on the effects of electromagnetic radiation in nature is needed to investigate this emerging threat.

Highlights

- The growth of wireless telecommunication technologies causes increased electrosmog.
- Radio frequency fields in the MHz range disrupt insect and bird orientation.
- Radio frequency noise interferes with the primary process of magnetoreception.
- Existing guidelines do not adequately protect wildlife.
- Further research in this area is urgent.

Excerpts

Different animal groups are sensitive to low frequency electromagnetic fields, and many species with receptor organs are provided with important orientation cues from natural electric fields (Kalmijn, 1988). Animals can use the direction of the magnetic field as a compass and the intensity of the magnetic field as a component of the navigational map, with light-dependent reactions in specialised photo-pigments and reactions involving small crystals of magnetite, using one of these systems, or both simultaneously, depending on the animal groups (Kirschvink et al., 2001, Johnsen and Lohmann, 2005, Wiltschko et al., 2007, Hsu et al., 2007, Ritz et al., 2009 and Wajnberg et al., 2010).

Some insects, like bumblebees (Bombus terrestris), can interact with floral electric fields and electric field sensing constitutes a potentially important sensory modality. The perception of weak electric fields by bees in nature, which should be considered alongside vision and olfaction, may have an adaptive value (Clarke et al., 2013). An applied static magnetic field affects circadian rhythms, magnetosensitivity and orientation of insects through cryptochromes, and a prolonged weakening of the geomagnetic field affects the immune system of rats (Roman and Tombarkiewicz, 2009 and Yoshii et al., 2009).

In the radiofrequency range, the rapid development and increased use of wireless telecommunication technologies led to a substantial change in the radio-frequency electromagnetic field (RF-EMF) exposure (Levitt and Lai, 2010). This increased exposure was most consistently observed in outdoor areas due to emissions from radio and mobile phone base stations (Urbinello et al., 2014). Current evidence indicates that exposure at levels found in the environment (in urban areas and near base stations), may particularly alter the receptor organs to orient in the magnetic field of the earth, although the species conservation implications are unknown. Radio frequency fields in the MHz range disrupt birds' orientation interfering directly with the primary processes of magnetoreception and therefore disable the avian compass as long as they are present (Wiltschko et al., 2014). Ritz et al. (2004 & 2009) reported the sensitivity for orientation of European robins (Erithacus rubecula) to radiofrequency magnetic fields. The orientation of migratory birds is disrupted when very weak high-frequency fields (broad-band field of 0.1-10 MHz of 85 nT or a 1.315 MHz field of 480 nT) are added to the static geomagnetic field of 46.000 nT (Thalau et al., 2006). It was convincingly demonstrated that robins are unable to use their magnetic compass in the presence of urban electromagnetic radiofrequency noise in the frequency range of 2 kHz-5 MHz (Engels et al., 2014). Therefore, electrosmog scrambles birds' magnetic sense and this finding could inform policies written to protect the habitats of endangered species.

As with birds, radio frequency magnetic fields disrupt magnetoreception in insects. The geomagnetic field reception in American cockroach is sensitive to weak radio frequency field causing a disruptive effect (Vacha et al., 2009), so these authors suggest that electromagnetic smog will have to be taken more seriously in animal magnetoreception experiments. In an experimentally-generated electromagnetic field of about 1 V/m with a realistic (and even lower) power intensity similar to those surrounding communication masts, the results and observations suggest that GSM (Global System for Mobile communications) 900 MHz radiation might have a severe impact on the nerve cells of exposed ants, especially affecting the visual and olfactory memory, causing the loss of their ability to use visual cues and suggesting that electromagnetic radiation may have an impact on the orientation behaviour and navigation of animals that use magnetic fields to find their way (Cammaerts et al., 2012 and Cammaerts et al., 2014). Honeybees are sensitive to pulsed electromagnetic fields generated by mobile phones and observable changes in the bee behaviour could be one explanation for the loss of colonies (Favre, 2011). Magnetoreception system in Monarch butterfly orientation (Guerra et al., 2014) may be also suffering interference with anthropogenic radio frequency magnetic fields and this, together with other factors (Brower et al., 2012), may be a cause of their population decline.

Electromagnetic fields act via activation of voltage-gated calcium channels (Pall, 2013). Changes in the size of the magnetic granules upon applying additional magnetic field to the cells of Apis mellifera were observed, and this size fluctuation triggered the increase of calcium intracellular (Hsu et al., 2007). Therefore, we may hypothesise that some of the disruptive effects of radio frequency fields on the orientation of animals may be related to the interference with calcium channels.

An aversive effect on bats has been found in habitats exposed to radiofrequency radiation (1-4 GHz) when compared with matched sites where no such radiation can be detected (Nicholls and Racey, 2009). Cattle exposed to radiofrequency emissions (900 MHz) from nearby base stations may suffer changes in the redox proteins and enzyme activities. It was also found that some are sensitive to radiation, while others are not (Hässig et al., 2014).

Exposure to low intensity radiation can have a profound effect on biological processes (Bolen,

1994). Although there is a good degree of evidence on the injurious effects of radiofrequency electromagnetic fields on the immune system, pineal gland, circadian rhythm, oxidative stress and teratogenicity, these topics remain controversial (Lerchl et al., 2008, Takahashi et al., 2009, Jin et al., 2012, Qin et al., 2012, Bilgici et al., 2013, Tsybulin et al., 2013, Yakymenko et al., 2014 and Cao et al., 2015). Conversely, there is a scientific agreement regarding harmful effects of radio frequency radiation on human reproduction (Adams et al., 2014). Low-voltage electricity current-generated electromagnetic field can produce a significantly negative effect on the breeding success of birds (Ciconia ciconia) nesting directly on electricity lines (Vaitkuvienė and Dagys, 2014) and these same results have been found in nests exposed to radiofrequency radiation near phone masts (Balmori, 2005).

The health risk of electromagnetic fields to aquatic organisms needs to be addressed (Lee and Yang, 2014). The potential interactions between diadromous fishes of conservation importance and the electromagnetic fields and subsea noise from marine renewable energy developments are being studied (Gill et al., 2012).

In a systematic review of published scientific studies on the potential ecological effects of radiofrequency electromagnetic fields (RF-EMF) in the range of 10 MHz-3.6 GHz, about two thirds of the reviewed studies show ecological effects of RF-EMF at high, as well as at low, dosages (Cucurachi et al., 2013). The low dosages are compatible with real field situations, and could be found under environmental conditions (Cucurachi et al., 2013 and Balmori, 2014). However, studies conducted in real field situations must be made with a sufficient experimental exposure time, since results with a short period of exposure are likely to be ambiguous (e.g. 48 h in Vijver et al., 2013).

A limited number of studies have addressed the effects of radiofrequency radiation on plants indicating that these effects depend on the plant family, growth stage, exposure duration, frequency, and power density, among other factors (Senavirathna and Takashi, 2013 and Halgamuge et al., 2015). There are two papers warning on negative effects of radio frequencies from mobile phone masts on trees (Balmori, 2004 and Waldmann-Selsam and Eger, 2013) and researchers have found very worrying effects in laboratory studies (Pesnya and Romanovsky, 2013). The results of these preliminary findings indicate that further research on this topic is extremely urgent.

These results could have important implications for wildlife, especially in urban and suburban areas, but also in rural, natural and protected areas where there are powerful base station emitters of radiofrequencies (Bürgi et al., 2014). Such effects have not yet been examined, but the consequences continue due to the fact that the existing guidelines of public health protection only consider the effects of short-term thermal exposure (Hyland, 2000) and do not adequately protect wildlife. EMF safety standard should be based on the more sensitive, natural biological response (Blank, 2014). Therefore, more research on the effects of electromagnetic radiation in nature is needed to investigate this emerging threat (Balmori, 2014).

Survey (Medical/biological Study)

Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation. review

By: Balmori A
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Endpoint

- wildlife orientation

(Study character: medical/biological study, survey)

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Rearing in a distorted magnetic field disrupts the 'map sense' of juvenile steelhead trout

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Animal behaviour

Rearing in a distorted magnetic field disrupts the 'map sense' of juvenile steelhead trout

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We used simulated magnetic displacements to test orientation preferences of juvenile steelhead trout (*Oncorhynchus mykiss*) exposed to magnetic fields existing at the northernmost and southernmost boundaries of their oceanic range. Fish reared in natural magnetic conditions distinguished between these two fields by orienting in opposite directions, with headings that would lead fish towards marine foraging grounds. However, fish reared in a spatially distorted magnetic field failed to distinguish between the experimental fields and were randomly oriented. The non-uniform field in which fish were reared is probably typical of fields that many hatchery fish encounter due to magnetic distortions associated with the infrastructure of aquaculture. Given that the reduced navigational abilities we observed could negatively influence marine survival, homing ability and hatchery efficiency, we recommend further study on the implications of rearing salmonids in unnatural magnetic fields.

1. Introduction

An animal's navigational capacity, the process by which an animal decides when and where to move, is centrally important to its overall fitness [1]. The Earth's magnetic field is an important source of navigational information for diverse animals whose movements encompass a wide range of spatial scales [2]. In addition to providing compass information that allows animals to maintain a heading, spatial variation in magnetic parameters provides map information, from which animals can infer their location [3]. At least two components of the magnetic field are used by animals for map information, the total field intensity (strength) and inclination angle (angle which field lines intersect the surface of the Earth) [3–6]. Both components generally increase from the equator to the magnetic poles (figure 1*a*,*b*) and provide animals with latitudinal information [3,5,6,8,9]. However, the gradients are not entirely parallel and thus form a bicoordinate grid, whereby different intensity and inclination combinations can, in some cases, provide longitudinal information [10].

Recent simulated magnetic displacement experiments indicate that juvenile Chinook salmon (*Oncorhynchus tshawytscha*) use magnetic map information to guide their migration to oceanic foraging grounds [8]. These responses appear to be inherited, given that the fish had never left the test site and did not have the opportunity to learn the large-scale magnetic gradients of the North Pacific. Environmental factors could still play an important role if fish calibrate their responses relative to the local magnetic field in which they rear. For example, the genetic programme might estimate location based on relative changes to a baseline field. Such a mechanism could be useful to mitigate problems associated with drift of the magnetic field, as the centre of the map would re-calibrate each generation [8,9].

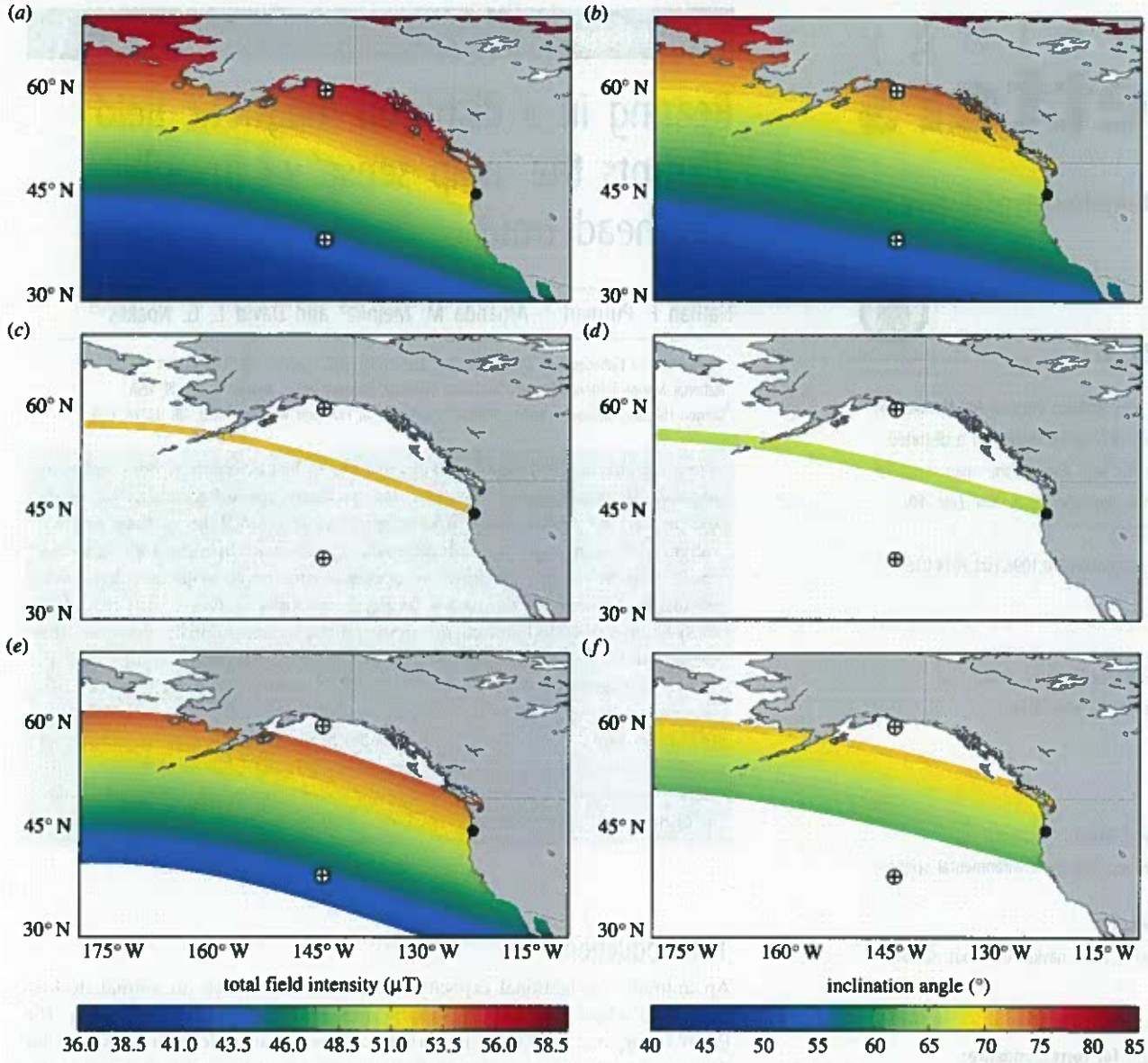

Figure 1. Gradients of (*a*) total field intensity and (*b*) inclination angle across the Northeast Pacific, based on IGRF-11 for 2014 [7]. (*c–f*) A geographical depiction of the magnetic gradients measured within the rearing tanks. (*c*) Intensity and (*d*) inclination gradients experienced by fish reared in the 'natural' field. (*e*) Intensity and (*f*) inclination gradients experienced by fish reared in a 'distorted' field. Black circles indicate the location of testing site. White circles with crosses show the locations of the simulated magnetic displacements.

However, problems might arise for fish exposed to magnetic fields that are uncharacteristic of the magnetic gradients across their range during the period(s) in which they acquire a baseline field, causing the internal 'magnetic map' to uncouple from geographical location. Although exposure to such fields would be rare for fish in the wild, this might be fairly common for fish produced in hatcheries, where iron pipes, concrete reinforced with steel and wires carrying electric current could greatly alter the ambient magnetic field around fish. Similar concerns have been raised over human-induced magnetic distortions for other animals that rely on the magnetic field to navigate, including sea turtles incubated in nests protected from predators by galvanized steel cages [11]. Here, we performed a series of simulated magnetic displacement experiments in which we predicted juvenile steelhead trout (*Oncorhynchus mykiss*) would orient in opposite directions: approximately southward when presented with a magnetic field that exists at the northern limit of their oceanic range and approximately northward when presented with a field at the southern limit [8]. We tested whether fish were behaviourally capable of distinguishing between these two fields when reared in either normal magnetic conditions (figure 1*c*,*d*) or distorted magnetic conditions (figure 1*e*,*f*).

2. Material and methods

Steelhead trout were taken as embryos from the ODFW Alsea Hatchery (44.423° N, 123.551° W) and transported to the Oregon Hatchery Research Center (44.404° N, 123.753° W) and incubated following routine protocol [12]. Upon hatching, one group of fish was maintained in a fibreglass tank, in which measurements of magnetic intensity ranged from 52.43 to 52.85 μT and inclination angle ranged from 65.9° to 67.8°

(figure 1*c*,*d*). A second group was maintained in a similar tank but in the vicinity of iron pipes and a concrete floor reinforced with steel rebar (typical of many hatchery conditions). In this tank, magnetic intensity ranged from 42.68 to 54.56 µT and inclination angle ranged from 62.6° to 70.7° (figure 1*e*,*f*). Fish were tested as parr, the stream-dwelling juvenile stage, at five to seven months post-fertilization.

Experiments were performed between 15 August and 12 September 2013. Skies were clear throughout testing and a mesh shade-cloth (70% reduction in incident light) was draped over the experimental apparatus to minimize stress to the fish. Twenty opaque circular buckets, each 30.5 cm in diameter and filled with still freshwater to a depth of 21.5 cm, served as orientation arenas. One fish was placed into each arena and allowed to acclimate for 10 min in the ambient magnetic field (intensity = 52.45 µT, inclination = 66.9°). The magnetic field was changed by two orthogonally arranged four-coil systems (outer, vertical coil side length = 3.315 m; inner, horizontal coil side length = 3.05 m) connected to a DC-Power supply housed in a nearby building [13]. Fish from each group were randomly assigned to either a magnetic field existing at the northern border of the oceanic range of steelhead (59° N, 145° W; intensity = 55.55 µT, inclination = 73.3°) or a magnetic field at the southern border of the range (38° N, 145° W; intensity = 444.6 µT, inclination = 56.7°) [14]. Field values were determined by the International Geomagnetic Reference Field (IGRF-11) [7] and measured with a tri-axial fluxgate magnetometer (Applied Physics 520A). A digital image of each fish was taken 8 min after the field changed and the direction the fish's head was pointing, relative to magnetic north, was recorded to the nearest 5°. The magnetic treatment groups were randomly assigned to different times on a daily basis. Individual fish were tested once. We used the Rayleigh test to test for directed orientation within each treatment group. We assessed whether fish distinguished between the two test fields (i.e. orientation differed depending on whether in a northern or southern field) using the non-parametric Mardia–Watson–Wheeler test, which calculates the probability that the distributions are identical. Comparisons were made separately for fish reared in natural and distorted magnetic conditions. Statistics were calculated in ORIANA (v. 2).

3. Results

Steelhead reared in a natural magnetic field that were exposed to the northern field oriented to the southeast, whereas those exposed to the southern field oriented to the northwest (table 1). A significant difference in orientation was observed between these two groups (Mardia–Watson–Wheeler $W_{159,160} = 17.5$, $p = 0.00016$; figure 2*a*). Conversely, fish reared in a distorted magnetic field were randomly oriented (table 1) and showed no difference between the two experimental fields (Mardia–Watson–Wheeler $W_{159,159} = 1.9$, $p = 0.387$; figure 2*b*).

4. Discussion

Without prior migratory experience, juvenile steelhead are capable of responding to magnetic fields at the latitudinal boundaries of their ocean range with oriented swimming that would lead them towards appropriate foraging grounds. This finding and similar work in Chinook salmon suggests that 'inherited magnetic maps' are a shared trait among Pacific salmonids [8]. Moreover, the similarities observed between the navigation system in juvenile salmon and

Table 1. Summary of simulated magnetic displacement results. For complete data, see electronic supplementary material.

treatment	rearing total field intensity (µT)	rearing inclination angle (°)	location of test field	test total field intensity (µT)	test inclination angle (°)	mean heading (°)	Rayleigh *R* (*p*)	*n*
normal	52.43–52.85	65.9–67.8	59°N, 145°W	55.55	73.3	139	0.175 (0.007)	160
normal	52.43–52.85	65.9–67.8	38°N, 145°W	44.46	56.7	307	0.167 (0.012)	159
distorted	42.68–54.56	62.6–70.7	59°N, 145°W;	55.55	73.3	200	0.120 (0.100)	159
distorted	42.68–54.56	62.6–70.7	38°N, 145°W	44.46	56.7	269	0.004 (0.998)	159

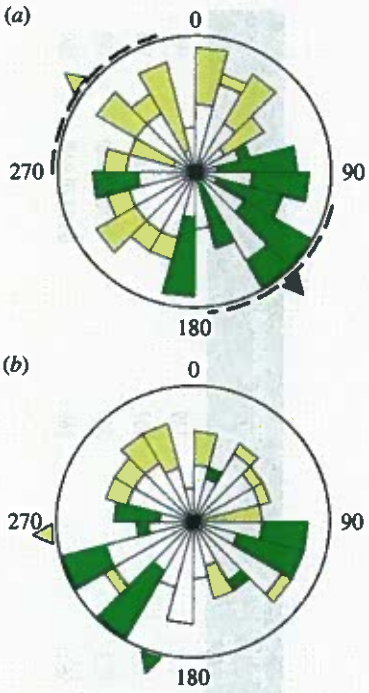

Figure 2. Circular histograms showing the orientation of steelhead to simulated magnetic displacements at the northern and southern latitudinal extremes of their ocean range. (*a*) Results for fish reared in a normal magnetic field. The green triangle indicates the mean heading of fish tested in the northern magnetic field. The yellow triangle indicates the mean heading of fish tested in the southern magnetic field. Dashed black lines indicate the 95% CI of each mean. The length of a wedge is proportional to the number of individuals that were oriented within that 15° interval. The distance between the centre of the circle and the outer edge is scaled to 12 individuals. Colours delineate the number of fish heading in a particular direction that were tested in the northern field (green) or the southern field (yellow). White coloration indicates the proportion of fish that oriented the same direction in both test fields. (*b*) Results for fish reared in a distorted magnetic field, conventions as in (*a*). The 95% CIs were not computed because fish were not significantly oriented.

hatchling sea turtles [15] suggests that this ability may underpin the life-history strategy of diverse marine migrants that exploit multiple distant oceanic regions for use as nursery habitat, foraging grounds and reproduction.

However, the results obtained using fish reared within a distorted magnetic field indicate that the 'inherited magnetic map' also has an important environmental component. Fish reared within a highly non-uniform magnetic environment failed to show appropriate orientation responses to the experimental magnetic fields. A likely explanation is that fish calibrate their magnetic map to the local field and that the inherited portion of the behaviour is an algorithm that tells fish which direction to swim if the intensity and inclination angle change a certain amount relative to the baseline field. Putting this in geographical context, fish exposed to a distorted magnetic field experienced a range of intensity and inclination angle that spans much of the typical ocean range for steelhead—from California to southwest Alaska (figure 1*e*,*f*). Fish were extremely poorly oriented in the southern magnetic field, whereas orientation was somewhat stronger and southward in the northern field (table 1). The southern field overlapped with their rearing field and the fish may not have associated the experimental field with displacement (figure 1*e*). The northern field was outside of the intensity (and inclination) range and it is possible that fish, at least partially, perceived magnetic displacement because the northern field differed from the rearing field. Further experiments are needed to clarify this possibility.

Regardless, the inability of fish reared under distorted magnetic conditions to differentiate the most extreme magnetic fields they would likely ever encounter in nature implicitly suggests that fish would be unable to use more subtle variations in the Earth's magnetic field to navigate. Whether this causes long-term problems for fish in the ocean is not known, but depends on how they construct and use their magnetic map. It is conceivable that fish frequently calibrate their magnetic maps, similar to migratory birds daily calibrating their magnetic compass [16]. If so, navigational difficulties might be short-lived. Alternatively, fish might imprint upon the local magnetic field during a critical period of development and their magnetic map might be set early on, resulting in long-tern navigational problems [17]. Given that there are a number of serious concerns in hatchery fish that could result from poor navigation abilities (e.g. high stray rates and low ocean survival [18]) and the magnetic conditions many hatchery fish experience are likely to be similar to the distortions encountered by our fish, experiments to determine how salmon construct their magnetic map are of considerable importance.

Experiments were performed in accordance with Oregon State University Animal Care and Use Protocol no. 4394.

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An International Journal for Scientific Research into the Environment and its Relationship with Humankind

Stanley, Robert@Wildlife <Robert.Stanley@wildlife.ca.gov>
ToTony Gutierrez
Jun 24 at 8:46 PM

Thank You Mr. Gutierrez for reaching out to CDFW,

We appreciate public organization and private citizens that have concern for the areas they live in and the environment that surrounds them. I will read through the information provided about small magnetic field distortion, if you have any articles that further confirm this hypothesis/study from other authors that would be much appreciated too, as CDFW has to make decisions based on verifiable scientific info.

I would also strongly advise submitting these comments to the City of Pinole so that it is part of their record for public comments and so they will have to respond to this comment as well.

I have been in touch with city of Pinole planners about this Project and will be expressing concerns but I must note that CDFW has limited regulatory authority in areas outside of its jurisdictional areas and this particular Project has physical impacts that occur 180 feet from the drip line of the closest riparian tree and so CDFW will need a very concrete rationale pertaining to deleterious effects caused by magnetic fields on juvenile steelhead to have valid reasoning to impose avoidance and minimization measures. I do share your concerns for steelhead and for opening up Pinole Creek to steelhead, I am the CDFW personnel who permitted the Fish Passage Project under I-80 and would like to see positive benefits from this Project.

Thanks Again for the information and feel free to contact me with any comments or questions.

Rob Stanley
CDFW

From: Tony Gutierrez [mailto:gutierrez.sounds@sbcglobal.net]
Sent: Wednesday, June 24, 2015 8:18 PM
To: Stanley, Robert@Wildlife
Cc: Tony Gutierrez
Subject: City of Pinole CEQA Application for Verizon Cell Tower on Pfeiffer Lane

June 24, 2015

Anthony Gutierrez
3805 Pinole Valley Road
Pinole, CA 94564

California Department of Fish and Wildlife
Attention: Robert Stanley
Region 3 Bay/Delta

7329 Silverado Trail
Napa, CA 94588

Dear Mr. Stanley,

It has come to my attention that the "Friends of the Pinole Creek" have obtained over $750,000 over the past seven years for various projects on the Pinole Creek. The Pinole Creek is considered one of the most pristine creeks in Northern California.

Also, some time in 2016 there is a project to bore holes into the concrete structures of the overpass of the I-80 freeway to allow for the passage of Steelhead Trout into the remainder of the creek. As part of this project there is an effort to restock the Pinole Creek with Steelhead Trout. This is very exciting and a wonderful opportunity for Pinole to contribute to getting the Steelhead Trout off of the endangered species list.

Unfortunately, a few years back the City of Pinole illegally signed a deal with Verizon Wireless to place a cell tower on protected lands in Pinole Valley Park. The placement of the Cellular Tower in the park violated the Open Spaces Act of 1966 of which the City of Pinole received Federal Funding to purchase the lands now known as Pinole Valley Park. The covenant with the Federal Government excludes the use of said lands for commercial ventures and can only be used for "outdoor recreational use" only.

The City of Pinole under threat of litigation by Verizon Wireless has now entered into a quid pro quo agreement with Verizon Wireless to expedite and secure a Conditional Use Permit (CUP) on private property. The Settlement Agreement over the illegally executed Cell Tower Lease on protected lands consists of a trade to not pursue the litigation on the part of Verizon Wireless for the CUP (Conditional Use Permit) on private property.

This is unfortunate that the City of Pinole has chosen to go down this illegal path circumventing the entire planning process for the Conditional Use Permit by having in place a back door deal for the Conditional Use Permit prior to the public having an opportunity to express their concerns over the placement of the cell tower by Verizon Wireless.

I am writing to you today with full knowledge that a Conditional Use Permit may not be challenged on the grounds that Cell Towers cause ill effects on humans due to the fact that the Telecommunications Act of 1996 clearly excludes this. I am also aware that the US Department of the Interior has issued various requests to the FCC (Federal Communications Commission) to revisit the Telecommunications Act of 1996 because the law is outdated and that the legislation only looked at heating effects of EMF radiation to arrive at safe emission levels and does not consider biological effects.

There is now quite a large body of scientific evidence which clearly shows that EMF radiation from cell phones and cell towers have clear biological (as opposed to simply heating effects) on not only humans but other species, such as various plant species, bird species and bees.

However, I am writing to you today to make you specifically aware of a study published in 2014 (Putnam et al) which specifically shows that small magnetic field deviations from the earth's magnetic field have a deleterious effect on the foraging abilities of juvenile Steelhead Trout. With an inability to forage for food, the Steelhead Trout which will be re-introduced into the Pinole Creek in 2016 will quite frankly

literally die due to the close proximity of the proposed Verizon Cell Tower which is directly in the near-field radiation pattern emitted by the proposed tower.

I encourage you to not approve any mitigation efforts on the part of the Pinole City Planning Department and not sign off on the CEQA requirements of the project on the simple grounds that the near-field magnetic radiation emitted from a Cell Tower in such a close proximity of the Pinole Creek will have a deleterious and fatal effect on the Steelhead Trout that will be re-introduced into the Pinole Creek in 2016.

Best Regards,

Anthony Gutierrez

Attachments:

Putman, N. F., Meinke, A. M., & Noakes, D. L. G. (2014). Rearing in a distorted magnetic field disrupts the 'map sense' of juvenile steelhead trout. Biology Letters, 10(6), 20140169. doi:10.1098/rsbl.2014.0169

Areial Map of 2512 Pfeiffer Lane with Proximity of Pinole Creek

Aerial Photo of Cell Location provided by Pinole City Planning

June 11, 2015 Letter to the Editor by Sal Spataro

Monday, March 24, 2014

Dept. of Interior Attacks FCC regarding Adverse Impact of Cell Tower Radiation on Wildlife

The Department of Interior charges that the FCC standards for cell phone radiation are outmoded and no longer applicable as they do not adequately protect wildlife.

The Director of the Office of Environmental Policy and Compliance of the United States Department of the Interior sent a letter to the National Telecommunications and Information Administration in the Department of Commerce which addresses the Interior Department's concern that cell tower radiation has had negative impacts on the health of migratory birds and other wildlife.

The Interior Department accused the Federal government of employing outdated radiation standards set by the Federal Communications Commission (FCC), a federal agency with no expertise in health. The standards are no longer applicable because they control only for overheating and do not protect organisms from the adverse effects of exposure to the low-intensity radiation produced by cell phones and cell towers:
"the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today."
The Department criticized the Federal government's proposed procedures for placement and operation of communication towers, and called for "independent, third-party peer-reviewed studies" in the U.S. to examine the effects of cell tower radiation on "migratory birds and other trust species."

Following are excerpts from the letter, dated Feb 7, 2014:
"The Department believes that some of the proposed procedures are not consistent with Executive Order 13186 Responsibilities of Federal Agencies to Protect Migratory Birds, which specifically requires federal agencies to develop and use principles, standards, and practices that will lessen the amount of unintentional take reasonably attributed to agency actions. The Department, through the Fish and Wildlife Service (FWS), finds that the proposals lack provisions necessary to conserve migratory bird resources, including eagles. The proposals also do not reflect current information regarding the effects of communication towers to birds. Our comments are intended to further clarify specific issues and address provisions in the proposals.
The Department recommends revisions to the proposed procedures to better reflect the impacts to resources under our jurisdiction from communication towers. The placement and operation of communication towers, including un-guyed, unlit, monopole or lattice-designed structures, impact protected migratory birds in two significant ways. The first is by injury, crippling loss, and death from collisions with towers and their supporting guy-wire infrastructure, where present. The second significant issue associated with communication towers involves

impacts from non-ionizing electromagnetic radiation emitted by them (See Attachment)."

Enclosure A

"The second significant issue associated with communication towers involves impacts from nonionizing electromagnetic radiation emitted by these structures. Radiation studies at cellular communication towers were begun circa 2000 in Europe and continue today on wild nesting birds. Study results have documented nest and site abandonment, plumage deterioration, locomotion problems, reduced survivorship, and death (e.g., Balmori 2005, Balmori and Hallberg 2007, and Everaert and Bauwens 2007). Nesting migratory birds and their offspring have apparently been affected by the radiation from cellular phone towers in the 900 and 1800 MHz frequency ranges- 915 MHz is the standard cellular phone frequency used in the United States. However, **the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today. This is primarily due to the lower levels of radiation output from microwave-powered communication devices such as cellular telephones and other sources of point-to-point communications; levels typically lower than from microwave ovens. The problem, however, appears to focus on very low levels of non-ionizing electromagnetic radiation.** For example, in laboratory studies, T. Litovitz (personal communication) and DiCarlo et al. (2002) raised concerns about impacts of low-level, non-thermal electromagnetic radiation from the standard 915 MHz cell phone frequency on domestic chicken embryos- with some lethal results (Manville 2009, 2013a). Radiation at extremely low levels (0.0001 the level emitted by the average digital cellular telephone) caused heart attacks and the deaths of some chicken embryos subjected to hypoxic conditions in the laboratory while controls subjected to hypoxia were unaffected (DiCarlo et al. 2002). To date, no independent, third-party field studies have been conducted in North America on impacts of tower electromagnetic radiation on migratory birds. With the European field and U.S. laboratory evidence already available, independent, third-party peer-reviewed studies need to be conducted in the U.S. to begin examining the effects from radiation on migratory birds and other trust species."

Radiation Impacts and Categorical Exclusions

"There is a growing level of anecdotal evidence linking effects of non-thermal, non-ionizing electromagnetic radiation from communication towers on nesting and roosting wild birds and other wildlife in the U.S. Independent, third-party studies have yet to be conducted in the U.S. or Canada, although a peer-reviewed research protocol developed for the U.S. Forest Service by the Service's Division of Migratory Bird Management is available to study both collision and radiation impacts (Manville 2002). As previously mentioned, Balmori (2005) found strong negative correlations between levels of tower-emitted microwave radiation and bird breeding, nesting, and roosting in the vicinity of electromagnetic fields in Spain. He documented nest and site abandonment, plumage deterioration, locomotion problems, reduced survivorship, and death in

House Sparrows, White Storks, Rock Doves, Magpies, Collared Doves, and other species. Though these species had historically been documented to roost and nest in these areas, Balmori (2005) did not observe these symptoms prior to construction and operation of the cellular phone towers. Balmori and Hallberg (2007) and Everaert and Bauwens (2007) found similar strong negative correlations among male House Sparrows. Under laboratory 'conditions, DiCarlo et al. (2002) raised troubling concerns about impacts of low-level, non-thermal electromagnetic radiation from the standard 915 MHz cell phone frequency on domestic chicken embryos- with some lethal results (Manville 2009). **Given the findings of the studies mentioned above, field studies should be conducted in North America to validate potential impacts of communication tower radiation both direct and indirect - to migratory birds and other trust wildlife species."**
The full text of the letter, the addendum and citations are available at:
http://1.usa.gov/1jn3CZg

Dept. of Interior attacks FCC regarding Adverse Impact of Cell Tower Radiation on Wildlife

The Department of Interior charges that the FCC standards for cell phone radiation are outmoded and no longer applicable as they do not adequately protect wildlife.

FOR IMMEDIATE RELEASE

PRLog (Press Release) - ***Mar. 24, 2014*** - ***BERKELEY, Calif.*** – The Director of the Office of Environmental Policy and Compliance of the United States Department of the Interior sent a letter to the National Telecommunications and Information Administration in the Department of Commerce that addresses the Interior Department's concern that cell tower radiation has had negative impacts on the health of migratory birds and other wildlife.

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"the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today."

The Department criticized the Federal government's proposed procedures for placement and operation of communication towers, and called for "independent, third-party peer-reviewed studies" in the U.S. to examine the effects of cell tower radiation on "migratory birds and other trust species."

More information is available at:
http://www.saferemr.com/2014/03/dept-of-interior-attacks-...

APPENDIX B

Letter 6 Attachments

IOPscience

Physics in Medicine and Biology > Volume 53 > Number 13

Analysis of RF exposure in the head tissues of children and adults

J Wiart[1], A Hadjem[1], M F Wong[1] and I Bloch[2]

Show affiliations

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J Wiart *et al* 2008 *Phys. Med. Biol.* **53** 3681. doi:10.1088/0031-9155/53/13/019
Received 9 November 2007, in final form 5 May 2008. Published 18 June 2008.

Abstract

This paper analyzes the radio frequencies (RF) exposure in the head tissues of children using a cellular handset or RF sources (a dipole and a generic handset) at 900, 1800, 2100 and 2400 MHz. Based on magnetic resonance imaging, child head models have been developed. The maximum specific absorption rate (SAR) over 10 g in the head has been analyzed in seven child and six adult heterogeneous head models. The influence of the variability in the same age class is carried out using models based on a morphing technique. The SAR over 1 g in specific tissues has also been assessed in the different types of child and adult head models. Comparisons are performed but nevertheless need to be confirmed since they have been derived from data sets of limited size. The simulations that have been performed show that the differences between the maximum SAR over 10 g estimated in the head models of the adults and the ones of the children are small compared to the standard deviations. But they indicate that the maximum SAR in 1 g of peripheral brain tissues of the child models aged between 5 and 8 years is about two times higher than in adult models. This difference is not observed for the child models of children above 8 years old: the maximum SAR in 1 g of peripheral brain tissues is about the same as the one in adult models. Such differences can be explained by the lower thicknesses of pinna, skin and skull of the younger child models.

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Occup Environ Med. 2009 Feb;66(2):118-23. doi: 10.1136/oem.2007.037721. Epub 2008 Nov 18.

Mobile phone base stations and adverse health effects: phase 1 of a population-based, cross-sectional study in Germany.

Blettner M[1], Schlehofer B, Breckenkamp J, Kowall B, Schmiedel S, Reis U, Potthoff P, Schüz J, Berg-Beckhoff G.
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Abstract

OBJECTIVE:

The aim of this first phase of a cross-sectional study from Germany was to investigate whether proximity of residence to mobile phone base stations as well as risk perception is associated with health complaints.

METHODS:

The researchers conducted a population-based, multi-phase, cross-sectional study within the context of a large panel survey regularly carried out by a private research institute in Germany. In the initial phase, reported on in this paper, 30,047 persons from a total of 51,444 who took part in the nationwide survey also answered questions on how mobile phone base stations affected their health. A list of 38 health complaints was used. A multiple linear regression model was used to identify predictors of health complaints including proximity of residence to mobile phone base stations and risk perception.

RESULTS:

Of the 30,047 participants (response rate 58.6%), 18.7% of participants were concerned about adverse health effects of mobile phone base stations, while an additional 10.3% attributed their personal adverse health effects to the exposure from them. Participants who were concerned about or attributed adverse health effects to mobile phone base stations and those living in the vicinity of a mobile phone base station (500 m) reported slightly more health complaints than others.

CONCLUSIONS:

A substantial proportion of the German population is concerned about adverse health effects caused by exposure from mobile phone base stations. The observed slightly higher prevalence of health complaints near base stations can not however be fully explained by attributions or concerns.

Occup Environ Med. 2008 Feb;65(2):116-23. doi: 10.1136/oem.2007.037721. Epub 2008 Nov 18.

Mobile phone base stations and adverse health effects: phase 1 of a population-based, cross-sectional study in Germany.

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Author information

Institute of Medical Biostatistics, Epidemiology, and Informatics, Johannes Gutenberg-University of Mainz, D-55101 Mainz, Germany. blettner@imbei.uni-mainz.de

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RESULTS:
Of the 30,047 participants (response rate 56.8%), 18.7% of participants were concerned about adverse health effects of mobile phone base stations, while an additional 10.3% attributed their personal adverse health effects to the proximity of their residence to a base station. Participants who were concerned about or attributed adverse health effects to mobile phone base stations and those living in the vicinity of a mobile phone base station (500 m) reported slightly more health complaints than others.

CONCLUSIONS:
A substantial proportion of the German population is concerned about adverse health effects caused by exposure from mobile phone base stations. The observed slightly higher prevalence of health complaints near base stations can not adequately be explained by attributions or annoyance.

Spezifische Symptome und Mobilfunkstrahlung in Selbitz (Bayern) – Evidenz für eine Dosiswirkungsbeziehung

Horst Eger und Manfred Jahn

In der bayerischen Stadt Selbitz wurden im Januar 2009 zuerst durch die Gemeinde im Rahmen einer Gesundheitsbefragung relevante Daten von 251 Einwohnern erfasst und anschließend daran nach Belastungsstärken durch Mobilfunkwellen ausgewertet.
Die Belastungswerte wurden in einem zweiten Schritt anhand von Wohnort und vorliegenden Messdaten der örtlichen Mobilfunkstrahlung zur Stratifizierung der Teilnehmer in Belastungsgruppen verwendet.
Die mittlere Strahlenbelastung der höchstbelasteten Gruppen in Selbitz (1,2 V/m) lag deutlich höher als die untersuchte Studienpopulation der QUEBEB-Studie (1) des Deutschen Mobilfunkforschungsprogramms (Mittelwert DMF 0,07 V/m). Für die Beschwerden Schlafstörung, Depressionen, cerebrale Symptome, Gelenkbeschwerden, Infekte, Hautveränderungen, Herz-Kreislauf Störungen sowie Störungen des optischen und akustischen Sensoriums und des Magen-Darm-Traktes besteht eine signifikante dosiswirkungsabhängige Korrelation zu objektiv bestimmten Expositionslagen, die mit dem Einfluss von Mikrowellen auf das Nervensystem des Menschen erklärt wird.
Die vorliegende fremdmittelfrei erstellte Arbeit gibt einen Konzeptentwurf vor, mit dem Ärzte und Gemeindeverwaltungen gemeinsam den gesundheitlich relevanten Einfluss von innerörtlichen Mobilfunksendern abschätzen können.

Schlüsselwörter: Symptome, Mobilfunkstrahlung, Dosis-Wirkungsbeziehung

Einleitung

Moderne Funktechnologien haben in den letzten Jahrzehnten an Bedeutung gewonnen. Die Folge davon ist jedoch auch, dass vielfach innerörtlich die höchste Belastung nicht mehr von Fernseh- oder Radiosendern hervorgerufen wird, sondern durch wohnortnahe Mobilfunksendeanlagen. Auf mangelnde Erkenntnisse über Folgen der Einwirkung dieser Technologien auf die menschliche Gesundheit weist die Strahlenschutzkommission seit 2003 explizit hin (2).

Im oberfränkischen Selbitz wurden mit Hilfe der Stadtverwaltung und örtlicher Arztpraxen[1] die separat erhobenen Daten einer allgemeinen Gesundheitsbefragung und der vorhandenen Messungsergebnisse genutzt, um die erhobenen Beschwerdescores mit den unabhängig davon vorliegenden Messwerten der Emission einschlägiger Mobilfunkstrahlung zu korrelieren.

1) Beteiligte Praxen: Dr. Brömel/ Pozder, Schulstraße 4, 95197 Schauenstein; Dr. Jahn, Brunnenstraße 1, 95152 Selbitz; Dr. Müller, Wildenberg 22, 95152 Selbitz.

Abstract

Specific symptoms and radiation from mobile basis stations in Selbitz, Bavaria, Germany: evidence for a dose-effect relationship

In January 2009 the municipality of the Bavarian town of Selbitz, carried out a health survey by which the data of 251 citizens was recorded and then analyzed regarding radiation intensity by microwaves. In a second step, the radiation data was used to stratify the participants in pollution intensity groups, utilizing place of residence and available readings of the regional mobile telephone radiation. The mean radiation measurements of the groups exposed at most in Selbitz (1.2 V/m) were substantially higher than the mean radiation of the study population studied in the QUEBEB study (1) of the German mobile telephone research program (Deutsches Mobilfunkforschungsprogramm DMF, established mean value 0.07 V/m).

A significant correlation was found dependent on dose-effects for insomnia, depressions, cerebral symptoms, joint illnesses, infections, skin changes, heart and circulation disorders, and disorders of the optical and acoustic sensory systems and the gastro-intestinal tract with objectively determined locations of exposure, which can be related by the influence of microwaves on the human nervous system.

This work, which has been carried out without external resources, provides a protocol for surveys of medical practitioners and municipality administrations to estimate possible health effects of mobile telephone basic stations situated near population residents.

Keywords: symptoms, HF-radiation, dose-effect evidence

Material und Methoden

Selbitz in Oberfranken liegt im Nordosten von Bayern und hatte am 31.12.2008 insgesamt 4.644 Einwohner (2.171 männliche und 2.473 weibliche) (3).

Die Stadt ist mobilfunktechnisch vollständig erschlossen. Direkt innerörtlich sind öffentlich nutzbare Sendeanlagen zweier Betreiber in der Feldstraße 28 sowie ca. 900 m hiervon entfernt eines dritten Telekommunikations-Dienstleisters in der Burgstraße Nr. 26a installiert (4).

Eine Befragung im Januar 2009 durch die Stadtverwaltung Selbitz wandte sich an 1.080 Personen im Stadtgebiet und den umliegenden Ortsteilen mit einem standardisierten Fragebogen zu Gesundheitsstörungen, der per Brief versandt wurde. Den Befragten war bekannt, dass man sowohl im 400 m Umkreis der Mobilfunksendeanlage in der Feldstraße 28 als auch außerhalb dieses Radius einen Erhebungsbogen erhalten konnte. Persönliche Interviews erfolgten nicht. Insgesamt 88 Angaben zu Gesundheitsbeschwerden wurden mittels der Ausprägungsskala von Null bis Fünf quantitativ erfasst. Die Symptom-Gruppen nach klinischen Entitäten wurden für die Auswertung nach Clustern zusammengefasst (Tab. 1).

Das Anschreiben mit der Aufforderung zur Mitarbeit sicherte Wahrung der Schweigepflicht zu. Die Fragebögen konnten an die Stadt Selbitz oder an die Allgemeinarztpraxen vor Ort zurückgesandt oder abgegeben werden. Nach der Rücksendung der Fragebögen wurden die persönlichen Daten (Personalbogen) in der Praxis Dr. Eger, Naila, von den Angaben im Fragebogen getrennt aufbewahrt und die anonym codierten Beschwerdebögen zur Eingabe an die Verwaltung der Stadt Selbitz übergeben. Vom Personal der EDV-Abteilung wurden die anonymisierten Daten dann zur Auswertung in eine Excel-Tabelle eingegeben.

Auf dem Personalbogen wurden Angaben zum Vorhandensein eines DECT-Telefons in der Wohnung durch einfaches Ankreuzen erfasst und konnten in die Datenerfassung übernommen werden.

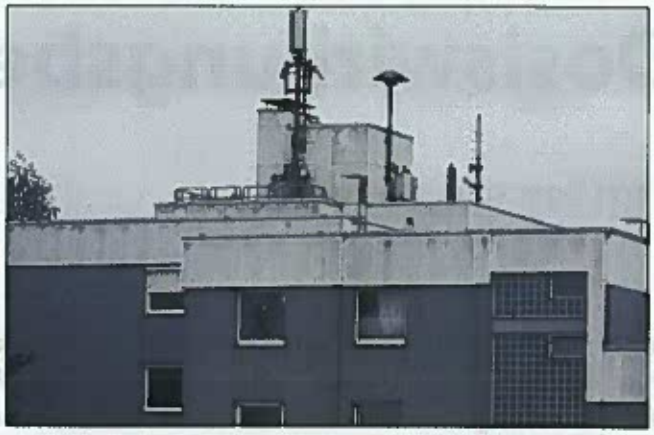


Abb. 1: Mobilfunksendeanlagen auf dem Hochhaus in der Feldstraße 28, Selbitz, Oberfranken.

	Symptomgruppe	Symptomnummer
1	Schlafstörungen	1 - 5
2	depressive Symptome	6, 7, 18-23
3	Kopfschmerzen	8
4	cerebrale Affektionen	8 - 12
5	Denkstörungen	24 - 29
6	Gelenkbeschwerden	30 - 34
7	Zahnschmerzen	35
8	Infekte	36 - 41
9	Hautveränderungen	42 - 47
10	Schwindel	55
11	Herz-Kreislauf-Beschwerden	48 - 52
12	akustisches System, Gleichgewichtsstörungen	56 - 61
13	Sehstörungen	62 - 67
14	Nasenbluten	68
15	Hormonstörungen	70 - 74
16	Gewichtszunahme	75
17	Gewichtsabnahme	76
18	Magen-Darm-Beschwerden	77 - 81
19	Einnässen	85

Tab. 1: Übersicht über die nach klinischen Entitäten zusammengefassten Symptom-Gruppen.

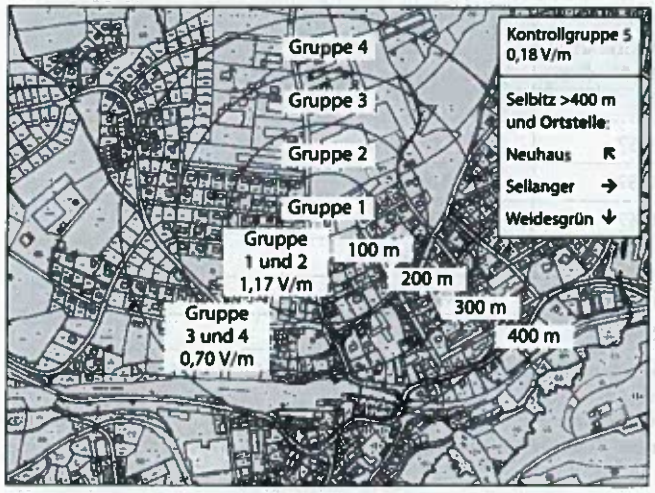


Abb. 2: Der Kataster-Auszug zeigt in der Mitte der konzentrischen Kreise die Sendeanlage in der Feldstraße 28 in Selbitz (Quelle: 5, mit freundlicher Genehmigung der Stadt Selbitz).

Alle Teilnehmer, die Fragebögen zurücksandten, wurden danach kategorisiert indem sie in Gruppen nach ihrer Wohnadresse eingeteilt wurden. Die in der Abbildung 2 eingezeichneten Kreise entsprechen Entfernungen von 100 m, 200 m, 300 m bzw. 400 m zu den zwei auf einem Gebäude in der Feldstraße 28 installierten Sendeanlagen und definieren so die Gruppen 1-4. Eine Kontrollgruppe (Gruppe 5), die als gering belastet gelten kann, setzte sich aus Teilnehmern außerhalb des 400 m Radius direkt in Selbitz und in weiter entfernt liegenden Ortsteilen zusammen.

Das Gelände um den Sender ist gemäß dem Höhenprofil in West-Ost Richtung eben, steigt in nördlicher Richtung flach an und fällt nach Süden mit 7 bis 9° ab.
Die Sendeanlagen der Betreiber befinden sich in einer Höhe von 19,20 m, 20,20 m und 23,50 m über Grund mit Richtfunkanbindungen in Höhe von 19,35 m und 22,70 m. Der Neigungswinkel der Anlagen (Downtilt) wird mit 8° angegeben. Verwendeter Frequenzbereich um 940 MHz und 1850 MHz (5).

Unter diesen Bedingungen liegt der Auftreffpunkt des Hauptstrahlsendebereichs in einer Entfernung von knapp 200 m. Bis 200 m sind zusätzlich Nebenkeulen zu erwarten.

Mess-Situation und Ergebnisse der Messungen

Den einzelnen Kategorien konnten auf Grund des Prüfberichts der akkreditierten Firma ECL mittlere Messwerte für die Mobilfunkstrahlenbelastung zugeordnet werden (6). Für die Gruppen 1 und 2 ergeben sich im Mittel 1,17 V/m, für Gruppen 3 und 4 0,7 V/m.
Die Messwerte außerhalb des definierten 400 m - Radius lagen durchschnittlich bei 0,18 V/m und dienen als Referenzwerte. Die im Ortsteil Weidesgrün gemessenen Werte zeigten mit 0,01 V/m die niedrigsten Messwerte.

Die Auswertungen erfolgten mit Hilfe des zweiseitigen T-Tests für unverbundene Stichproben für insgesamt 19 Symptomscores der einzelnen Gruppen 1 bis 5 zur Prüfung der Nullhypothese, dass die Beschwerdescores der verglichenen Gruppen gleichverteilt und damit unabhängig von der Strahleneinwirkung sind (7).

Die vorgenommenen Vergleiche der gesundheitsrelevanten Angaben erfolgten nach zwei Ansätzen:

A) Vergleich der sendernahen Probandengruppen 1 bis 4, d.h. bis 400 m um den Sendestandort mit den senderfernen Kontrollprobanden außerhalb 400 m in Selbitz / Ortsteilen.
B) Vergleich innerhalb der sendernahen Probandengruppe bis 400 m um Sendestandort:
Vergleich der höchstbelasteten Gruppen 1 und 2 gegen die senderferneren Gruppen 3 und 4.

Ergebnisse

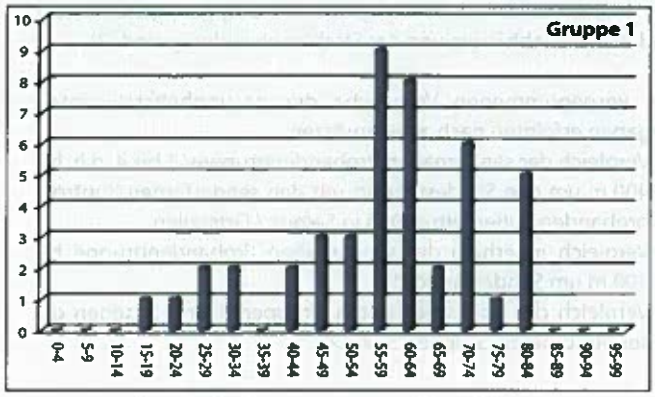
Insgesamt 255 Personen im Alter über 18 Jahren nahmen an der Befragung teil, 4 Fragebögen waren nicht auswertbar. Dies entspricht einer Rücklaufquote von 23 % von 1.080 Aussendungen. Die sendernahen Gruppen 1-4 zusammen mit 22 % und die Kontrollgruppe mit 27 % Rücklaufquote zeigten keinen statistisch signifikanten Unterschied (Tab. 2).

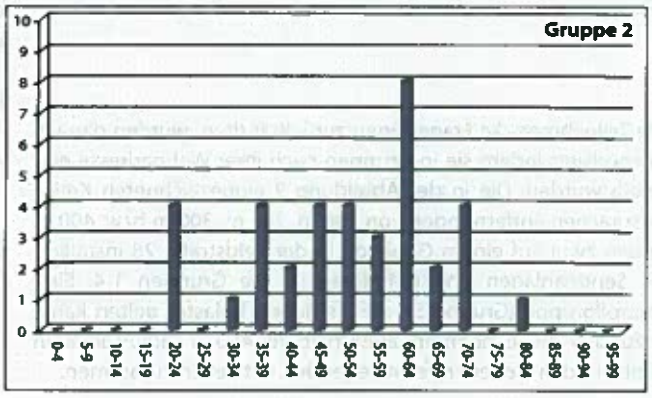
	Aus-Sendungen	Rücksender Anzahl / (Prozent)	Verweigerer Anzahl / (Prozent)	Vergleich Rücksender-/Verweigerer-Anzahl der jeweiligen Gruppe mit Kontroll-Gruppe 5 (Chi²-Test)
Gruppen				
1	125	45 (36,0%)	80 (64,0%)	n.s.**
2	144	37 (25,7%)	107 (74,3%)	n.s.
3	281	60 (21,4%)	221 (78,6%)	n.s.
4	273	38 (14,0%)	235 (86,0%)	$p < 0,01$ (Chi²)
Kontroll-gruppe 5	254	71 (28,0%)	183 (72,0%)	
Summe	1077*	251	826	

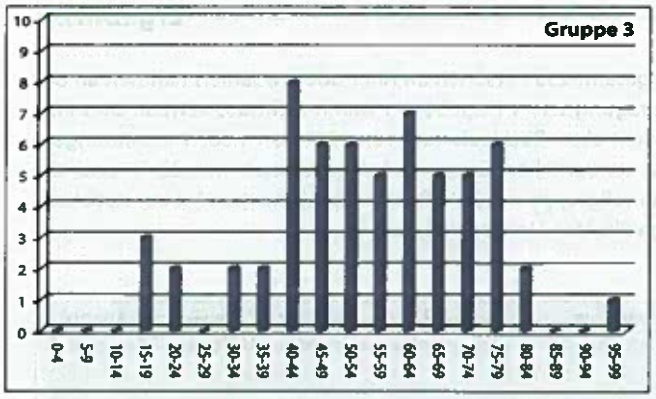
Tab. 2: Verteilungen der Aussendungen in den Gruppen 1 bis 4 und der Kontrollgruppe 5, nach Respondern und Verweigerern.
Mit Ausnahme der geringeren Rücksendequote in Gruppe 4 sind Unterschiede der Rücksender/ Verweigererquote der Einzelgruppen gegenüber der Kontrollgruppe 5 statistisch nicht signifikant.
*3 Personen von 1.080 Angeschriebenen waren nicht zuzuordnen
** n.s. = nicht signifikant

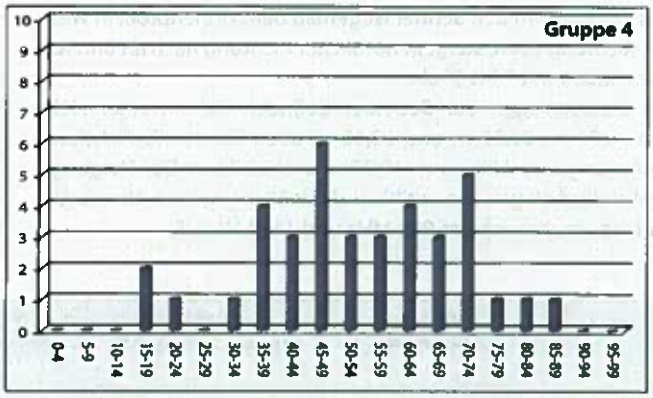
	Anzahl	Geschlecht männlich/ weiblich (in %)	Alter in 5 -Jahres-Schritten** Mittelwert/ Median	Entfernung zur Sendeanlage Feldstraße 28	Durchschnitts-messwerte Mobilfunk in V/m
Gruppen					
1	45	47/53	57,5/57	0-100 m	1,17 V/m
2	37	41/59	52,0/52	100-200 m	
3	60	40/60	55,0/57	200-300 m	0,70 V/m
4	38	42/57	53,5/52	300-400 m	
5	71	44/56	52,0/52	über 400 m	0,18 V/m
Selbitz*	4644	47/53	53,5/52		

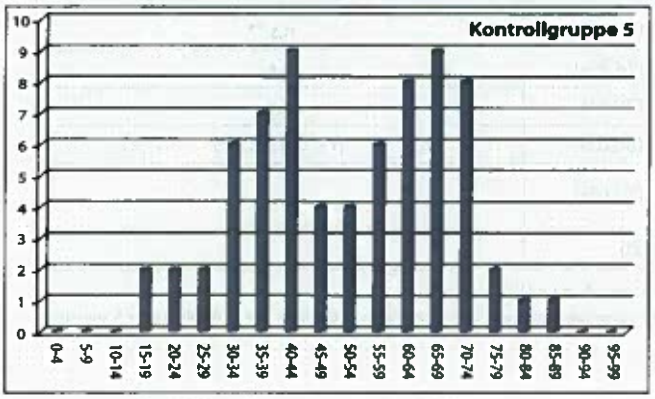
Tab. 3: Übersicht der untersuchten Einzelgruppen nach Geschlecht, Alter, Wohnort und Strahlenbelastung. Die Gruppen 1-4 mit insgesamt 180 Probanden befinden sich in einem Umkreis bis zu 400 m um die Sendeanlage. Die 71 Probanden der Kontrollgruppe 5 waren über 400 m entfernt.
Sowohl die Geschlechtsverteilung als auch der Vergleich der Altersgruppen weichen statistisch nicht von der Grundgesamtheit Selbitz ab.
*Zum Vergleich des Altersmittelwerts wurden aus Selbitz nur Personen über 18 Jahre herangezogen. Einwohner Selbitz gesamt 4.644; Einwohner über 18 Jahre 3.890.
** Die Altersangaben erfolgten innerhalb 5-Jahresgruppen..











Das Geschlechtsverhältnis liegt für alle Teilnehmer bei 43 %

Abb. 3a-e:
Altersverteilung in den Gruppen 1-4 und der Kontrollgruppe 5 in 5-Jahres-Schritten.

		A Vergleich der Gruppen 1 bis 4 (0-400 m/ n=180) gegen Kontrollgruppe 5 (>400 m/ n=71)	B Vergleich der Gruppen 1 und 2 (0-200m/ n=82) gegen 3 und 4 (200-400m/n=98)
	Symptome p (t-Test)	Signifikanzniveau p (t-Test)	Signifikanzniveau p (t-Test)
1	Schlafstörungen	0,001	0,001
2	depressive Symptome	0,001	0,001
3	Kopfschmerzen	n . s.	0,001
4	cerebrale Affektionen	0,001	0,001
5	Denkstörungen	n. s.	0,001
6	Gelenkbeschwerden	0,01	0,001
7	Zahnschmerzen	n. s.	n. s.
8	Infekte	0,01	0,001
9	Hautveränderungen	0,001	0,001
10	Schwindel	n. s.	0,01
11	Herz-Kreislauf-Beschwerden	0,001	0,001
12	akustisches System, Gleichgewichtsstörungen	0,01	0,001
13	Sehstörungen	0,01	0,001
14	Nasenbluten	n. s.	0,01
15	Hormonstörungen	0,05	n. s.
16	Gewichtszunahme	n. s.	n. s.
17	Gewichtsabnahme	n. s.	n. s.
18	Magen - Darm-Beschwerden	0,01	0,001
19	Einnässen	n. s.	n. s. = nicht signifikant

Tab. 4: Spezifische Symptome der Probanden in Abhängigkeit von der Entfernung zur Emissionsquelle

A) Vergleich der Probandengruppen 1 bis 4 bis 400 m um Sendestandort mit der Kontrollgruppe außerhalb 400 m in Selbitz / Ortsteilen.

B) Vergleich innerhalb der sendernahen Probandengruppe bis 400 m um Sendestandort.
Hier dargestellt der Vergleich der höchstbelasteten Gruppen 1 und 2 gegen die senderferneren Gruppen 3 und 4. Die Belastungsstufen betrugen für Gruppe 1 und 2 1,17 V/m, für Gruppe 3 und 4 0,7 V/m und für Kontrollgruppe 5 0,18 V/m.

männlichen und 57 % weiblichen Probanden und entspricht weitgehend der in Selbitz statistisch registrierten 47 % männlichen und 53 % weiblichen Einwohner (Tab. 3).

Für die Gruppen 1 bis 4, die Kontrollgruppe 5 und die Personen in Selbitz ab dem vollendeten 18. Lebensjahr lag der Altersdurchschnitt bei 54,5, 52,0 und 53,5 Jahren.
Die Altersverteilung in 5-Jahresschritten entspricht der Grundgesamtheit in Selbitz (Tab. 3, Abb. 3a-e) Die Probanden stellten somit eine altersmäßig repräsentative Stichprobe aus der Grundgesamtheit aller Einwohner von Selbitz ab dem Alter von 18 Jahren dar.

Innerhalb des 400 m Radius um die Sendeanlage lässt sich für 14 von 19 Symptomengruppen eine höhere Rate an Beschwerden für die höher belasteten sendernah gelegenen Gruppen 1 und 2 gegenüber der senderferneren Gruppen 3 und 4 nachweisen (Tab. 4). Der Unterschied ist statistisch signifikant.

Im Vergleich der vier sendernahen Gruppen 1-4 gegenüber der Kontrollgruppe fanden sich signifikante ($p < 0,01$, t-Test) Unterschiede für folgende Symptomengruppen: Schlaf, depressive Symptome, cerebrale Affektionen, Gelenkbeschwerden, Infekte, Hautveränderungen, Herz- und Kreislaufstörungen, Störung des akustischen und optischen Systems sowie des Hormonsystems, weiterhin Darmbeschwerden. Nicht signifikant waren die zur Kontrolle eingeführten Symptome für Zahnschmerzen und Einnässen (Tab. 4).
Eine Übersicht über die gefundenen Mittelwerte für alle 19 Beschwerden oder Symptomscores gibt Abb. 4. Die höchsten Mittelwerte finden sich überwiegend bei den höchst belasteten Gruppen 1 und 2.

Auf den Abb. 5-8 sind die Symptomenscores für Schlafstörungen, depressive Symptome, Gelenkbeschwerden und Herz-Kreislauf Störungen dargestellt mit den jeweiligen Mittelwerten und 95 % Konfidenzintervallen. Rein optisch werden hier die gefundenen Signifikanzen aus Tabelle 4 deutlich.

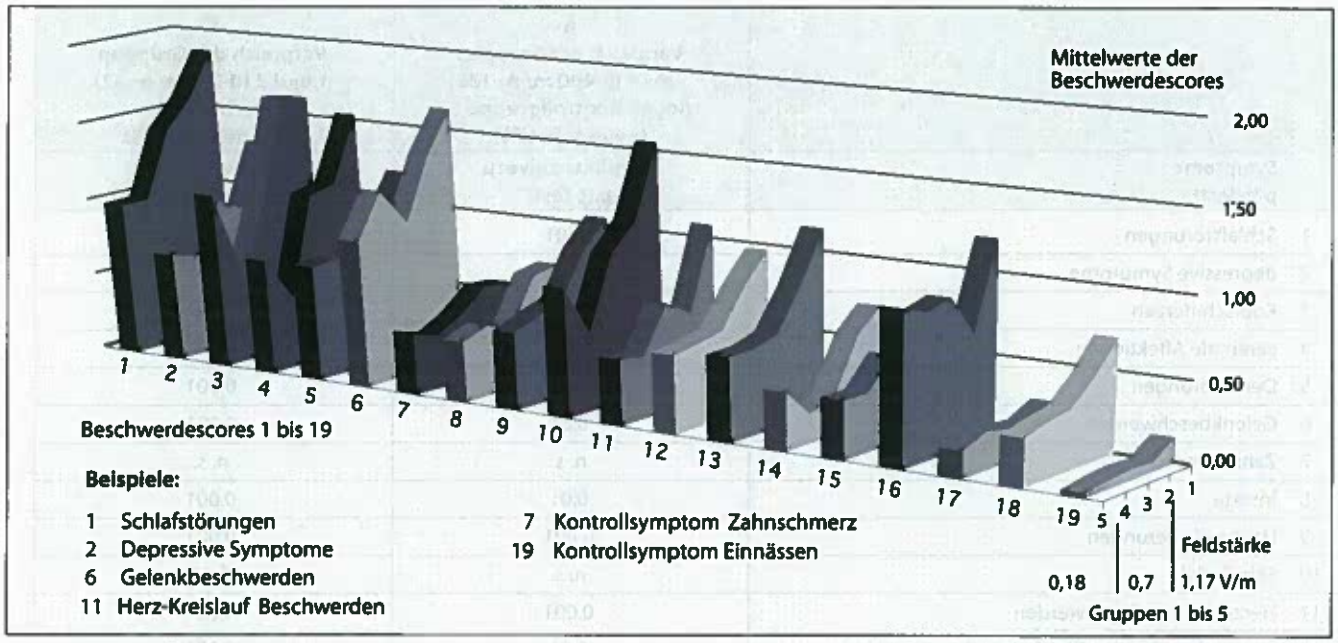


Abb. 4: Gegenüberstellung der spezifischen Symptome mit Dosisangaben
Die räumliche Darstellung zeigt die 19 Symptomscores auf der x-Achse angeordnet. Auf der y-Achse ist der Mittelwert des jeweiligen Symptomscores quantitativ dargestellt, auf der z-Achse erscheinen die Belastungsgruppen 1 bis 5.

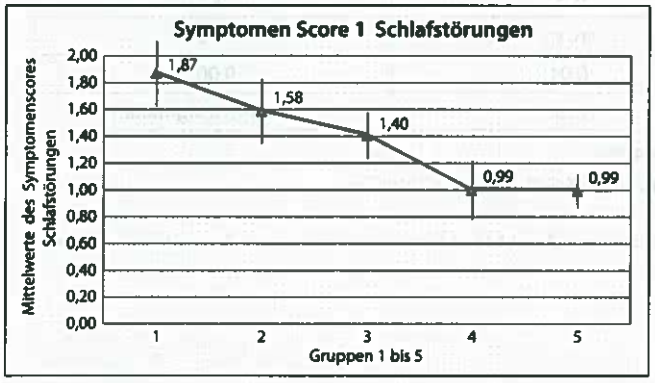


Abb. 5: Symptomscore 1 für Schlafstörungen für die Gruppen 1-4 sowie Kontrollgruppe 5. Auf der y-Achse ist der Mittelwert des Symptomscores angegeben, die senkrechten Striche an den Ergebnispunkten stellen die 95 %-Konfidenzintervalle dar.

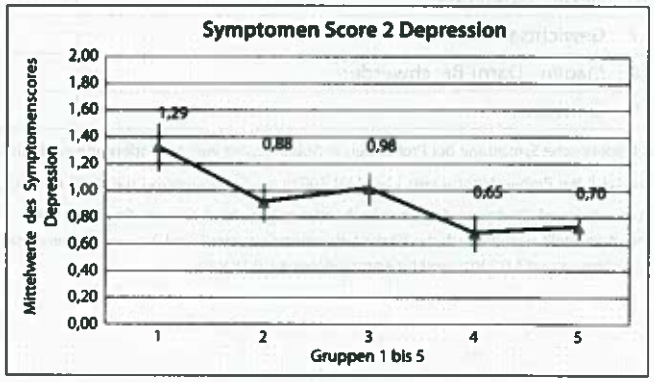


Abb. 6: Symptomscore 2 für depressive Veränderungen für die Gruppen 1-4 sowie Kontrollgruppe 5. Auf der y-Achse ist der Mittelwert des Symptomscores angegeben, die senkrechten Striche an den Ergebnispunkten stellen die 95 %-Konfidenzintervalle dar.

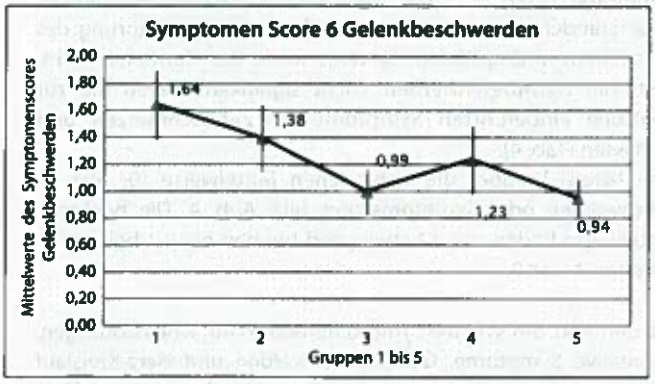


Abb. 7: Symptomscore 6 Gelenkbeschwerden für die Gruppen 1-4 sowie Kontrollgruppe 5. Auf der y-Achse ist der Mittelwert des Symptomscores angegeben, die senkrechten Striche an den Ergebnispunkten stellen die 95 %-Konfidenzintervalle dar.

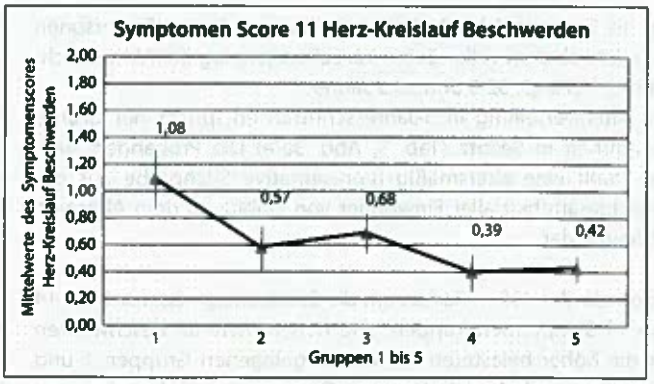


Abb. 8: Symptomscore 11 für Herz-Kreislauf Beschwerden für die Gruppen 1-4 sowie Kontrollgruppe 5. Auf der y-Achse ist der Mittelwert des Symptomscores angegeben, die senkrechten Striche an den Ergebnispunkten stellen die 95 %-Konfidenzintervalle dar.

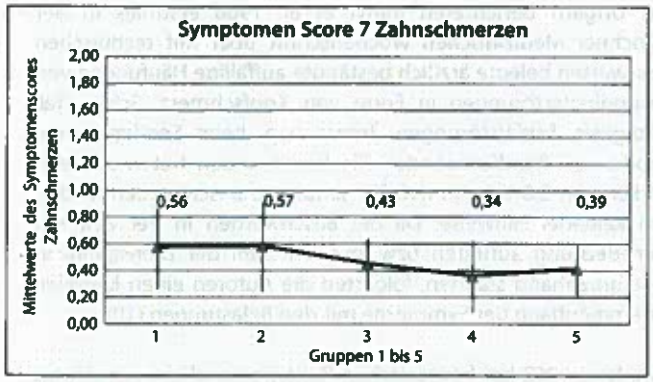


Abb. 9: Kontroll-Symptomscore 7 für Zahnschmerzen für die Gruppen 1-4 sowie Kontrollgruppe 5. Auf der y-Achse ist der Mittelwert des Symptomscores angegeben, die senkrechten Striche an den Ergebnispunkten stellen die 95 %-Konfidenzintervalle dar.

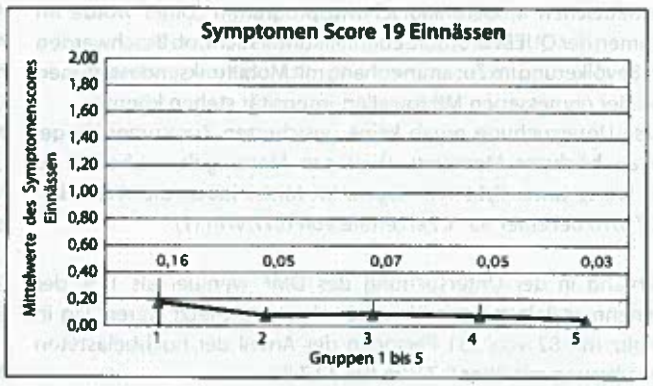


Abb. 10: Kontroll-Symptomscore 19 für Einnässen für die Gruppen 1-4 sowie Kontrollgruppe 5. Auf der y-Achse ist der Mittelwert des Symptomscores angegeben, die senkrechten Striche an den Ergebnispunkten stellen die 95 %-Konfidenzintervalle dar.

Die Symptome „Zahnschmerz" und „Einnässen" dienten als Kontrolle, um als nicht strahlungsabhängige Beschwerden die Plausibilität der Antworten der Teilnehmer zu überprüfen. Hier finden sich keine signifikanten Unterschiede im Vergleich der Gruppen 1 und 2 gegen 3 und 4 bzw. gegenüber der Kontrollgruppe 5 (Tab. 4).

In einem zweiten Schritt wurde nun untersucht, ob auch innerhalb des 400 m Umkreises die ermittelten Symptomenscores mit dem Abstand bzw. mit der Höhe der gemessenen Strahlenbelastung in Zusammenhang stehen.

In Abb. 11 sind die Summenmittelwerte der Gruppen 1 und 2 (obere schwarze Linie) gegen die Summenmittelwerte der Gruppen 3 und 4 (untere graue Linie) dargestellt.

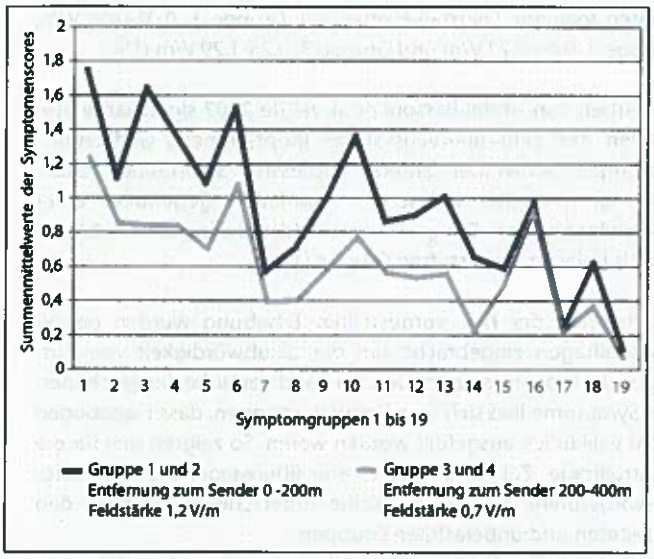


Abb. 11: Vergleich der sendernahen Gruppen 1 und 2 gegenüber der senderfernen Gruppen 3 und innerhalb des 400 m Umkreises der Senderanlage. Die helleren Zahlen geben die nicht signifikanten Symptomengruppen an.

Bis auf die Symptome Zahnschmerz, Hormonstörung, Gewichtszunahme, Gewichtsabnahme und Einnässen fanden sich signifikante Unterschiede ($p < 0,01$; t-Test).

Zusammenfassend fand sich für die Studien-Teilnehmer ein signifikanter Dosiswirkungs-Zusammenhang zwischen der theoretisch ermittelten bzw. gemessenen Expositionslage sowie der Höhe der Beschwerdescores.

Erhebung zu DECT-Telefonen

Im Personalbogen konnten die Probanden ankreuzen, ob im Haushalt ein DECT-Telefon vorhanden war. Von 251 Teilnehmern hatten 171 den Besitz eines solchen Gerätes bejaht, 80 verneint. Der Altersdurchschnitt der DECT-Benutzer lag mit 50,5 Jahren signifikant niedriger als der der Teilnehmer ohne Schnurlostelefon (t-Test, $p< 0,001$), so dass für die Einbeziehungen in die Auswertungen keine vergleichbaren Gruppen vorlagen.

Diskussion

Die dargestellten Ergebnisse weisen einen signifikanten Zusammenhang zwischen mittleren Werten der Strahlungsbelastung der Studienteilnehmer und den angegebenen Gesundheitsbeschwerden aus.
Für die höchst belastete Gruppe war eine durchschnittliche Mikrowellenbelastung mit einer Feldstärke von 1,2 V/m gefunden worden. Eine zusätzliche Abfrage zur häuslichen Nutzung von DECT-Telefonen ließ für alle untersuchten Haushalte eine zusätzliche durchgehende Basisbelastung erkennen.
Die grafischen Darstellungen zeigen eindeutige Trends abnehmender Beschwerdescores mit abnehmender mittlerer Belastung durch senderbedingte Emissionen.

Der nationale und internationale Vergleich zur Einordnung dieser Ergebnisse ergibt zusätzliche Argumente für nicht-zufällige Zusammenhänge.

Im deutschen Mobilfunkforschungsprogramm (DMF) wurde im Rahmen der QUEBEB-Studie ebenfalls untersucht, ob Beschwerden der Bevölkerung im Zusammenhang mit Mobilfunksendestationen und der gemessenen Mikrowellen-Intensität stehen könnten.
Diese Untersuchung ergab keine gesicherten Zusammenhänge, da als höchster Messwert 1Volt pro Meter galt, wobei 99 % der Werte unter 0,34 V/m lagen. Im Mittel lagen die Werte bei 0,07 V/m bei einer 95 % Perzentile von 0,17 V/m (1).

Während in der Untersuchung des DMF weniger als 1 % der Teilnehmer Belastungen über 0,34 V/m ausgesetzt waren, lag in Selbitz mit 82 von 251 Personen der Anteil der hochbelasteten Bevölkerung mit über 0,7 V/m bei 32,7 %.
Hochbelastete Gruppen, wie wir sie hier in Selbitz vorfinden, kamen in der Stichprobe des deutschen Mobilfunkforschungsprogramms praktisch nicht vor. Das liegt methodisch bedingt an der reinen Zufallsauswahl der Probanden und führt systematisch zu einer Unterschätzung des Risikos für höher exponierte Anwohner. Damit ist der Befund der QUEBEB-Studie, dass sich keine deutliche Korrelation ergeben hatte, nur für niedrig belastete Stichproben zutreffend und widerspricht in keiner Form den Ergebnissen in Selbitz.

In Deutschland liegen bei der flächendeckenden Anwendung der Mobilfunktechnik dem Bundesamt für Strahlenschutz (BfS) gewichtige Erkenntnisse zu Gesundheitsproblemen bei Senderanwohnern vor. Auf der Sitzung am 2.8.2006 in Neuherberg wurden dezidiert Amtsärztliche Gutachten zitiert, die Problemsituationen in besonders hochexponierten Haushalten aufzeigen (17-19).

Auch seitens der Industrie wurden Gesundheitsschäden eigener Techniker bekannt (20, 21).
Man suchte bereits nach Möglichkeiten zur Reduktion von Elektrosmog in kabellosen Netzwerken. Die Begründung für ein im Jahr 2003 eingereichtes Patent zitierte explizit auch Hinweise auf Schäden am menschlichen Erbgut (22).

Seit den 1960er-Jahren ist eine nichtthermische unterhalb der heutigen Grenzwerte stattfindende Langzeit-Einwirkung von Mikrowellen, Ultrakurzwellen und Kurzwellen auf das ZNS in mehreren Studien kausal nachgewiesen.

Wenzel untersuchte den Gesundheitszustand des Funkmesspersonals der Nationalen Volksarmee im Rahmen einer Dissertation und stellte die Ergebnisse in einem bis 1989 vertraulichen Bericht zusammen. Gegenüber einer nicht exponierten Kontrollgruppe fand er eine Zunahme von Kopfschmerzen, Schlafstörungen, allgemeiner Mattigkeit, Augenschmerzen, Herzstechen, nachlassender Denkschärfe, erhöhter Reizbarkeit, Schwindelgefühl, Neigung zu Schwitzen und Sehstörungen. Als Folge seiner Befunde wurde bereits im Jahr 1967 auf die Unzulänglichkeit der bestehenden Grenzwerte hingewiesen (9).

Die Auswertung sowjetischer betriebsmedizinischer Erhebungen aus den Jahren 1960 bis 1996, die im Auftrag des Bundesinstituts für Telekommunikation von Professor Hecht durchgeführt worden waren, belegten kausal die Wirkung von Mikrowellen als Disstressor des zentralen Nervensystems (26).

Aus Ungarn berichteten Iranyi et al. 1960 erstmals in der Münchner Medizinischen Wochenschrift über mit technischen Messwerten belegte ärztlich bestätigte auffällige Häufungen von Gesundheitsstörungen in Form von Kopfschmerz, Schwindel, Müdigkeit, Schlafstörungen, Tremor u.a. beim Sendepersonal „moderner" Rundfunksender. Die Beschwerden traten ab Feldstärken von 3,8 Volt /m auf. Für simulierte Beschwerden fanden sich keinerlei Hinweise. Da die Beschwerden in der Zeit der Dienstleistung auftraten bzw. mit der Zahl der Dienstjahre in Zusammenhang standen, folgerten die Autoren einen kausalen Zusammenhang der Symptome mit den Belastungen (10).

Miro fand 1962 bei französischen Radarpersonal ein vermehrtes Auftreten von Schmerzen, Schwindel, Übelkeit, Veränderung des Charakters, Gewichtsverlust, Fieberanfälle mit Frieren und Schwitzen und allgemeiner Erschöpfung. Die Hochfrequenz-Exposition lag bei ca. 5 V/m (8).

Im Jahr 1996 belegte eine Studie des Schweizer Bundesamtes für Energiewirtschaft um den Kurzwellensender Schwarzenburg in der Schweiz hochsignifikante Gesundheitsstörungen bei der Zivilbevölkerung bezüglich der Symptome Schlafstörung, Kopfschmerz, Gelenkschmerz, Erschöpfung u.a.. In einer verblindeten Abschaltstudie kam es einen Tag nach Senderabschaltung zu einer Besserung der Beschwerden (11-13).

Santini et al. hatten 2002 in Frankreich ebenfalls einen klaren Dosiswirkungs-Zusammenhang für folgende Symptome in der Nähe von Mobilfunksendestationen nachgewiesen: Schlafstörung, Müdigkeit, Erschöpfung, Erregbarkeit, Depression u.a.. Als Folgerung empfahl man damals Sender dieser Art nicht näher als 300 m zu Wohnungen aufzustellen (14).

Deckungsgleiche Ergebnisse zeigten die Arbeiten von Navarro et al. mit Nachmessungen durch Oberfeld (Landesregierung Salzburg, Abteilung Gesundheit), bei der ebenfalls die gemessenen Strahlungsbelastungswerte signifikant in einer Dosiswirkungsbeziehung mit erheblichen Gesundheitsproblemen korreliert. Drei Gruppen zeigten folgende Feldstärkeverteilung: Gruppe 1: 0,02-0,04 V/m, Gruppe 2: 0,05-0,22 V/m und Gruppe 3: 0,25-1,29 V/m (15).

Die Arbeit von Abdel-Rassoul et al. zeigte 2007 signifikante Störungen des Zentralnervensystems (Kopfschmerz, Gedächtnisstörungen, Schwindel, Zittern, depressive Symptome, Schlafstörung) bei einer belasteten Population gegenüber einer Kontrollpopulation. Die gemessene Feldstärke lag bei 3 Volt/m in der als belastet eingestuften Gruppe (16).

Im Rahmen der hier vorgestellten Erhebung wurden gezielt Kontrollfragen eingebracht, um die Glaubwürdigkeit von Aussagen der Probanden zu prüfen. An Hand der Höhe der geschilderten Symptome ließ sich zum Beispiel erkennen, dass Fragebögen nicht willkürlich ausgefüllt worden waren. So zeigten sich für die Kontrollfrage „Zahnschmerzen", eine überwiegend durch Karies hervorgerufene Erkrankung, keine Unterschiede zwischen den belasteten und unbelasteten Gruppen.
Das Kontrollsymptom „Einnässen" kam erwartungsgemäß nur in einem ganz geringen Prozentsatz vor und zeigte ebenfalls keine Unterschiede zwischen belasteten und unbelasteten Gruppen.

Das Verhältnis der Fragen „Gewichtszunahme" gegenüber „Gewichtsabnahme" entsprach der klinischen Realität. Die Adipositasprävalenz (Body-Mass-Index BMI > 30) liegt im Mittel bei 20 % der Bevölkerung - was einem Wert von 1 (20 % vom Maximalwert 5) unserer Beschwerdescores entspricht (25, 27). Untergewicht findet sich nur bei ca. 1-6 % der deutschen Bevölkerung, was sich in dem niedrigeren Beschwerdescore für Gewichtsabnahme in Höhe von 0,2 auch in unserer Untersuchung widerspiegelt (28).
Tendenzielles Abstimmungsverhalten im Sinne einer Beschwerde-Aggravation war somit auszuschließen.

Die Symptomengruppen Schlafstörung, Depression, cerebrale Symptome, Infekte, Hautveränderungen, Herz-Kreislauf Störungen, Störungen des optischen und akustischen Systems sowie des Magen-Darm-Traktes erwiesen sich als konsistent und signifikant gehäuft bei den belasteten Gruppen. Wie aus der Literaturübersicht hervorgeht, ist seit den 1960-Jahren bekannt, dass hochfrequente Felder und Mikrowellen diese Einflüsse auslösen können (8-10).

Ebenfalls signifikant waren Unterschiede bei den Scores zu Gelenkbeschwerden, was wiederum einen bereits publizierten Befund der Erkenntnisse aus Schwarzenburg (Schweiz) replizierte (11-13).

Die statistische Absicherung der hier vorgestellten Ergebnisse erfolgte im t-Test (7). Die oftmals stereotyp angeführte Kritik einer für die Absicherung von Zusammenhängen zu kleinen Fallzahl wurde durch die Anwendbarkeit dieses statistischen Tests und dessen signifikantem Ergebnis mathematisch widerlegt.

Wesentlich kritischer zu sehen ist die Limitierung der erhobenen Daten durch die erkennbare Selbstselektion der Teilnehmer gegenüber der Gesamtheit der befragten Stichprobe, was sich in der geringen Rücklaufquote der Fragebögen manifestiert. Allerdings unterscheiden sich weder die Rücklaufquote des gesamten sendernahen Bereichs bis 400 m noch die Rücklaufquote der höchstbelasteten Gruppen signifikant von der Quote der Kontrollgruppe 5, was jedenfalls auf ein homogenes Antwortverhalten und gegen eine Überselektion von vermeintlich Erkrankten schließen lässt (Tab. 2).

Den angeschriebenen Teilnehmern, die sich sowohl aus Personen im 400 m Umkreis der Mobilfunk-Sender in der Feldstraße als auch aus weiter entfernt lebenden Selbitzer Bürgern zusammensetzten, war nicht bekannt, dass sie nach Wohnort und Belastung in Gruppen eingeteilt werden würden. Eine Selbstzuordnung zu den Gruppen 1-5 war den Teilnehmern also nicht möglich.
In Nachfolgestudien sollte versucht werden, die Rücklaufquote durch telefonischen Recall beziehungsweise persönliche Interviews statt der hier durchgeführten alleinigen Briefversendung zu steigern.

In der Gemeinde Selbitz fanden sich neben Befürwortern auch Kritiker des Mobilfunks sowie Personen mit einer indifferenten Haltung, so dass jede Gruppe die gleiche Möglichkeit zu einer Rückantwort hatte. Die Zahl von Studienteilnehmern, die sich durch Mobilfunk gesundheitlich beeinträchtigt fühlten lag in Selbitz bei 12 % und liegt somit unter der Teilnehmerrate von 23 %. Dies entspricht dem im DMF gefundenen Prozentsatz von 9 % (1). Ein Selektionsbias ließ sich so nicht erkennen.

Die teilnehmenden Einzelgruppen unterschieden sich nicht nach Alter bzw. Geschlecht, die Plausibilität der Antworten wurde innerhalb der Studie geprüft. Somit wird angenommen, dass die gefundenen Ergebnisse die tatsächliche Verteilung der Gesundheitsproblematik widerspiegeln.
Internationale Definitionen legen fest, dass negative Gesundheitseffekte durch Mikrowellen dann als gesichert anzusehen sind, wenn ein plausibles Erklärungsmodell zugrunde liegt, Studien mehrfach unabhängig voneinander repliziert wurden und keine Widersprüche zu anderen Studien bestehen (23).

Mit der vorliegenden Arbeit sind genau diese Bedingungen erfüllt, so dass ein weiteres Mal die immer wieder geforderte Evidenz nachgewiesen wurde. Auch die negativen Ergebnisse des deutschen Mobilfunkforschungsprogramms sind unter Berücksichtigung der niedrigeren Strahlungsintensitäten als schlüssig anzusehen.

Folgerungen

Die offizielle Vorgehensweise der Abklärung von Gesundheitsproblemen bei Senderanwohnern erschöpfte sich bis 2009 in der Messung der Strahlenbelastung der betroffenen Haushalte, anstatt eine Vorortuntersuchung mit Senderabschaltung zur Überprüfung der Kausalität durchzuführen.
Aus der Einhaltung der gesetzlichen Grenzwerte wurde reduktionistisch ohne Untersuchung gefolgert, dass unterhalb dieser Grenzwerte keine Gesundheitsschäden auftreten könnten, da erstens die Grenzwerte eingehalten seien und zweitens keine wissenschaftlich anerkannten Untersuchungen vorlägen. Letzteres entspricht nicht dem aktuellen Stand der Wissenschaft.

Nach § 22 BImSchG (Bundes-Immissionsschutzgesetz) sowie Art. 2 Abs. 2 GG (Grundgesetz) müssen beim Betrieb von technischen Anlagen unstreitig Gesundheitsgefährdungen Dritter ausgeschlossen sein.
Der Bundesverordnungsgeber hat durch Erlass der 26. BImSchV (Bundes-Immissionsschutzverordnung) Grenzwertregelungen im Bereich der elektromagnetischen Strahlenfelder getroffen, mit denen die gesetzlich und grundgesetzlichen Anforderungen konkretisiert werden sollen. Wie durch die vorliegende Untersuchung aber erneut aufgezeigt wird, treten bereits weit unterhalb der offiziellen Grenzwertregelungen deutlich erhöhte Krankheitshäufigkeiten ein.
Auch wenn damit im Rechtssinne noch kein individuell-konkreter Schädigungsnachweis geführt ist, machen die vorliegenden Untersuchungen deutlich, dass die vom Bundesverordnungsgeber aus den Ergebnissen des Deutschen Mobilfunkforschungsprogramms gezogenen Schlussfolgerungen, wonach unterhalb der Grenzwerte der 26. BImSchV keine Gesundheitsgefährdungen zu befürchten sind, wissenschaftlich und rechtlich nicht haltbar sind.

Festzustellen ist insofern aus rechtlicher Sicht, dass die jetzigen Grenzwertregelungen im Ergebnis keine ausreichende Gefahrenabwehr gewährleisten. Soweit offiziell nach wie vor

darauf hingewiesen wird, dass die Grenzwerte der 26. BImSchV Vorsorge-Grenzwerte seien, ist dieses u.a. auch durch die vorliegende Untersuchung widerlegt, als hier ein signifikant erhöhtes Krankheitsrisiko in der Nachbarschaft von Mobilfunkanlagen aufgezeigt wird.

Wie auch schon vom Europäischen Parlament angemahnt, sind die jetzigen Grenzwertregelungen dringend zu überprüfen. Aufgrund der dokumentierten Schädigungszusammenhänge ergibt sich zudem ein dringender weiterer Forschungsbedarf zur weiteren Aufklärung der konkreten Schädigungszusammenhänge.

Es ist ärztliche Pflicht weisungsungebunden an der Erhaltung der natürlichen Lebensgrundlagen im Hinblick auf die Gesundheit der Menschen hinzuwirken (24).
Als Vertreter der öffentlichen Gesundheitsbehörden werden das Gesundheitsamt, das Landesamt für Umweltschutz sowie das Bayerische Umweltministerium als regionale, wie Bundesumweltministerium als zuständige staatliche übergeordnete Behörde und die Europäische Union aufgefordert, die Ursache dieser möglichen schleichenden Vergiftung zu bezeichnen.

In Selbitz sollte es nach Abschalten des entsprechenden Senders für ein halbes Jahr zu einer Normalisierung eines Teils der Gesundheitsbeschwerden bei den Probanden kommen. Die erhebliche klinische Relevanz der gefundenen Ergebnisse wurde diskutiert.

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Der dokumentarischen Tätigkeit von Frau Christina Panchyrz gebührt unsere Anerkennung.

Hinweis:
Die anonymisierten Rohdaten können wissenschaftlichen Instituten auf Anfrage von der Stadt Selbitz zur Verfügung gestellt werden.

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Mitteilung der Redaktion

Der obige Beitrag ist als **Wissenschaftlicher Originalbeitrag** gekennzeichnet und unterlag einem speziellem Peer-Review-Verfahren unter Beteiligung des Wissenschaftlichen Beirats.

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Specific Health Symptoms and Cell Phone Radiation in Selbitz (Bavaria, Germany)— Evidence of a Dose-Response Relationship

Horst Eger and Manfred Jahn

In January 2009 the administration of the Bavarian Municipality of Selbitz gathered relevant data from 251 residents as part of a health survey. Subsequently, the data were assessed based on the exposure levels of cell phone radiation.
In a next step, the exposure levels based on residential location and available RF measurements of local cell phone radiation levels were used to classify participants into exposure groups.
The mean radiation exposure level of the highest exposure group in Selbitz (1.2 V/m) was substantially higher than that of the study population in the QUEBEB study (1) of the German Mobile Phone Programme (mean value 0,07 V/m). For such symptoms as sleep problems, depressions, cerebral symptoms, joint problems, infections, skin problems, cardiovascular problems as well as disorders of the visual and auditory systems and the gastrointestinal tract, a significant dose-response relationship was observed in relation to objectively determined exposure levels. The impact of microwave radiation on the human nervous system serves as an explanation.
Carried out without outside funds, the study presented here provides a protocol concept that allows physicians and municipalities to cooperate and assess the potential human health impact of cell phone base stations located within residential areas.

Keywords: symptoms, cell phone radiation, wireless technologies, dose-response relationship

Participating offices: Dr. Brömel/Pozder, Schulstraße 4, 95197 Schauenstein; Dr. Jahn, Brunnenstraße 1, 95152 Selbitz; Dr. Müller, Wildenberg 22, 95152 Selbitz.

Deutsche Zusammenfassung

In der bayerischen Stadt Selbitz wurden im Januar 2009 zuerst durch die Gemeinde im Rahmen einer Gesundheitsbefragung relevante Daten von 251 Einwohnern erfasst und anschließend daran nach Belastungsstärken durch Mobilfunkwellen ausgewertet.
Die Belastungswerte wurden in einem zweiten Schritt an hand von Wohnort und vorliegenden Messdaten der örtlichen Mobilfunkstrahlung zur Stratifizierung der Teilnehmer in Belastungsgruppen verwendet.
Die mittlere Strahlenbelastung der höchstbelasteten Gruppen in Selbitz (1,2 V/m) lag deutlich höher als die untersuchte Studienpopulation der QUEBEB-

Studie (1) des Deutschen Mobilfunkforschungsprogramms (Mittelwert DMF O,07V *Im).* Fürdie Beschwerden Schlafstörung, Depressionen, cerebrale Symptome, Gelenkbeschwerden, Infekte, Hautveränderungen, Herz-Kreislauf Störungen sowie Störungen des optischen und akustischen Sensoriums und des Magen-Darm-Traktes besteht eine signifikante dosiswirkungsabhängige Korrelation zu objektiv bestimmten Expositionslagen, die mit dem Einfluss von Mikrowellen auf das Nervensystem des Menschen erklärt wird.
Die vorliegende fremdmittelfrei erstellte Arbeit gibt einen Konzeptentwurf vor, mit dem Ärzte und Gemeindeverwaltungen gemeinsam den gesundheitlich relevanten Einfluss von innerörtlichen Mobilfunksendern abschätzen können.

Introduction

Over the last decades wireless technologies have gained in importance. As a result, however, TV and radio stations are no longer the broadcasting sources that cause the highest exposure levels in residential areas; now it is cell phone base stations. Since 2003 the German Commission on Radiological Protection (SSK) has explicitly pointed out that there is a lack of knowledge about the consequences of these technologies on human health (2).

In Upper Franconian Selbitz, the municipality collaborated with local medical offices[1] whereby two separate data sets—a general health survey and available RF measurements—were used to correlate gathered symptom scores with independently available RF emission measurements of relevant cell phone radiation.

Materials and Methods

Selbitz in Upper Franconia is located in the northeast of Bavaria, Germany, having a total population of 4,644 (2,171 male and 2,473 female) on 31 December 2008 (3).
Cell phone coverage is available across the entire municipality. In the center, cell phone transmitters of two service providers are located in the street *Feldstraße 28* and the installation of a third telecommunication service provider is located in the street *Burgstraße 26a* (4).

Fig. 1:
Cell Phone Transmitters on Top of the Multistory Building at Feldstraße 28, Selbitz, Upper Franconia

As part of a survey in 2009, Selbitz municipality sent standardized health questionnaires by mail to 1,080 persons within the municipality and surrounding areas. The participants were aware that they could receive a questionnaire when they lived within a 400-m radius of the cell phone base station at *Feldstraße 28* or also outside of this radius. There were no personal interviews. A total of 88 sets of information on health symptoms were gathered, using a quantitative scale of zero to five. The symptom groups based on clinical entities were summarized as clusters for the assessment (Table 1).

	Symptom Group	Symptom Number
1	Sleep disorders	1-5
2	Symptoms of depression	6,7,18-23
3	Headaches	8
4	Cerebral affections	8-12
5	Concentration difficulties	24-29
6	Joint problems	30-34
7	Toothaches	35
8	Infections	36-41
9	Skin problems	42-47
10	Dizziness	55
11	Cardiovascular problems	48-52
12	Auditory system, Disturbance of equilibrium	56-61
13	Visual problems	62-67
14	Nosebleed	68
15	Hormonal imbalances	70-74
16	Weight gain	75
17	Weight loss	76
18	Gastrointestinal problems	77-81
19	Bedwetting	85

Table 1: Summary of Symptom Groups Based on Clinical Entities

The cover letter of the invitation to participate stated that participant confidentiality is ensured. The questionnaires could be returned or sent back to Selbitz municipality or the local doctor's offices. After the questionnaires were returned, the personal information form was separately filed from the symptom information form at the doctor's office of Dr. Eger, Naila. The anonymously coded symptom information forms were then passed on for data entry to the administrative staff of Selbitz municipality. The staff of the IT department entered the anonymized data into an Excel table for analysis. On the personal information form, the existence of a DECT phone in the residence was indicated by a simple checkmark, which was also entered into the data pool.

All participants who returned their questionnaires were classified into groups based on their residential address. The circles drawn in Figure 2 show distances of 100 m, 200 m, 300 m, or 400 m from the two cell transmitters installed on the building of *Feldstraße 28*, identifying the groups 1 to 4. One control group (group 5), which can be classified as low-emission, includes participants outside the 400-m radius directly in Selbitz and also from surrounding areas that are further away from the municipality.

According to the elevation map, the landscape around the transmitter is level toward the west and east, gently rises toward the north, and declines with 7° to 9° toward the south.
The cell phone facilities of the service providers are located at a height of 19.20 m, 20.20 m, and 23.50 m above ground with the actual transmitters at 19.35 m and 22.70 m. The down tilt of the transmitters is given with 8°. The frequency ranges used are at about 940 MHz and 1850 MHz (5).

Under these conditions, the area where the main beam touches the ground is located almost 200 m away from the transmitters. Within the 200-m radius additional side lobes are to be expected.

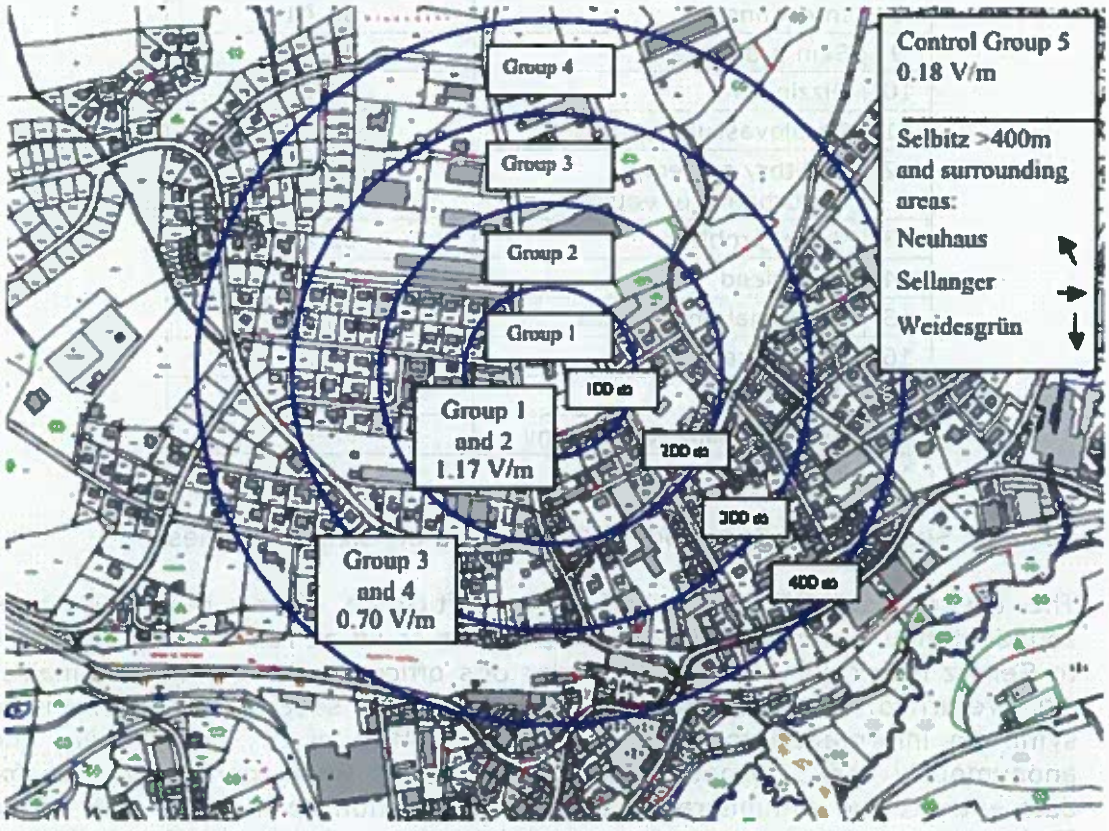


Fig. 2: The map from the land title office shows in the center of the concentric circles the cell transmitters at Feldstraße 28 in Selbitz. (Source: 5, With kind permission of Selbitz municipality)

Testing Situation and Measurement Results

Based on the testing report by the accredited company ECL, mean exposure values of the cell phone radiation could be assigned to the individual exposure groups (6). For the groups 1 and 2 the mean value is 1.17 V/m, for the groups 3 and 4 0.7 V/m.
The testing results for the area outside the 400-m radius were on average at 0.18 V/m and serve as a reference value. Weidesgrün area showed the lowest measurements with 0.01 V/m.

The analysis is performed by using a two-tailed t-test of two unrelated samples for a total of 19 symptom scores of the individual groups 1 through 5 to test the null hypothesis that the symptom scores of the compared groups are evenly distributed and thus independent of the radiation effect (7).

The comparison of the health-relevant data was carried out based on two concepts:

A) Comparison of the participant groups 1 to 4 within the 400-m radius of the transmitter location to the control group outside the 400-m radius in Selbitz/surrounding areas.
B) Comparison of the participant groups within the 400-m radius of the transmitter location, comparing the highest-exposure groups 1 and 2 to the groups 3 and 4 further away.

Results

A total of 255 persons above the age of 18 participated in the survey; 4 questionnaires could not be evaluated. This corresponds with a response rate of 23% from 1,090 questionnaires sent out. In total, the groups 1 to 4 close to the transmitter had a response rate of 22% and the control group's rate was 27%, thus displaying no significant difference in the response rate (Table 2).

For all participants the gender ratio of 43% male and 57% female applies, which roughly corresponds with the ratio of the statistically registered inhabitants of Selbitz with 47% male and 53% female (Table 3).

For groups 1 through 4, the control group 5, and persons in Selbitz from the age of 18, the average age is 54.5, 52.0, and 53.5 years.
The age distribution in 5-year increments corresponds with the total population in Selbitz (Table 3, Figure 3a-e). The survey participants, thereby, represent an age-representative sample of the total population of all inhabitants of Selbitz from age 18.

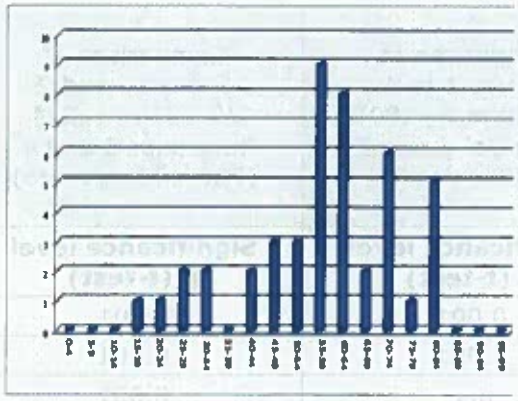
Within the 400-m radius around the transmitter, a higher symptom rate could be documented for 14 out of 19 symptom groups in the highest exposure groups 1 and 2 close to the transmitter compared to groups 3 and 4 further away from the transmitter (Table 4). The difference is statistically significant.

	Mailouts	Responses Number/(Percent)	Nonresponses Number/(Percent)	Comparison of Responses/Nonresponses incl. Control Group 5 (chi-square test)
Groups				
1	125	45 (36.0%)	80 (64.0%)	n.s.**
2	144	37 (25.7%)	107 (74.3%)	n.s.
3	281	60 (21.4%)	221 (78.6%)	n.s.
4	273	38 (14.0%)	235 (86.0%9	$p < 0.01$ (chi^2)
Control Group 5	254	71 (28.0%)	183 (72.0%)	
Sum	1077*	251	826	

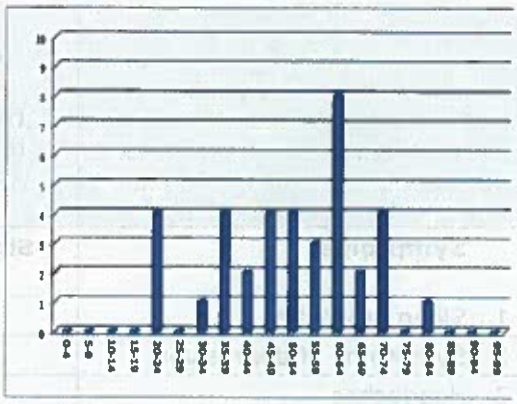
Table 2: Distribution of Questionnaires in Groups 1 to 4 and Control Group 5 according to Responses and Nonresponses.
With the exception of the low response rate in group 4, the differences between the responders/nonresponders of the individual groups and the control group 5 are not statistically significant.
*Three persons of the 1,080 surveys sent out could not be assigned.
** n.s. = not significant

	Number	Gender Male/Female (in %)	Age in 5-year Increments** Mean/Median	Distance from Transmitter at Feldstraße	Mean Exposure Levels of Cell Phone Radiation in V/m
Groups					
1	45	47/53	57.5/57	0-100 m	1.17 V/m
2	37	41/59	52.0/52	100-200 m	
3	60	40/60	55.0/57	200-300 m	0.70 V/m
4	38	42/57	53.5/52	300-400 m	
5	71	44/56	52.0/52	> 400 m	0.18 V/m
Selbitz*	4644	47/53	53.5/52		

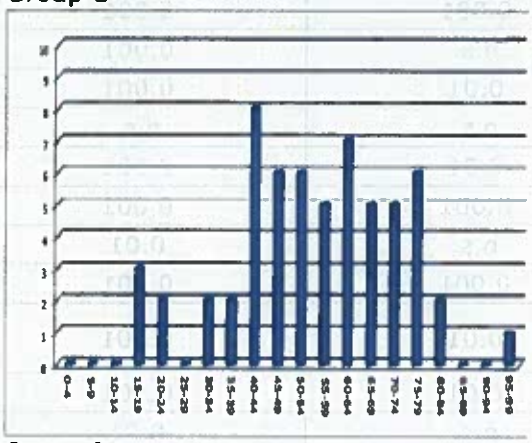
Table 3: Overview of Investigated Groups Based on Gender, Age, Residential Location, and Exposure Level. Groups 1-4 with a total of 180 participants are located within the 400-m radius of the transmitter. The 71 participants of control group 5 are further away than 400 m. Both the gender distribution as well as the comparison of age groups does not statistically differ from the total population of Selbitz.
* For the comparison of the mean age only persons above the age of 18 were chosen from the Selbitz population. Total population of Selbitz: 4,644; Inhabitants above age 18: 3,890.
** Age values are given within 5-year groups.



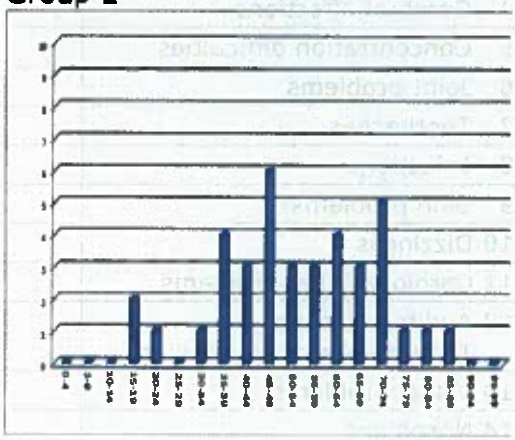
Group 1



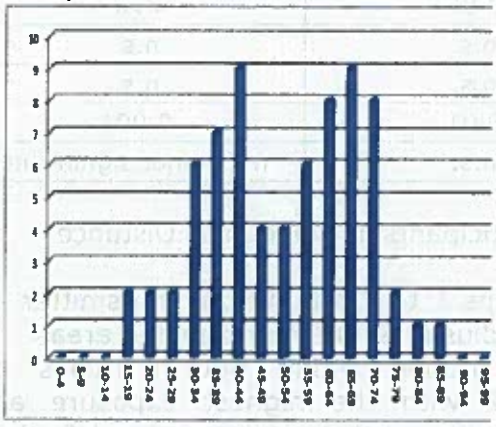
Group 2



Group 3



Group 4



Control Group 5

Fig. 3a-e: Age Distribution in Groups 1-4 and Control Group 5 in 5-year Increments

	A Comparison of Groups 1 to 4 (0-400 m/n=180) to control group 5 (> 400 m/n=71)	B Comparison of Groups 1 and 2 (0-200m/n=82) to groups 3 and 4 (200-400 m/n=98)
Symptoms	**Significance level p (t-test)**	**Significance level p (t-test)**
1 Sleep problems	0.001	0.001
2 Symptoms of depression	0.001	0.001
3 Headaches	n.s.	0.001
4 Cerebral affections	0.001	0.001
5 Concentration difficulties	n.s.	0.001
6 Joint problems	0.01	0.001
7 Toothaches	n.s.	n.s.
8 Infections	0.01	0.001
9 Skin problems	0.001	0.001
10 Dizziness	n.s.	0.01
11 Cardiovascular problems	0.001	0.001
12 Auditory system Disturbance of equilibrium	0.01	0.001
13 Visual problems	0.01	0.001
14 Nosebleed	n.s.	0.01
15 Hormonal imbalances	0.05	n.s.
16 Weight gain	n.s.	n.s.
17 Weight loss	n.s.	n.s.
18 Gastrointestinal problems	0.01	0.001
19 Bedwetting	n.s.	n.s. = not significant

Table 4: Specific Symptoms of Study Participants in Relation to Distance from Emission Source

A) Comparison of participant groups 1 to 4 around the transmitter to control group outside 400-m radius in Selbitz/surrounding areas

B) Comparison of participant groups within 400-m radius of transmitter. Groups 1 and 2 with the highest exposure are compared to groups 3 and 4 with a lower exposure level further away from the transmitter. Exposure levels for groups 1 and 2 were 1.17 V/m, for groups 3 and 4 0.7 V/m, and for control group 5 0.18 V/m.

In comparison to the control group, significant ($p < 0.01$, t-test) differences were found for the following symptom groups in the four exposure groups 1 to 4 located close to the transmitter: sleep problems, symptoms of depression, cerebral symptoms, joint problems, infections, skin problems,

cardiovascular problems, disorders of the visual and auditory system as well as hormone system and also gastrointestinal problems. The control symptoms "toothaches" and "bedwetting" were not significant (Table 4).
An overview of the documented mean values for all 19 symptoms or symptom scores is shown in Figure 4. The highest mean values are found mostly in the two highest exposure groups 1 and 2.

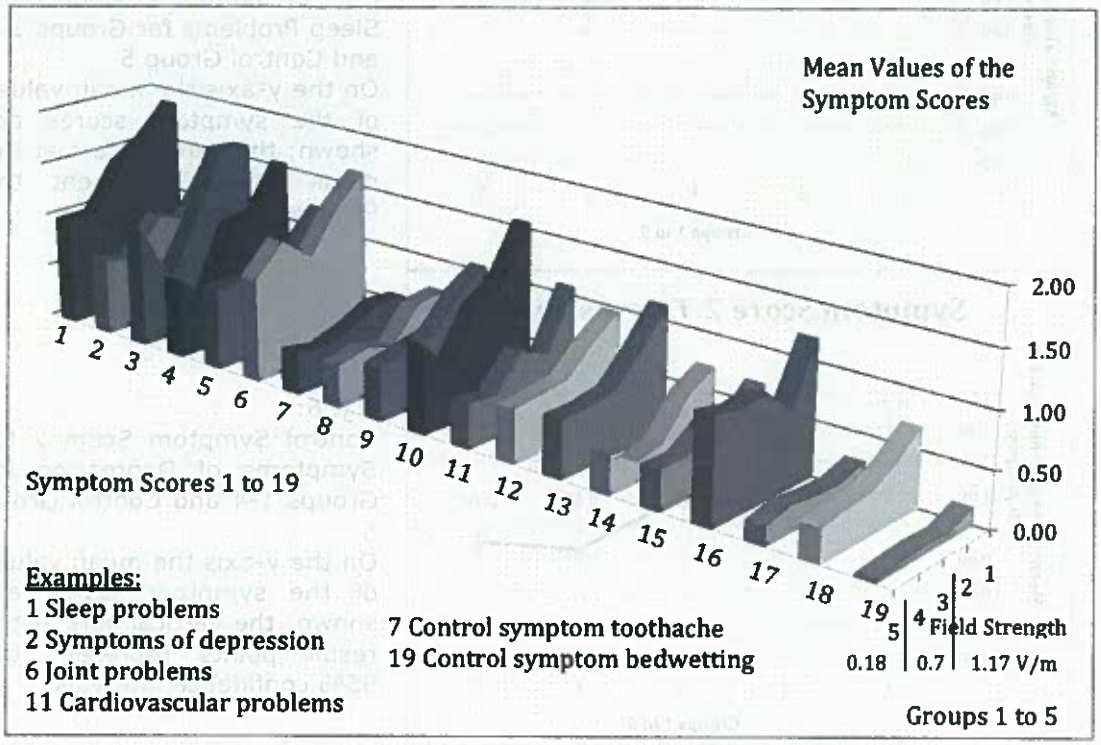


Fig. 4: Comparison of Specific Symptoms to Field Strengths
The spatial representation shows the 19 symptom scores on the y-axis where the mean value of each symptom score is plotted quantitatively. On the z-axis the exposure groups 1 to 5 are shown.

In Figure 5 and 8, the symptom scores for sleep problems, symptoms of depression, joint problems and cardiovascular problems are shown with their mean values and 95% confidence intervals. In a highly visual way, the significant relationships from Table 4 become obvious here.

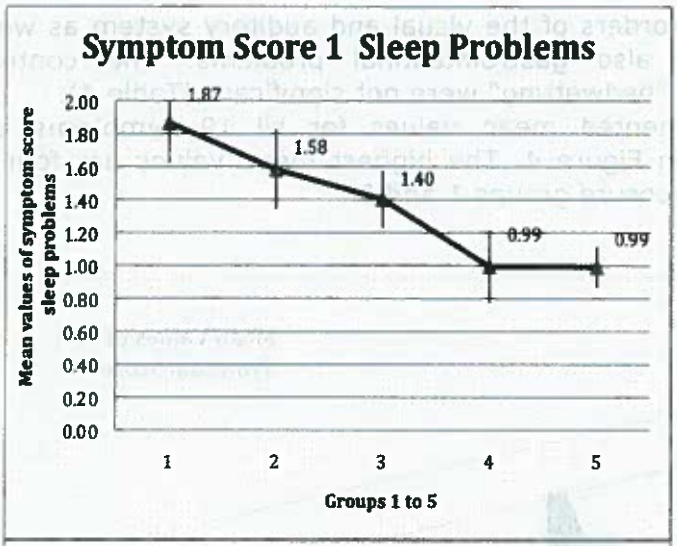


Fig. 5:
Control Symptom Score 1 for Sleep Problems for Groups 1-4 and Control Group 5
On the y-axis the mean values of the symptom scores are shown; the vertical bars at the result points represent the 95% confidence intervals.

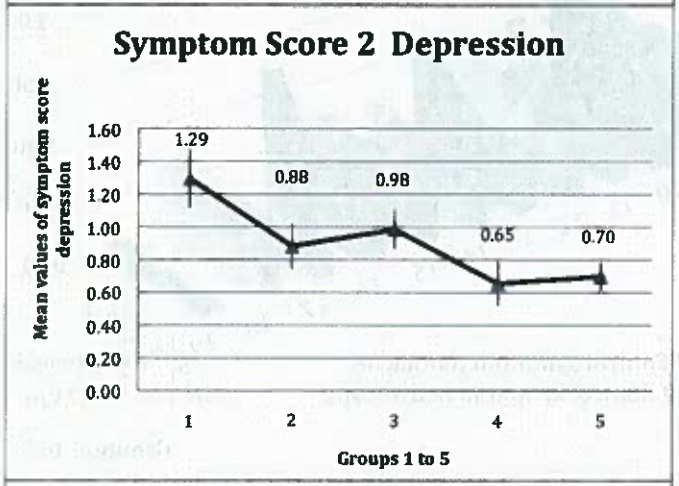


Fig. 6:
Control Symptom Score 2 for Symptoms of Depression for Groups 1-4 and Control Group 5
On the y-axis the mean values of the symptom scores are shown; the vertical bars at the result points represent the 95% confidence intervals.

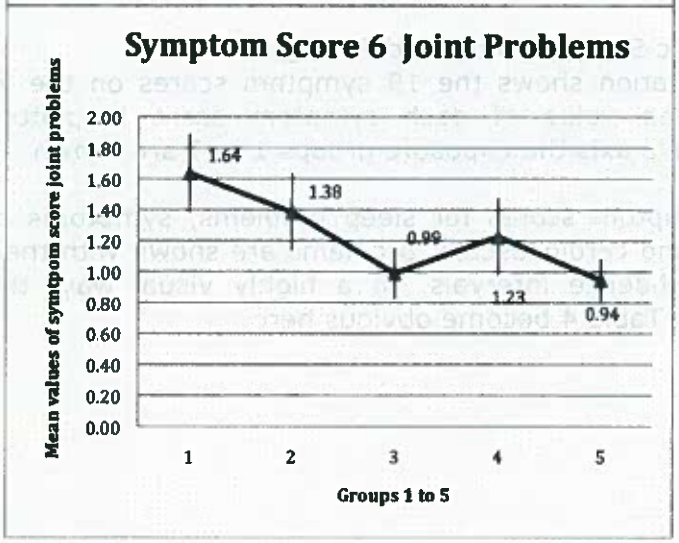


Fig. 7:
Control Symptom Score 6 for Joint Problems for Groups 1-4 and Control Group 5
On the y-axis the mean values of the symptom scores are shown; the vertical bars at the result points represent the 95% confidence intervals.

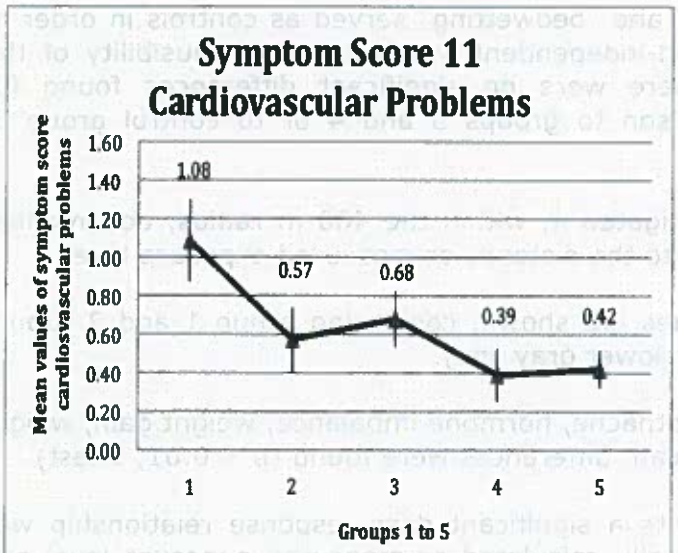


Fig. 8:
Control Symptom Score 11 for Cardiovascular Problems for Groups 1-4 and Control Group 5
On the y-axis the mean values of the symptom scores are shown; the vertical bars at the result points represent the 95% confidence intervals.

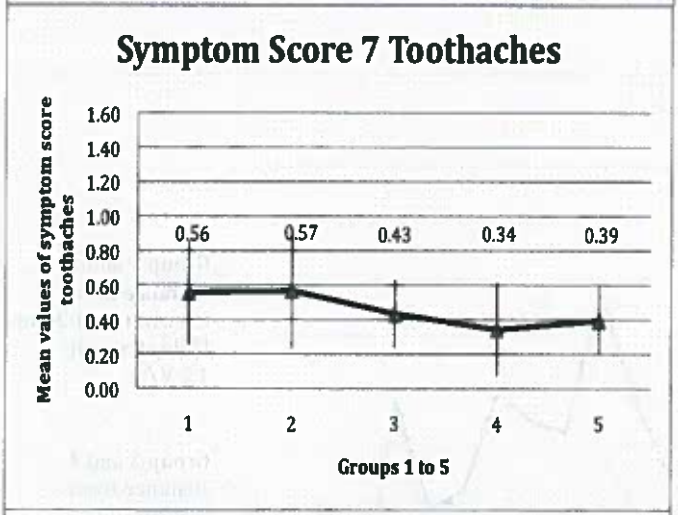


Fig. 9:
Control Symptom Score 7 for Toothaches for Groups 1-4 and Control Group 5
On the y-axis the mean values of the symptom scores are shown; the vertical bars at the result points represent the 95% confidence intervals.

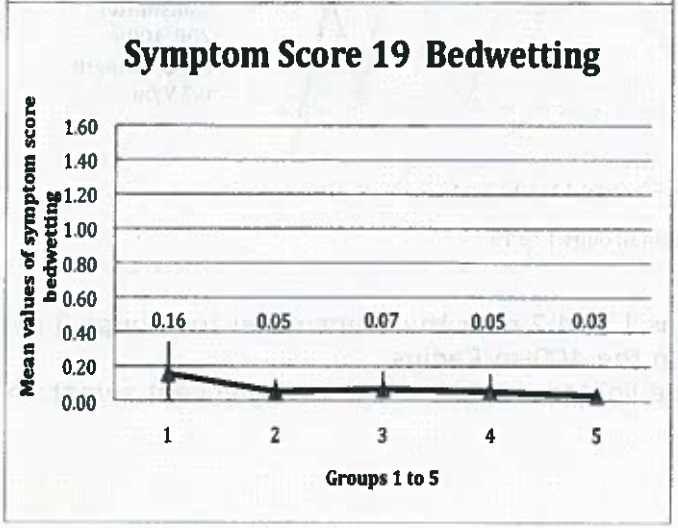


Fig. 10:
Control Symptom Score 19 for Bedwetting for Groups 1-4 and Control Group 5
On the y-axis the mean values of the symptom scores are shown; the vertical bars at the result points represent the 95% confidence intervals.

The symptoms "toothaches" and "bedwetting" served as controls in order to validate with these radiation-independent symptoms the plausibility of the participants' responses. There were no significant differences found for groups 1 and 2 in comparison to groups 3 and 4 or to control group 5, respectively (Table 4).

In a second step, we investigated if, within the 400-m radius, documented symptom scores are related to the distance or measured exposure level.

In Figure 11 the mean values are shown, comparing group 1 and 2 (upper black line) to group 3 and 4 (lower gray line).

Except for the symptoms toothache, hormone imbalance, weight gain, weight loss, and bedwetting, significant differences were found ($p < 0.01$; t-test).

Among the study participants a significant dose-response relationship was found between the theoretically calculated or measured exposure level and the symptom score levels.

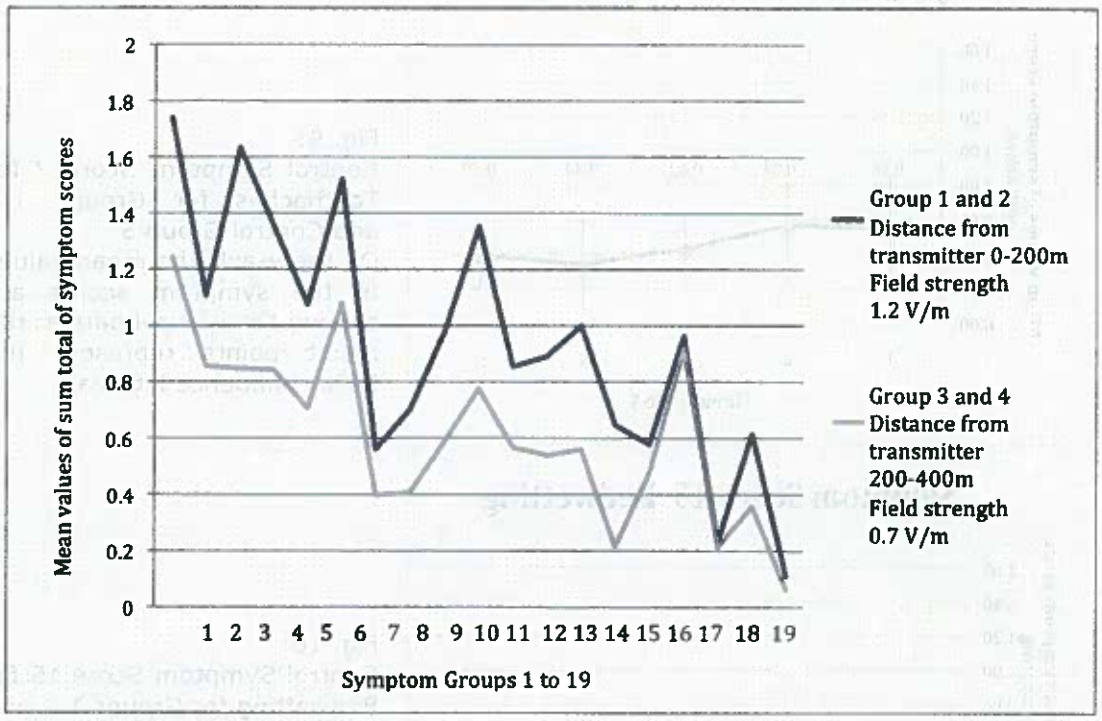


Fig. 11: Comparison of Groups 1 and 2 near the Transmitter to Groups 3 and 4 further away within the 400-m Radius
The numbers a shade lighter represent the nonsignificant symptom groups.

Data Gathering of DECT Phone Use

In the personal information form, participants could checkmark whether they have a DECT phone in their household. Out of 251 participants, 171 said they owned such a device and 80 said no. The average age of DECT phone users was with 50.5 years significantly lower than for those participants without a DECT phone (t-test, $p < 0.001$) so that no comparison group existed for individual relationships.

Discussion

The presented results show a significant relationship between mean exposure levels of the study participants and reported health symptoms.
For the highest exposure group, the mean microwave exposure is given with a field intensity of 1.2 V/m. An additional question concerning the use of DECT phones at home revealed an additional background exposure level in all participating households.
The graphs show clear trends for decreasing symptom scores in relation to decreasing mean exposure levels caused by cell phone transmitter emissions.

The comparison with the national and international research to classify these results provides additional arguments for nonrandom relationships.

Within the framework of the German Mobile Phone Programme (DMF), the QUEBEB study also investigated if health symptoms in the population could be associated with cell phone base stations and measured microwave radiation levels.
This study did not show any significant relationships because the highest measurement is given with 1 volt per meter, whereby 99% of the measurements are below 0.34 V/m. The mean exposure level was at 0.07 V/m with a 95% percentile at 0.17 V/m (1).

While less than 1% of the participants of the DMF study were exposed above 0.34 V/m, 82 out of the 251 study participants in Selbitz belonged to a high-exposure group above 0.7 V/m, that is, 32.7%.
High exposure groups as found in Selbitz did basically not occur in the samples of the German Mobile Phone Programme. To a certain degree, this has to do with the method of random sampling and leads to a systematic underestimation of the risk for population groups with higher exposures. Thus the finding of the QUEBEB study that found no correlation applies only to low-exposure groups and does in no way contradict the findings in Selbitz.

In Germany where complete cell phone coverage is provided, the Federal Office for Radiation Protection (BfS) has received highly important information about the health problems affecting residents living next to cell phone base stations. In a meeting on 2 August 2006 in Neuherberg, strongly worded official medical reports were quoted that document problem situations in particularly highly exposed households (17-19).

It has become known to industry that the health of their technicians is damaged (20,21).
There are already efforts under way to explore possibilities of how the electromagnetic pollution in wireless networks could be reduced. The reasoning for a patent filed in 2003 explicitly quotes evidence of damage in human DNA (22).

Since the 1960s long-term, nonthermal effects on the human central nervous system have been causally linked to microwaves, ultrashort waves, and shortwaves in several studies.

As part of a dissertation, Wenzel studied the health status of radio personnel in East German military forces (NVA) and summarized his results in a report that was confidential until 1989. In comparison to a nonexposed group, he observed an increase in headaches, sleep problems, general fatigue, eye pain, stabbing pain in the chest, declining mental power, irritability, dizziness, tendency to sweat, and visual problems. As a result of his findings, the inadequacy of the current exposure limits had already been pointed out in 1967 (9).

The review of occupational surveys in the Soviet Union between 1960 and 1996, which had been carried out by Prof. Hecht on behalf of the Federal Office for Telecommunications, revealed causal links for microwave radiation as a stressor of the central nervous system (26).

In 1960 Iranyi et al. from Hungary reported for the first time in the *Munich Medical Weekly Journal* about a substantially increasing number of health problems in radio personnel of "modern" radio stations that had been validated by measurements and confirmed by medical doctors, including headaches, dizziness, tiredness, sleep problems, tremors, and other symptoms. The symptoms occurred from field intensities above 3.8 V/m. There was no indication of simulated complaints. Because the symptoms occurred during their working hours and were associated with the number of years of employment, the authors concluded that there is a causal link between symptoms and exposure levels (10).

In 1962 Miro found increasing cases of pain, dizziness, nausea, personality changes, weight loss, fever attacks with chilling and sweating, and general fatigue in French radar personnel. The RF radiation exposure was at ca. 5 V/m (8).

In 1996 a study by the Swiss Federal Office of Energy around the shortwave transmitter at Schwarzenburg in Switzerland documented highly significant health problems in the civilian population regarding sleep problems, headaches, joint pain, fatigue, and other symptoms. In a blinded follow-up study, symptoms started to improve one day after the transmitter was turned off (11-13).

In 2002 Santini et al. had also demonstrated a clear dose-response relationship for the following symptoms in the vicinity of French cell phone base stations: sleep problems, tiredness, fatigue, irritability, depression, and other symptoms. As a conclusion, it was recommended back then to install this type of transmitter no closer to residences than 300 m (14).

Similar findings were revealed in the work by Navarro et al. with the follow-up measurements by Oberfeld (Government of Land Salzburg, Health Department), in which case the measured exposure levels were highly significantly correlated with major health problems. Three groups showed the following field intensity distribution: group 1 – 0.02-0.04 V/m, group 2 – 0.05-0.22 V/m, and group 3 – 0.25-1.29 V/m (15).

In 2007 the paper by Abdel-Rassoul et al. showed significant problems of the central nervous system (headaches, memory problems, dizziness, tremors, symptoms of depression, sleep problems) in an exposed population compared to the control group. The measured field intensity of the group classified as exposed was 3 V/m (16).

The survey presented here included specific control questions to verify the credibility of the participants' responses. From the number of described symptoms, for example, it was possible to see that the questionnaires had not been filled out randomly. Thus the control question for "toothaches," a disease mainly caused by caries, showed no difference between the exposed and unexposed groups.
As was to be expected, the control symptom "bedwetting" occurred only in a very small percentage and also showed no difference between exposed and unexposed groups.

The relationship between the question "weight gain" and "weight loss" corresponded with the known clinical reality. The obesity prevalence (body mass index BMI > 30) in the population is on average at 20%, which corresponds with a value of 1 (20% of maximum value 5) in our symptom scores. Underweight is found only in ca. 1-6% of the German population, which is reflected in the low symptom score for weight loss at 0.2 in our study (28).
A trend toward voting behavior in terms of symptom aggravation could thus be ruled out.

The occurrence of the symptom groups sleep problems, depression, cerebral symptoms, infections, skin problems, cardiovascular problems, problems of the visual and auditory system as well as the gastrointestinal tract proved to be consistently and significantly higher in the exposed groups. As can be seen from the literature review, it has been known since the 1960s that RF electromagnetic fields and microwaves can trigger these symptoms (8-10).

Equally significant were differences for the scores of joint problems, which again replicated already published findings of the Schwarzenburg study, Switzerland (11-13).

The results presented here were statistically validated by the t-test (7). The often stereotypically quoted criticism of too small case numbers for a validation of an association was mathematically refuted by the application of this statistical test and its significant results.

Considerably more crucial is the limitation of the gathered data because of the noticeable self-selection of the participants compared to the total number of the survey sample, which is reflected in the low response rate to the questionnaires. However, neither the response rates of the entire 400-m radius around the transmitter nor the highest exposure area do significantly differ from the response rate of control area 5, which again suggests a homogenous response behavior and speaks against an overselection of allegedly sick persons (Table 2).

The approached participants, including persons from the 400-m radius around the cell phone transmitter at the *Feldstraße* as well as Selbitz residents from further away, did not know that they would be classified into groups based on their residential location and exposure level. Thus it was not possible for the participants to classify themselves into groups 1 to 5.
In follow-up studies one should try to increase the response rate by phone calls or personal interviews instead of relying on a single mailout as was done in this study.

In Selbitz municipality, there are proponents as well as critics of wireless technologies and also persons who are indifferent to it so that each group had the same opportunity to respond. The number of study participants who considered their health affected by cell phone radiation was 12% in Selbitz and, therefore, falls below the participation rate of 23%. This corresponds with a percentage of 9% as found in the DMF. Thus a selection bias was not detected.

The participating individual groups did not differ based on age or gender, respectively; the plausibility of the responses was validated within the study. It is therefore assumed that the documented results reflect the actual distribution of the health problems.
International definitions stipulate that adverse health effects caused by microwave radiation can only be regarded as verified if the explanation for a plausible effect mechanism is provided, studies are independently replicated several times, and no contradictions exist in other studies (23).

With the paper presented here, these conditions are met so that the ongoing demand for evidence has been met once again. When taking the low exposure levels into account, the negative results of the German Mobile Phone Programme are consistent.

Conclusions

Until 2009 the official protocol for the investigation of health problems in residents living next to transmitters amounted to nothing more than measuring exposure levels in affected households instead of on-site monitoring with transmitter shutdowns to investigate causal links.
From the compliance with the currently valid exposure limits, it was concluded without any further investigation—using the logic of reductionism—that below these exposure limits no health effects could occur because, first, the exposure limits have already been met and, second, no scientifically accepted studies are available. The latter statement is not up to the current state of science.

According to the *Federal Immission Control Act* (§ 22 BImSchG) as well as the German constitution (art. 2, para. 2 GG), during the operation of technical facilities health hazards to a third party must indisputably be ruled out.
With the *Federal Immission Control Ordinance* (26. BImSchV), the federal regulation maker establishes exposure limit regulations for electromagnetic fields whose specifications are required by acts and the constitution. But as the presented paper shows once more, a clearly increasing incidence of disease is already taking place far below legally binding exposure guideline limits.
Even if in legal terms, this is not yet proof for an individual-specific evidence of damage, the presented investigations make it clear that the conclusions drawn by the federal regulation maker from the results of the German Mobile Phone Programme, according to which no health risk is to be expected below the exposure limits of the 26. BImSchV, are scientifically and legally unjustifiable.

From a legal perspective, it should be noted here that the current exposure limit regulations basically do not provide sufficient protection against health risks. Insofar as official agencies still suggest that the exposure limits of the 26. BImSchV would be precautionary limits, these limits are now disproven—among others—through our investigation, as it showed a significantly increased health risk in the vicinity of cell phone base stations.

As has already been demanded by the European Parliament, current exposure guidelines need to be urgently reviewed. Because of the documented relationship between exposure and health symptoms, there is also an urgent need for further research to elucidate the detailed relationships of health symptoms.

It is a physician's responsibility—not bound by directives—to work towards the preservation of the natural basis of life regarding human health (24).
As representatives of public health agencies, state offices such as the Public Health Department, the State Office for the Environment, and the Bavarian Ministry of the Environment as well as higher-ranking government levels

such as the Federal Ministry of the Environment and the European Union are invited to specify the cause of this possible slow poisoning.

After shutting down the respective transmitters for half a year, a portion of the health symptoms reported by the study participants in Selbitz should become normalized. The significant clinical relevance of the observed results has been discussed.

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Note:
Upon request, the anonymized raw data can be provided by Selbitz municipality to scientific institutions.

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Editor's Note
The above paper is identified as an **original scientific paper** and it was subject to a special peer-review process in cooperation with the Scientific Advisory Board.

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Abstract

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Neurobehavioral effects among inhabitants around mobile phone base stations.

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Author information

Abstract

BACKGROUND: There is a general concern on the possible hazardous health effects of exposure to radiofrequency electromagnetic radiations (RFR) emitted from mobile phone base station antennas on the human nervous system.

AIM: To identify the possible neurobehavioral deficits among inhabitants living nearby mobile phone base stations.

METHODS: A cross-sectional study was conducted on (85) inhabitants living nearby the first mobile phone station antenna in Menoufiya governorate, Egypt, 37 are living in a building under the station antenna while 48 opposite the station. A control group (80) participants were matched with the exposed for age, sex, occupation and educational level. All participants completed a structured questionnaire containing: personal, educational and medical histories; general and neurological examinations; neurobehavioral test battery (NBTB) [involving tests for visuomotor speed, problem solving, attention and memory]; in addition to Eysenck personality questionnaire (EPQ).

RESULTS: The prevalence of neuropsychiatric complaints as headache (23.5%), memory changes (28.2%), dizziness (18.8%), tremors (9.4%), depressive symptoms (21.7%), and sleep disturbance (23.5%) were significantly higher among exposed inhabitants than controls: (10%), (5%), (5%), (0%), (8.8%) and (10%), respectively ($P<0.05$). The NBTB indicated that the exposed inhabitants exhibited a significantly lower performance than controls in one of the tests of attention and short-term auditory memory [Paced Auditory Serial Addition Test (PASAT)]. Also, the inhabitants opposite the station exhibited a lower performance in the problem solving test (block design) than those under the station. All inhabitants exhibited a better performance in the two tests of visuomotor speed (Digit symbol and Trailmaking B) and one test of attention (Trailmaking A) than controls. The last available measures of RFR emitted from the first mobile phone base station antennas in Menoufiya governorate were less than the allowable standard level.

CONCLUSIONS AND RECOMMENDATIONS: Inhabitants living nearby mobile phone base stations are at risk for developing neuropsychiatric problems and some changes in the performance of neurobehavioral functions either by facilitation or inhibition. So, revision of standard guidelines for public exposure to RER from mobile phone base station antennas and using of NBTB for regular

assessment and early detection of biological effects among inhabitants around the stations are recommended.

PMID: 16962663 [PubMed - indexed for MEDLINE]

MeSH Terms

LinkOut - more resources

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(English translation)

Study of the health of people living in the vicinity of mobile phone base stations: I. Influences of distance and sex *

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Institut national des sciences appliquées – laboratoire de biochimie-pharmacologie – bâtiment Louis Pasteur, 20, avenue Albert Einstein, 69621 Villeurbanne, France

Summary

A survey study using a questionnaire was conducted on 530 people (270 men, 260 women) living or not in the vicinity of cellular phone base stations, on 18 Non Specific Health Symptoms. Comparisons of complaint frequencies (CHI-SQUARE test with Yates correction) in relation to the distance from base stations and sex show significant (p <0.05) increase as compared to people living > 300 m or not exposed to base stations, up through 300 m for tiredness, 200 m for headache, sleep disruption, discomfort, etc., 100 m for irritability, depression, loss of memory, dizziness, libido decrease, etc. Women significantly more often than men (p < 0.05) complained of headache, nausea, loss of appetite, sleep disruption, depression, discomfort and visual disruptions. This first study on symptoms experienced by people living in the vicinity of base stations shows that, in view of radioprotection, the of minimal distance of people from cellular phone base stations should not be < 300 m. © 2002 Editions scientifiques et medicales Elsevier SAS

base station / bioeffects / cellular phone

1. INTRODUCTION

Chronic exposure to high frequency electromagnetic fields or microwaves brings on bioeffects in man such as headaches, fatigue, and sleep and memory disruptions [1, 2]. These biological effects, associated with others (skin problems, nausea, irritability, etc.) constitute what is known in English as "Non Specific Health Symptoms" (NSHS) that characterize radiofrequency sickness. [3] Cellular mobile phone technology uses hyperfrequencies (frequencies of 900 or 1800 MHz) pulsed with extremely low frequencies (frequencies < 300 Hertz) [4]. Even though the biological effects resulting from mobile phone use are relatively well known and bring to mind those described in radiofrequency sickness [5, 6], to our knowledge no study exists on the health of people living in the vicinity of mobile phone base stations.

We are reporting here the results pertaining to 530 people living in France, in the vicinity or not, of base stations, in relation to the distances from these stations and to the sex of the study participants.

2. MATERIALS AND METHODS

2.1. Questionnaire employed:

A questionnaire similar to that developed for the study on mobile phone users [6] was sent to people wishing to participate in the study. General questions pertained to age, sex, estimated distance from base stations (less than 10 m, 10 to 50 m, 50 to 100 m, 100 to 200 m, 200 to 300 m, more than 300 m) and their location in relation to the antennas (facing, beside, behind, beneath in the case of antennas placed on rooftops). The exposure conditions were defined by the length of time living in the neighborhood of base stations, (less than 1 year through more than 5 years), the number of days per week and the number of hours per day (less than 1 hour through 16-24 hours per day).

Participants were asked to indicate the presence or not of electrical transformers (at less that 10 m), high or very high tension electric power lines (at less that 100 m) and radio and television transmitters (at less than 4 km). The questionnaire also sought information on computer use (more than 2 hours per day) and portable telephone use (more than 20 minutes per day).

The level of complaints for the studied symptoms was expressed by the study participants using a scale of: 0 = never, 1 = sometimes, 2 = often, 3 = very often. Of 570 questionnaires received, 40 were not used due to lack of information on the distance from the base stations or on the level of the complaints experienced. For the 530 questionnaires studied, 270 came from males (average age + or - variation: 45 years + or - 20) and 260 from females (47 years + or - 19). 18 symptoms referenced in the "NSHS" were the subject of the questionnaire, one of which, premature menopause, concerned only females.

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* The results presented in this study do not involve INSA in Lyon. INSA is the French National Institute of Applied Sciences.

** For correspondence or reprints - E-mail: rsantini@insa-lyon.fr (R. Santini).

2.2 Analysis of results:

The results obtained, pertaining to the frequency of the complaints experienced (in comparison to complaints at a level of "0"), were analyzed by the CHI-SQUARE test with Yates correction [7] using a program (STATITCF, 19787, France). We present here the results tallying:

a) The influence of distance for the base stations on the frequency of reported complaints, by comparison with the reference subjects, exposed at >300 m or not exposed (no existing base stations or non-operating base stations).

b) The influence of sex on the frequency of reported complaints, and this independent of the age of the subjects.

3. RESULTS

3.1 Influence of distance:

The study subjects are distributed in the following manner: 19.6% are at less than 10 m from base station antennas, 26.2% between 10 and 50 m, 13.8% between 50 and 100 m, 9.6% between 100 and 200 m, 10.1% between 200 and 300 m and 20.7% are at more than 300 m or not exposed (reference group).

In comparison with the reference subject group located at >300 m or not exposed to base stations, the complaints are experienced to a significantly higher degree by the subjects located in the distance zones of <10 m through 300 m from base stations. Certain symptoms are experienced significantly more often ($p < 0.05$) uniquely in the immediate vicinity of base stations (<10 m) and not beyond that: nausea, loss of appetite, visual disruptions, difficulty in moving. Significant differences ($p<0.05$)) are observed up through 100 m from base stations for symptoms such as: irritability, depressive tendencies, difficulties in concentration, loss of memory, dizziness, lowering of libido). In the zone 100 m to 200 m, the symptoms of headaches, sleep disruption, feelings of discomfort, and skin problems are again experienced significantly more often ($p<0.05$) in comparison with the group of subjects at > 300 m or not exposed. Beyond 200 m, only the symptom of fatigue is reported at a significantly high frequency ($p < 0.05$) (Table 1). By contrast, no significant effect is demonstrated in relation to distance for the symptom of premature menopause. A significant lowering of libido is reported for the distances of less than 10 m, 10 to 50 m and 50 to 100 m from base stations. For fatigue and headaches Figures 1 and 2 present the percentages of complaints expressed as a function of distance from base stations.

3.2 Influence of sex:

Two symptoms were experienced significantly more often in women ($p < 0.05$) as a function of different distance zones: nausea at a distance of less than 10 m, and headaches at distances of 10-50m, 50-100 m, 100-200 m, and 200-300 m. Men complained significantly more often ($p < 0.05$) than women of decrease in libido at a distance of 50 to 100 m from base stations.

When the men/women comparison is made for subjects exposed at a distance of < 300 m, seven symptoms (headaches, nausea, loss of appetite, sleep disruptions, depressive tendencies, feeling of discomfort, and visual disruptions) are experienced significantly more often in women ($p < 0.05$) (Table II). On the contrary, in the group of subjects living beyond 300 m or not exposed to base stations, no significant difference related to sex appears in the frequency of complaints reported for the different symptoms.

4. DISCUSSION

This study gives evidence of the fact that bioeffects are reported by people exposed at up to 300 m from base stations. The significant increase in the frequency of complaints in relation to the reference group (people exposed at > 300 m or not exposed) leads toward the observation found in the Australian governmental report indicating that at 200 m from a base station, some people exposed in their homes are complaining of chronic fatigue and sleep disruption [8].

The number of reported symptoms is higher close to base stations and it decreases with increased distance from them. Some symptoms such as nausea, loss of appetite, visual disturbances, and difficulties in movement are no longer experienced in a significant way beyond 10 m. For symptoms that, like fatigue, headaches, and sleep disruptions, are experienced significantly at considerable distances from base stations, no notable diminishment is observed in the percentages of complaints experienced with increased distance. However, the measurements of electromagnetic fields in the neighborhood of base stations show a reduction in field strength over distance [1,9]. One can expect that human sensitivity to electromagnetic waves is such that increased distance from base stations has no significant effect on certain symptoms up to a distance of 200 to 300 m. It is equally possible that the levels of electromagnetic fields found around base stations would not be the exact representation of the levels of exposure of populations. In fact, different parameters are likely to interfere to modify the levels and in particular fluctuations in emission strengths such as the number of calls handled by the base stations, the reflection of electromagnetic waves, etc. [10].

The results obtained demonstrate the greater sensitivity of women for 7 of the studied NSHS. One earlier study relating to portable phone users demonstrated a greater sensitivity of females to the symptom of sleep disturbance. This sex-related difference is parallel to the particular sensitivity of females to electromagnetic fields [11, 12].

5. CONCLUSION

From these results and in applying the precautionary principle, it is advisable that mobile phone base stations not be sited closer than 300 meters to populations and most significantly because exposed people can have different sensitivities related particularly to their sex.

Table I. Percentages of complaints reported compared to responses of a level of « 0 », by persons living in the vicinity of base stations as a function of their distance away from a base station.

Symptoms	Distances from base stations in meters (m)											
	< 10 m		10 to 50 m		50 to 100 m		100 to 200 m		200 to 300 m		> 300 m ...	
	2	3	2	3	2	3	2	3	2	3	2	3
Fatigue	76 *	72 *	63.5*	50.9*	60.6	56.6*	64.2	41.1	66.6*	43.7	40.7	27.2
Irritability	32.8	23.2*	41.7*	25.7*	47.2*	44.1*	25.8	4.1	25	9	18	3.3
Headaches	51 *	47.8*	40 *	26.1*	40.6*	36.7*	60.7*	31.2*	19.3	0	15.6	1.8
Nausea	14.5*	6.9	8.4	3	5.7	3.8	2.4	4,6	0	2.3	2,1	1.1
Loss of Appetite	20.4*	8.3	8	5.5	5	5	6.9	0	4.2	0	3.3	3.3
Sleep Disruption	41.3*	57.1*	41.4*	57.5*	46.9*	58.5*	45.8*	50*	33.3	35.5	13.8	21.1
Depression	16,9	26.8*	21.6	19.7*	11.6	24 *	16.2	3.1	13.6	2.5	10.3	3.7
Feeling of Discomfort	28 *	45.4*	25.2*	18.9	30.6*	12.8	15.7*	0	9.7	5.1	2.4	8.1
Difficulty in concentration	39.3	28.8*	37.5	16.6	34.2	26.4*	25	12.5	43.3	5.5	26.7	7.1
Memory Loss	27.8	25.4*	29.4	26.6*	37.1*	29 *	25	15.6	17.2	11.1	17.9	5.8
Skin Problems	18.1*	17.1*	6.6	10.8	11.1*	11.1	13.9*	7.5	8.7	0	1.2	4.6
Visual Disruptions	14.5	24.3*	23	13.5	22	7.1	2.5	4.9	15	2.8	13.6	4.1
Hearing Disruptions	33.3*	17.4	17.7*	12	8.3	15.5	7.7	7.7	11.6	9.5	5.6	8.7
Dizziness	10	12.5*	17.3*	7,5*	9.6	9.6*	12.2	2.7	7.7	5.2	6.2	0
Movement Difficulties	5.6	7.7*	8.2	1.7	3	3	0	0	2	0	2.9	1
Cardio-vascular Problems	10.1*	13 *	15.3*	9.6	12.3*	7.4	8.7	0	8.5	6.5	1	3

* Significant difference ($p < 0.05$) in comparison to reference subjects found at > 300 m or not exposed, for the responses 2 = « often » and 3 = « very often».

Table II. Influence of sex on the frequency of symptoms reported by subjects (205 men, 215 women) living in the vicinity (all distances < 300 m) of mobile phone base stations

Symptoms	Males (%)	Females (%)
Fatigue	41.4	57.5
Irritability	17.9	28.3
Headaches	14.4	45.6 *
Nausea	0	5.9 *
Loss of appetite	1.9	8 *
Sleep disruptions	45.4	61 *
Depressive tendencies	9.8	26.7 *
Feeling of discomfort	15	25.4 *
Difficulties in concentration	18.4	21.6
Memory loss	18	27.7
Skin problems	8	13.1
Visual disruptions	12.2	22 *
Hearing disruptions	9.6	19
Dizziness	6	9.8
Movement difficulties	3.3	2.7
Cardio-vascular problems	8.3	8.8
Lowering of libido	18	12

*$p < 0.05$. Levels of compalints in parentheses.

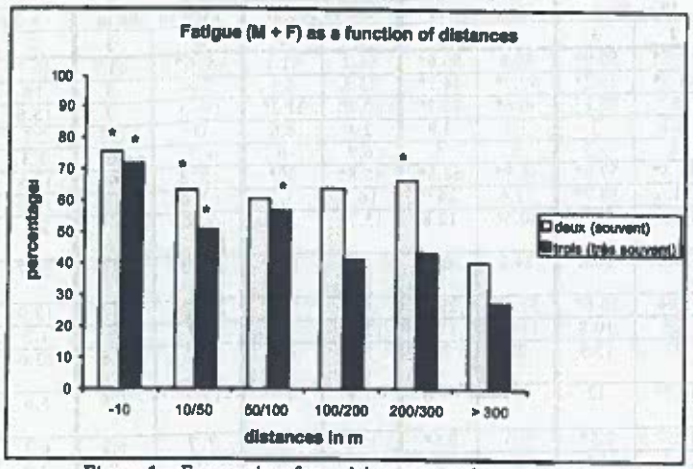

Figure 1.- Frequencies of complaints compared to a response level of « 0 » for the symptom of fatigue, in people living in the vicinity of mobile phone base stations as a function of their distance from base stations.
M = Males, F = Females, m = meters, deux (souvent) = two (often),
trois (tres souvent) = three (very often).
* = $p < 0.05$ (comparison with the subjects at a distance > 300 m or not exposed).

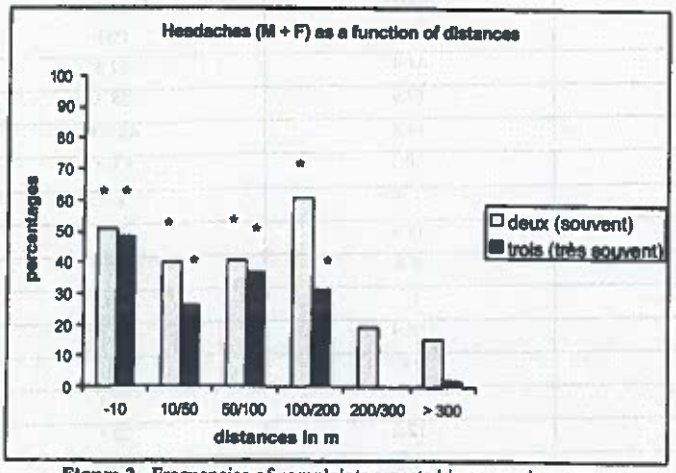

Figure 2. Frequencies of complaints reported in comparison to a response level of « 0 » for the symptom of headaches in people living in the vicinity of base stations as a function of their distance from base stations.
M = Males, F = Females, m = meters, deux (souvent) = two (often),
trois (tres souvent) = three (very often),
* = $p < 0.05$ (comparison with the subjects at a distance > 300 m or not exposed).

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Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations

Vini G. Khurana; Lennart Hardell; Joris Everaert; Alicja Bortkiewicz; Michael Carlberg; Mikko Ahonen

Keywords: KeywordsBASE STATIONS; ELECTROMAGNETIC FIELD (EMF); EPIDEMIOLOGY; HEALTH EFFECTS; MOBILE PHONE; RADIOFREQUENCY (RF); ELECTROMAGNETIC RADIATION

DOI: http://dx.doi.org/10.1179/107735210799160192

Abstract

Abstract

Human populations are increasingly exposed to microwave/radiofrequency (RF) emissions from wireless communication technology, including mobile phones and their base stations. By searching PubMed, we identified a total of 10 epidemiological studies that assessed for putative health effects of mobile phone base stations. Seven of these studies explored the association between base station proximity and neurobehavioral effects and three investigated cancer. We found that eight of the 10 studies reported increased prevalence of adverse neurobehavioral symptoms or cancer in populations living at distances < 500 meters from base stations. None of the studies reported exposure above accepted international guidelines, suggesting that current guidelines may be inadequate in protecting the health of human populations. We believe that comprehensive epidemiological studies of longterm mobile phone base station exposure are urgently required to more definitively understand its health impact.

Keywords: Keywords BASE STATIONS; ELECTROMAGNETIC FIELD (EMF); EPIDEMIOLOGY; HEALTH EFFECTS; MOBILE PHONE; RADIOFREQUENCY (RF); ELECTROMAGNETIC RADIATION

Robert Stanley
California Dept. of Fish and Wildlife
Region3 Bay/Delta
7329 Silverado Trail
Napa, CA 94588

July 5, 2015

Dear Mr. Stanley,

I am a resident the beautiful Pinole Valley region of Pinole and my family is fortunate enough to have our property back up to the Pinole Creek and we truly the appreciate the beauty and wildlife of this watershed. I am writing to you today to let you know of my support of your department's efforts to reintroduce steelhead trout to Pinole Valley Creek watershed, as well as share my alarm and concern about Verizon's plans to the build a cell tower on a private property on Pfeiffer Lane immediately adjacent to the creek and the watershed surrounding it.

Almost three years ago Verizon entered into a contract with the City of Pinole to build a cell tower at Pinole Valley Park, which also caused alarm among many of the residents of Pinole Valley. We were concerned about health risks, wildfire potential, and irreparable damage to an open space in the park. When the State and National Parks discovered the plans for the tower, the City and Verizon were told to cease plans and development of the tower since this park property was not leased for such development. For the past two years, Verizon has been courting owners of nearby private properties to enter into a paid lease to build a very large cell tower on their residential property. If such a lease deal is made this would benefit the City of Pinole who would no longer be liable for the costs Verizon occurred planning for the cell tower in Pinole Valley Park and for ending their signed contract with Verizon.

I am writing because I think that your agency needs to be aware that the City of Pinole is currently preparing for or has begun an environmental review of this residential site for the cell tower and I want to ensure that the environmental review is complete, comprehensive, and considers any possible dangers to wildlife in this watershed that would result from possible radiation from the tower, noise from the tower or generator, erosion during construction or post construction with such a large heavy construction on a step hillside, and fire danger due to the diesel generator on site. The City of Pinole has a financial incentive for this proposed tower to be built as Verizon will likely not continue to hold the City liable for ending their contractually binding lease after being told by the State and National Parks that the cell tower could not be built on park property. I think it is imperative that your agency is carefully watching the planning process for this proposed tower on Pfeiffer Lane, especially the extent and quality of the environmental review. If your agency is putting resources, funds, and energy into restoring native fish the watershed, then it is important that any development that could adversely affect your plans of the health of this creek and watershed be examined and halted if necessary.

Please let me know if there is anything my neighbors and I can do to assist your agency's efforts to look into this planning and environmental review of this cell tower project. I truly appreciate your time and attention to this matter.

Sincerely,

Julie Maier
2456 Delarosa Ct.
Pinole, CA. 94564
jmaier@sfsu.edu (510) 912-2613

APPENDIX C

Supplemental Geotechnical Evaluation Letter

MPE
MID PACIFIC ENGINEERING, INC.

REDDING
530-246-9499 p
530-246-9527 f

WEST SACRAMENTO
916-927-7000 p
916-372-9900 f

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

November 6, 2015

Mr. Chris Durand
NSA Wireless, Inc.
12893 Alcosta Blvd., Suite G
San Ramon, California 94583

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

Dear Mr. Durand:

This letter is intended to address the findings of the City of Pinole General Plan, Chapter 9: Health and Safety (Plan) regarding site classification of the proposed telecommunications facility to be located at 2518 Pfeiffer Lane, in Pinole, California. Our office previously prepared a *Geotechnical Investigation Report* (MPE No. 02314-01, dated February 4, 2015) for the subject site. It is our understanding that the foundation recommendations presented in the referenced report will be incorporated into the project construction documents.

Review of Chapter 9 of the Plan, and specifically the Seismic and Geologic Hazards section, Figure 9.1, indicates the project site lies outside areas mapped as "few landslides" or "many landslides". Review of geologic maps and aerial photographs containing the site, and our on-site observations did not reveal evidence of slope instability or landsliding within or adjacent to the project site. In addition, our on-site investigation encountered very dense sandstone at an approximate depth of seven feet below ground surface. Based on review of available documents, and to the best of our knowledge, the project site is not within an identified seismic or landslide hazard zone.

We have prepared this letter for your use in substantial accordance with the generally accepted geotechnical engineering practice as it exists in the site area at the time of our study. No warranty is either expressed or implied.

2915 INNSBRUCK DRIVE, SUITE A, REDDING, CALIFORNIA 96003
840 EMBARCADERO DRIVE, SUITE 20, WEST SACRAMENTO, CALIFORNIA 95605

If you have questions regarding this letter or need further information, please contact the undersigned.

Sincerely,

Mid Pacific Engineering, Inc.

Todd Kamisky, P.E. 11/06/2015
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
TODD G. KAMISKY
No. 2567
Exp. 12/31/15
GEOTECHNICAL
STATE OF CALIFORNIA

Woody Joe Pollard, C.E.G. 11/06/2015
Project Geologist

REGISTERED GEOLOGIST
WOODY JOE
POLLARD
No. 2297
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Distribution: Client (via email)
File

MPE

verizon wireless

PSL NUMBER: **248125**

SITE ADDRESS: **2518 PFEIFFER LANE**
PINOLE, CA 94564

SITE ADDRESS:
2518 PFEIFFER LANE
PINOLE, CA 94564

PROPERTY OWNER:
MICHAEL & DEBRA EVANS
2518 PFEIFFER LANE
PINOLE, CA 94564
PHONE: (510) 301-1134

PROJECT ARCHITECT:
DIAMOND ENGINEERING SERVICES
4255 PARK RD.
BENICIA, CA 94510
CONTACT: BRUCE LYON, ARCHITECT
PHONE: (925) 352-2264

PROJECT ENGINEER:
DIAMOND ENGINEERING SERVICES
4255 PARK RD.
BENICIA, CA 94510
CONTACT: ERIC UHRENHOLT, PE
PHONE: (707) 304-3351

CONSTRUCTION MANAGER:
NSA WIRELESS
2010 CROW CANYON PL., STE. #355
SAN RAMON, CA 94583
CONTACT: SCOTT COWAN
PHONE: (925) 244-1890 Ext.237

ZONING / LEASING:
NSA WIRELESS
2010 CROW CANYON PL., STE. #355
SAN RAMON, CA 94583
CONTACT: PAMELA NOBEL
PHONE: (707) 486-7252

JURISDICTION:
CITY OF PINOLE

APN:
360-131-036-4

ELEVATION (NAVD88):
277.2'± AMSL

APPLICANT:
verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA 94598

SITE INFORMATION

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST APPLICABLE VERSION OF THESE CODES.

1. 2013 CALIFORNIA BUILDING CODE (CBC)

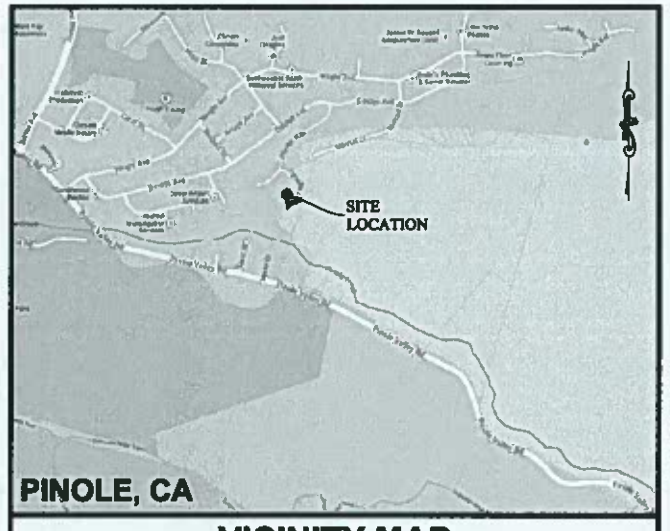
WORK PERFORMED SHALL COMPLY WITH THE FOLLOWING:

CALIFORNIA FIRE CODE	2013 EDITION UFC
CALIFORNIA BUILDING CODE	2013 EDITION CBC
CALIFORNIA MECHANICAL CODE	2013 EDITION IAPMO
CALIFORNIA PLUMBING CODE	2013 EDITION IAPMO
CALIFORNIA ELECTRICAL CODE	2013 EDITION 2012 NEC
CAL GREEN CODE	2013 EDITION CGC

CALIFORNIA ENERGY EFFICIENCY STANDARDS CODE (CEES) 2013 EDITION REVISED JULY 2013, AND ALL APPLICABLE LOCAL & STATE ORDINANCES, CODES AND REGULATIONS AND 2013 CALIFORNIA STATE STANDARDS CODE AMENDMENTS.

2. LOCAL BUILDING CODE
3. CITY/COUNTY ORDINANCES
4. NFPA 76

BUILDING CODES



VICINITY MAP

ZONING:	SR
ZONING CLASSIFICATION:	SUBURBAN RESIDENTIAL
BUILDING TYPE:	V-B
OCCUPANCY:	S-2, UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
FIRE SPRINKLES:	A NEW AUTOMATED FIRE SUPPRESSION SYSTEM (FIRE SPRINKLERS) IS REQUIRED.
EQUIPMENT LEASE AREA:	560 SQ. FT.
TOTAL LEASE AREA:	560 SQ. FT.

BUILDING DATA

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED
IN ACCORDANCE WITH THE 2013 CALIFORNIA BUILDING CODE.

ADA COMPLIANCE

SIGNATURES

VERIZON WIRELESS EQUIPMENT ENGINEER:	VERIZON WIRELESS REAL-ESTATE:
SIGNATURE: DATE:	SIGNATURE: DATE:
VERIZON WIRELESS CONSTRUCTION:	VERIZON WIRELESS RF ENGINEER:
SIGNATURE: DATE:	SIGNATURE: DATE:
PROPERTY OWNER:	AGENT - LEASING:
SIGNATURE: DATE:	SIGNATURE: DATE:
AGENT - CONSTRUCTION:	AGENT - ZONING:
SIGNATURE: DATE:	SIGNATURE: DATE:

SIGNATURE OF APPROVAL

1. INSTALL NEW VERIZON WIRELESS FAUX WATER TOWER.
2. INSTALL NEW 27'-5" x 19'-5" VERIZON WIRELESS REDWOOD FENCE EQUIPMENT COMPOUND & NEW CONCRETE EQUIPMENT PAD.
3. INSTALL NEW VERIZON WIRELESS 30KW GENERATOR WITH 132 GALLON, UL 142 FIRE RATED DIESEL FUEL TANK.
4. INSTALL NEW VERIZON WIRELESS EQUIPMENT CABINETS.
5. INSTALL (2) GPS ANTENNAS INSIDE EQUIPMENT COMPOUND.
6. INSTALL NEW VERIZON WIRELESS GENERATOR ON NEW CONCRETE PAD.
7. INSTALL (9) NEW VERIZON WIRELESS PANEL ANTENNAS & (9) NEW RRUS INSIDE NEW FRP WATER TANK.
8. INSTALL (2) NEW VERIZON WIRELESS RAYCAPS, (2) INSIDE THE REDWOOD FENCE EQUIPMENT COMPOUND & (2) INSIDE THE NEW FRP WATER TANK.

PROJECT DESCRIPTION

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

NSA Wireless, Inc.
2010 CROW CANYON PL., STE. #355
SAN RAMON, CA 94583
(925) 244-1890

DIAMOND ENGINEERING SERVICES

PROJECT TEAM

SHEET NO	DESCRIPTION
G1	PROJECT INFORMATION & SHEET INDEX
G2	NOTES AND MATERIALS BOARD
C-1	SITE SURVEY
C-2	SITE SURVEY
GR-1	PRELIMINARY GRADING AND STORMWATER CONTROL PLAN
GR-2	PRELIMINARY GRADING AND STORMWATER CONTROL ENLARGED PLAN
EC-1	EROSION CONTROL PLAN
ECD1	EROSION CONTROL DETAILS
ECD2	EROSION CONTROL DETAILS
A1	SITE PLAN
A2	ENLARGED SITE PLAN
A3	EQUIPMENT PLAN
A4	ANTENNA PLAN
A5	NORTH ELEVATION
A6	EAST ELEVATION
A7	SOUTH ELEVATION
A8	WEST ELEVATION
A9	EQUIPMENT LAYOUT, LEGEND AND NOTES
AD1	ANTENNA, RRU & RAYCAP DETAILS
AD2	ANTENNA COLOR CODES
L-1	LANDSCAPING PLAN

SHEET INDEX

DIAMOND ENGINEERING SERVICES
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BENICIA, CA 94510

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

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

PROJECT INFORMATION & SHEET INDEX

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

G1

SECURITY AND CRIME PREVENTION MEASURES

1. THE FOLLOWING SECURITY MEASURES SHALL BE IMPLEMENTED DURING CONSTRUCTION:
   a. PROVIDE TEMPORARY CONSTRUCTION FENCING AROUND PROPOSED NEW VERIZON WIRELESS EQUIPMENT COMPOUND CONSTRUCTION AREA.
   b. STORE CONSTRUCTION MATERIALS IN APPROVED LOCKED CONTAINERS OR INSIDE A LOCKED SECURITY FENCE.
   c. PROVIDE A TEMPORARY LIGHT ON THE TEMPORARY POWER POLE.

2. POST CONSTRUCTION SECURITY MEASURES:
   a. CONSTRUCT WOOD FENCE AS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS.
   b. PROVIDE GATES WITH LOCK, CANE BOLT, AND SECURITY HARDWARE AS INDICATED ON THE APPROVED CONSTRUCTION DRAWINGS.
   c. PROVIDE EQUIPMENT COMPOUND LIGHTING PER THE APPROVED CONSTRUCTION DRAWINGS.
   d. NO GLASS IS PROPOSED FOR USE ON THIS PROJECT.

STATEMENTS

1. OPERATION OF THE PROPOSED NEW VERIZON WIRELESS FACILITY SHALL BE OPERATED IN ACCORDANCE WITH APPLICABLE FCC STANDARDS AND NOT EXCEED APPLICABLE FCC LIMITS.

2. PRIMARY POWER: A NEW 200AMP PG&E METER SERVICE IS PROPOSED FOR THE NEW VERIZON WIRELESS FACILITY.

3. BACK-UP POWER: A 30KW DIESEL GENERATOR UL 142 LISTED FIRE RATED 132 GALLON DIESEL FUEL TANK SHALL PROVIDE BACKUP POWER IN THE EVENT OF A POWER OUTAGE. THE BACKUP POWER SYSTEM SHALL BE CONNECT TO AN AUTOMATIC TRANSFER SWITCH AND PROVIDE AC POWER TO THE ELECTRICAL DISTRIBUTION PANEL SERVING THE EQUIPMENT, CHARGING POWER FOR THE BACKUP BATTERY CABINET, AND COMPOUND AREA LIGHTING. A PROPOSED NEW VERIZON WIRELESS BACK UP BATTERY CABINET EQUIPPED WITH VALVE REGULATED LEAD ACID (VLRA) BATTERIES PROVIDES DC POWER TO THE RADIO EQUIPMENT FOR A LIMITED TIME IN THE EVENT OF A POWER OUTAGE.

Diamond Engineering Services

4255 Park Road
Benicia, CA 94510
707-304-3391

Material and Color Sample Board

Fence
Color: Natural Redwood
Material: Redwood

Water Tower
Material: Water Tank Panels (undercoat paint)
Color Name: French Roast
Color Number: SW 6089
Manufacture: Sherwin Williams

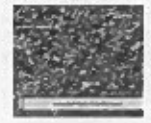
Water Tower
Material: Water Tank Panels
Color Name: Fireweed
Color Number: SW 5326
Manufacture: Sherwin Williams

DESIGN14014 PINOLE PSL #248125 Color and Material Sample Board, REV A, February 24, 2015

Diamond Engineering Services

Water Tower
Material: All Steel
Color Name: Olive Brown
Color Number: SW2731
Manufacture: Sherwin Williams

CMU Wall
Material: CMU Split face
Manufacture: Basalite
Color: Standard Tan #345



Covered Roof
Material: Berridge Metal Kynar 500 finish
22 Gauge
Color: Standard Medium Bronze

MEDIUM BRONZE

DESIGN14014 PINOLE PSL #248125 Color and Material Sample Board, REV A, February 24, 2015

1 COLOR AND MATERIALS BOARD

NOTE: FOR REFERENCE ONLY. ACTUAL BOARD SHALL BE FURNISHED IN FULL COLOR

SCALE: NONE

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NOTES AND MATERIALS BOARD

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Draw/Check By: BLL / EKU

G2

NOTES

OWNER(S): MICHAEL EVANS AND DEBRA EVANS, HUSBAND AND WIFE AS JOINT TENANTS

APN: 360-131-036-4

THIS DRAWING DOES NOT REPRESENT A BOUNDARY SURVEY OF ANY PARCEL OF LAND, NOR DOES IT IMPLY OR INFER THAT A BOUNDARY SURVEY WAS PERFORMED. THIS IS A SPECIALIZED TOPOGRAPHIC MAP WITH PROPERTY AND EASEMENTS BEING A GRAPHIC DEPICTION BASED ON INFORMATION GATHERED FROM VARIOUS SOURCES OF RECORD AND AVAILABLE MONUMENTATION. PROPERTY LINES AND LINES OF TITLE WERE NEITHER INVESTIGATED NOR SURVEYED AND SHALL BE CONSIDERED APPROXIMATE ONLY. NO PROPERTY MONUMENTS WERE SET.

THE EASEMENTS (IF ANY) THAT APPEAR ON THIS MAP HAVE BEEN PLOTTED BASED SOLELY ON INFORMATION CONTAINED IN THE PRELIMINARY TITLE REPORT BY: NORTH AMERICAN TITLE COMPANY, ORDER NO. 54606-1279361-14, DATED MARCH 12, 2014. WITHIN SAID TITLE REPORT THERE ARE EIGHT (8) EXCEPTIONS LISTED, ONE OF WHICH IS EASEMENT AND CAN BE PLOTTED.

THE UNDERGROUND UTILITIES (IF ANY) THAT APPEAR ON THIS MAP HAVE BEEN LOCATED BY FIELD OBSERVATION. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES STATE THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.

THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD RATE MAP FOR COMMUNITY NO. 060136, PANEL NO. 0232F, DATED JUNE 16, 2009 SHOWS THAT THE LOCATION OF THIS SITE FALLS WITHIN ZONE X, WHICH ARE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

LESSOR'S PROPERTY LEGAL DESCRIPTION PER TITLE REPORT:

REAL PROPERTY IN THE CITY OF PINOLE, COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL B, AS SHOWN ON THE PARCEL MAP FILED APRIL 11, 1986 IN BOOK 122 OF PARCEL MAPS, PAGE 14, CONTRA COSTA COUNTY RECORDS.

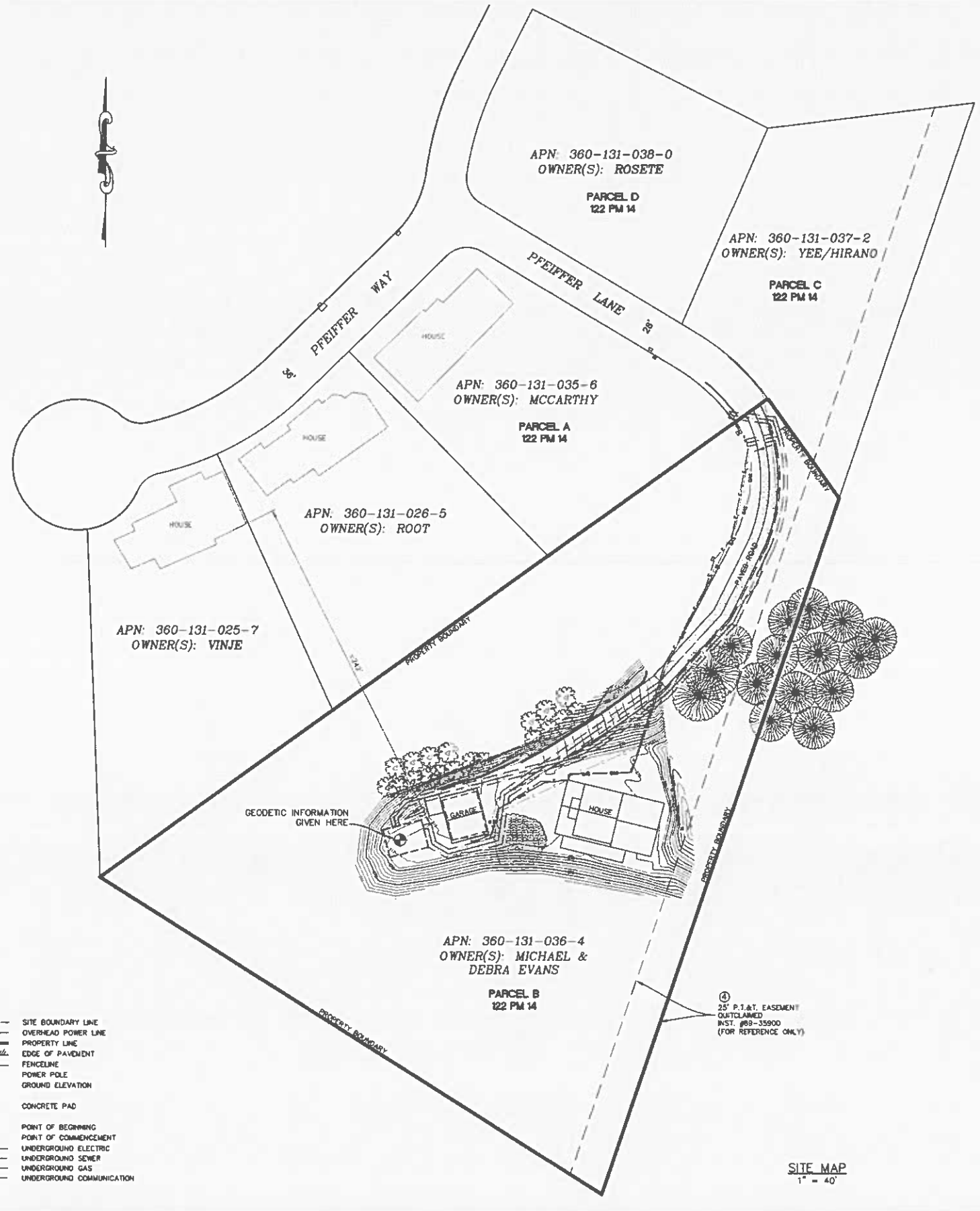
APN: 360-131-036-4

EASEMENT(S) PER TITLE REPORT:

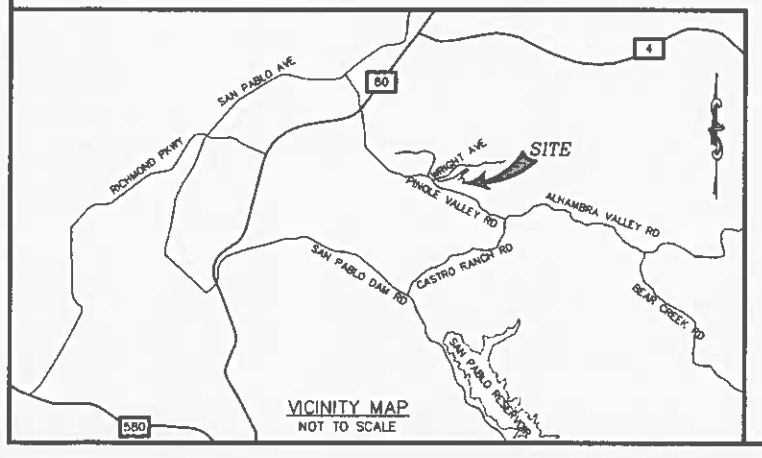
4. AN EASEMENT SHOWN OR DEDICATED ON THE MAP FILED OR RECORDED AUGUST 22, 1980 AS BOOK 245, PAGE 16 SAID MAP WAS RE-RECORDED APRIL 8, 1986 IN BOOK 300 OF MAPS PAGE 7.
   FOR: 25 FOOT PT&T CO. EASEMENT AND INCIDENTAL PURPOSES.

   THE EFFECT OF A DOCUMENT ENTITLED "QUITCLAIM OF EASEMENT", RECORDED FEBRUARY 27, 1989 AS INSTRUMENT NO. 89-35899 OF OFFICIAL RECORDS.

   THE EFFECT OF A DOCUMENT ENTITLED "QUITCLAIM OF EASEMENT", RECORDED FEBRUARY 27, 1989 AS INSTRUMENT NO. 89-35900 OF OFFICIAL RECORDS.
   ** QUITCLAIMED EASEMENT PLOTTED, AS SHOWN HEREON, FOR REFERENCE ONLY **



SITE MAP
1" = 40'



VICINITY MAP
NOT TO SCALE

LEGEND

- SITE BOUNDARY LINE
- OVERHEAD POWER LINE
- PROPERTY LINE
- EDGE OF PAVEMENT
- FENCELINE
- POWER POLE
- GROUND ELEVATION
- CONCRETE PAD
- POB POINT OF BEGINNING
- POC POINT OF COMMENCEMENT
- E UNDERGROUND ELECTRIC
- SS UNDERGROUND SEWER
- GAS UNDERGROUND GAS
- C UNDERGROUND COMMUNICATION

NSA Wireless, Inc.
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SMITHCO
SURVEYING & ENGINEERING
P.O. BOX 81626 BAKERSFIELD, CA 93380
PHONE: (661) 393-1217 FAX: (661) 393-1218

SPACE RESERVED FOR PROFESSIONAL SEAL

PRELIMINARY

REVISION

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3	UG UTILITIES	DL	04/23/14
4	LEASE & ROUTES	DL	05/19/14
5	LEASE & ROUTES	DL	07/08/14
6	REV. SITE NAME	DL	09/29/14

DRAWN BY:	DL
CHECKED BY:	DA
DATE DRAWN:	04/09/14
SMITHCO JOB #:	56-598

SITE NAME

PSL #248125

SITE ADDRESS

2518 PFEIFFER LANE
PINOLE, CA 94564
CONTRA COSTA COUNTY

SHEET TITLE

SITE SURVEY

FOR EXAMINATION ONLY

SHEET

C-1

PROPOSED LESSEE LEASE AREA DESCRIPTION:

ALL THAT PORTION OF THE HEREON DESCRIBED LESSOR'S PROPERTY, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE WESTERLY MOST CORNER OF SAID LESSOR'S PROPERTY, THENCE N 86°00'53" E, A DISTANCE OF 200.28 FEET TO THE TRUE POINT OF BEGINNING;
THENCE N 14°36'14" W, A DISTANCE OF 19.42 FEET;
THENCE N 75°23'46" E, A DISTANCE OF 9.46 FEET TO POINT "A";
THENCE CONTINUING N 75°23'46" E, A DISTANCE OF 17.96 FEET;
THENCE S 14°36'14" E, A DISTANCE OF 6.77 FEET TO POINT "B";
THENCE CONTINUING S 14°36'14" E, A DISTANCE OF 12.65 FEET;
THENCE S 75°23'46" W, A DISTANCE OF 27.42 FEET TO THE POINT OF BEGINNING.

CONTAINING 533 SQUARE FEET, MORE OR LESS.

PROPOSED LESSEE ACCESS & UTILITY ROUTES DESCRIPTION:

A 6.00' WIDE NON-EXCLUSIVE ACCESS AND UTILITY ROUTE FOR INGRESS AND EGRESS, AND UTILITY PURPOSES, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE ABOVE DESCRIBED POINT "B";
THENCE N 75°23'46" E, A DISTANCE OF 3.00 FEET;
THENCE S 14°36'14" E, A DISTANCE OF 11.40 FEET;
THENCE S 59°34'20" E, A DISTANCE OF 12.94 FEET;
THENCE N 75°07'06" E, A DISTANCE OF 35.91 FEET;
THENCE N 07°56'52" E, A DISTANCE OF 31.97 FEET;
THENCE N 54°59'37" E, A DISTANCE OF 132.49 FEET TO POINT "C", SAID POINT BEING THE TERMINUS OF THIS DESCRIPTION.

A 12.00' WIDE NON-EXCLUSIVE ACCESS ROUTE FOR INGRESS AND EGRESS PURPOSES, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

COMMENCING AT THE ABOVE DESCRIBED POINT "C"; THENCE N 44°15'42" W, A DISTANCE OF 3.04 FEET TO THE TRUE POINT OF BEGINNING;
THENCE N 42°38'29" E, A DISTANCE OF 62.50 FEET;
THENCE N 26°11'34" E, A DISTANCE OF 55.89 FEET TO THE BEGINNING OF A NON-TANGENT 110.81 FOOT RADIUS CURVE CONCAVE TO THE NORTHWEST, A RADIAL LINE FROM SAID POINT BEARS S 67°39' 20" E;
THENCE ALONG SAID CURVE NORTHEASTERLY THROUGH A CENTRAL ANGLE OF 48°46'27", AN ARC DISTANCE OF 94.33 FEET TO THE SOUTHERLY RIGHT OF WAY OF PFEIFFER LANE AND THE TERMINUS OF THIS DESCRIPTION.

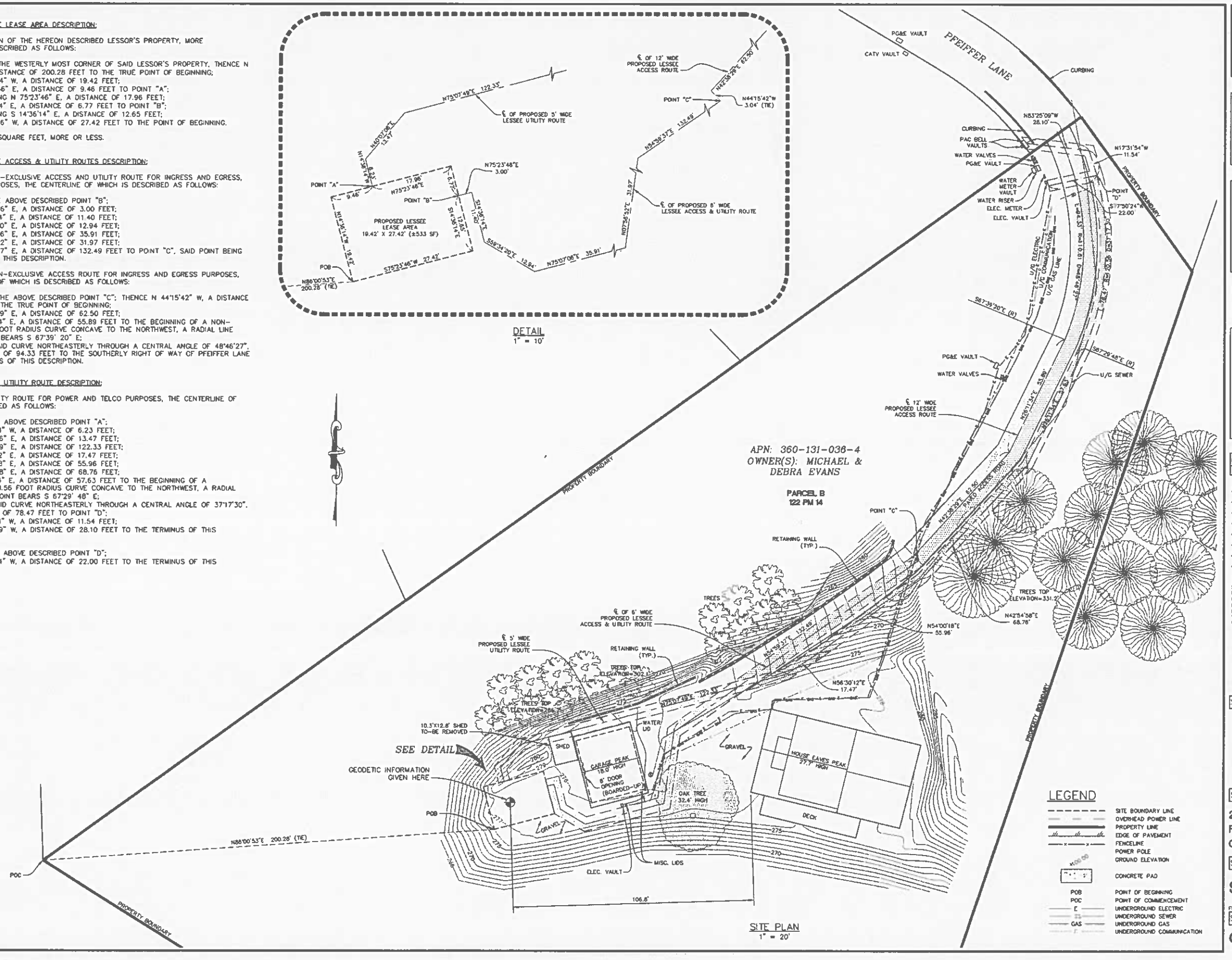
PROPOSED LESSEE UTILITY ROUTE DESCRIPTION:

A 5.00' WIDE UTILITY ROUTE FOR POWER AND TELCO PURPOSES, THE CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE ABOVE DESCRIBED POINT "A";
THENCE N 14°36'14" W, A DISTANCE OF 6.23 FEET;
THENCE N 40°07'06" E, A DISTANCE OF 13.47 FEET;
THENCE N 75°07'49" E, A DISTANCE OF 122.33 FEET;
THENCE N 56°30'12" E, A DISTANCE OF 17.47 FEET;
THENCE N 54°00'18" E, A DISTANCE OF 55.96 FEET;
THENCE N 42°54'58" E, A DISTANCE OF 68.76 FEET;
THENCE N 26°11'34" E, A DISTANCE OF 57.63 FEET TO THE BEGINNING OF A NON-TANGENT 120.56 FOOT RADIUS CURVE CONCAVE TO THE NORTHWEST, A RADIAL LINE FROM SAID POINT BEARS S 67°29' 48" E;
THENCE ALONG SAID CURVE NORTHEASTERLY THROUGH A CENTRAL ANGLE OF 37°17'30", AN ARC DISTANCE OF 78.47 FEET TO POINT "D";
THENCE N 17°31'54" W, A DISTANCE OF 11.54 FEET;
THENCE N 83°25'09" W, A DISTANCE OF 28.10 FEET TO THE TERMINUS OF THIS DESCRIPTION.

BEGINNING AT THE ABOVE DESCRIBED POINT "D";
THENCE S 77°50'24" W, A DISTANCE OF 22.00 FEET TO THE TERMINUS OF THIS DESCRIPTION.

DETAIL
1" = 10'



SITE PLAN
1" = 20'

NSA Wireless, Inc.
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SITE NAME

PSL #248125

SITE ADDRESS

2518 PFEIFFER LANE
PINOLE, CA 94564
CONTRA COSTA COUNTY

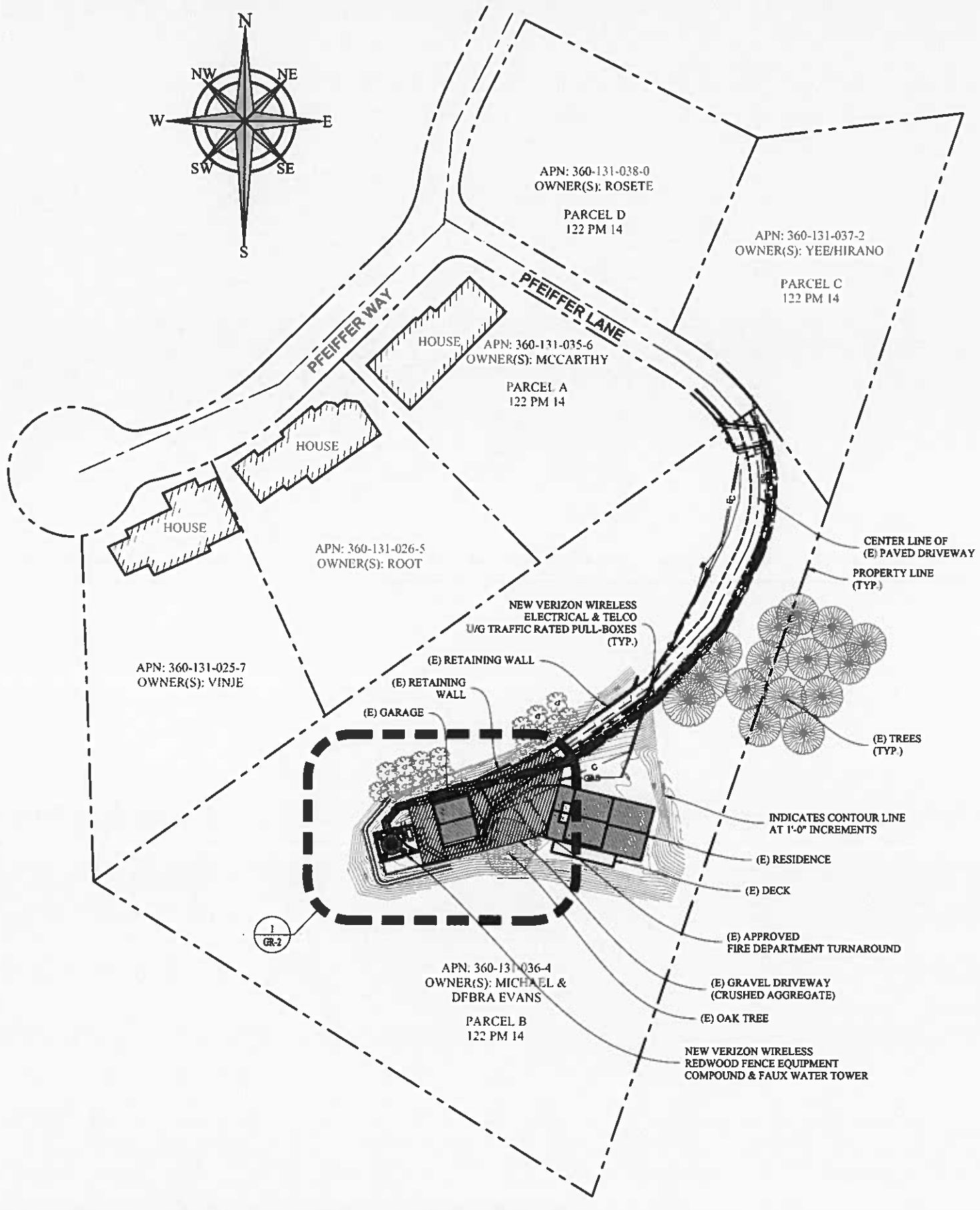
SHEET TITLE

SITE SURVEY

FOR EXAMINATION ONLY

SHEET

C-2



1 PRELIMINARY GRADING AND STORMWATER CONTROL PLAN

SCALE: 1"=40'-0"

GRADING NOTES

A. ALL GRADING, SITE PREPARATION, PLACING AND COMPACTION OF FILL SHALL BE DONE IN ACCORDANCE WITH CONTRA COSTA COUNTY GRADING ORDINANCE.

B. ANY DEVIATION FROM THE APPROVED PLAN REQUIRES APPROVAL OF THE COUNTY OF CONTRA COSTA AND SHALL BE ACCURATELY SHOWN ON REVISED PLANS.

C. ALL CUT SLOPES SHALL BE ROUNDED TO MEET EXISTING GRADES AND BLEND WITH SURROUNDING TOPOGRAPHY.

D. CONTRACTOR SHALL IMPLEMENT DUST CONTROL MEASURES AT ALL TIMES DURING THE GRADING OPERATION.

E. SILT AND EROSION CONTROL MEASURES ARE REQUIRED FOR WORK DURING THE RAINY SEASON. (OCTOBER 15 THROUGH APRIL 15)

F. IF THERE ARE ANY EXISTING WATER WELLS ON THE PROPERTY, THE CONTRACTOR SHALL CONTACT THE COUNTY DEPARTMENT OF HEALTH SERVICES, ENVIRONMENTAL HEALTH DIVISION, PRIOR TO ANY GRADING IN THE IMMEDIATE VICINITY OF THESE WELLS.

G. NO TREES SHALL BE REMOVED UNLESS THEY ARE SHOWN AND NOTED TO BE REMOVED ON THIS PLAN. ALL TREES CONFLICTING WITH GRADING, UTILITIES, OR OTHER IMPROVEMENTS, SO AS TO FORM A NUISANCE OR HAZARD, SHALL BE TRIMMED, PROPERLY TREATED AND SEALED.

H. TREES TO BE SAVED SHALL BE FLAGGED AND MARKED PRIOR TO ANY CLEARING OR ANY STRIPPING WORK AND PROTECTIVE FENCING SHALL BE INSTALLED PRIOR TO COMMENCING ANY GRADING.

I. HAULING OF ANY EARTH, SAND, GRAVEL, STONE, DEBRIS, PAPER OR ANY OTHER SUBSTANCE, EXCAVATED FROM THE SITE OVER ANY PUBLIC STREET, ALLEY OR OTHER PUBLIC PLACE WITHOUT PRIOR APPROVAL FROM THE COUNTY IS RESTRICTED.

J. MUD TRACKED ONTO STREETS OR ADJACENT PROPERTIES SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.

K. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTANT DRAINAGE OF THE SITE AND CONTROL OF SILTATION.

L. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT ADJACENT WATER COURSES AND PUBLIC AND PRIVATE PROPERTY FROM DAMAGE BY EROSION, FLOODING AND DEPOSITION OF MUD OR DEBRIS ORIGINATING FROM THE SITE.

ESTIMATED EARTHWORK QUANTITIES		
NEW WORK DESCRIPTION	IMPERVIOUS SURFACE	PERVIOUS SURFACE
CELL SITE COMPOUND	567 sf	
FENCE OUTSIDE COMPOUND	22 sf	
UTILITY PULL BOXES	64 sf	
350 (LF) OF 2'-0" WIDE TRENCH		700 sf
110 (LF) OF 1'-0" WIDE TRENCH		110 sf
TOTAL	653 sf	810 sf

C.3 COMPLIANCE

A. REFER TO THE ESTIMATED EARTHWORK QUANTITIES TABLE ON THIS SHEET WHICH DEMONSTRATES THAT THE QUANTITY OF IMPERVIOUS SURFACE ADDED DOES NOT EXCEED 2,500 SQUARE FEET.

B. PRELIMINARY GRADING, DRAINAGE, AND EROSION CONTROL PLANS DEMONSTRATE COMPLIANCE WITH GRADING DRAINAGE AND EROSION CONTROL PER MUNICIPAL CODE.

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

PRELIMINARY GRADING AND STORMWATER CONTROL PLAN

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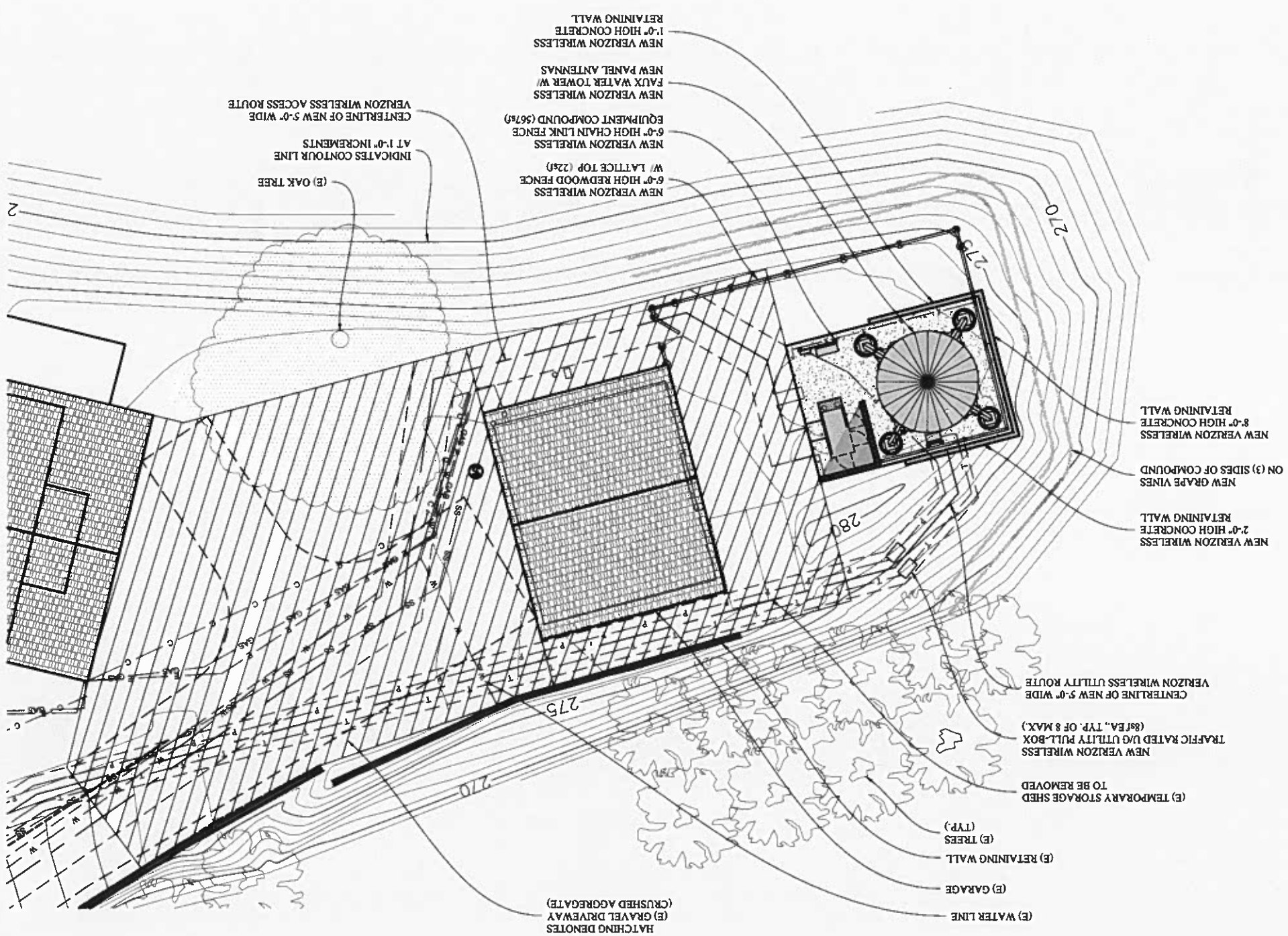
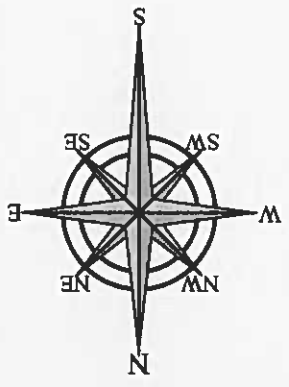
Job No.: N14014
Draw/Check By: BLL / EKU

GR-1

1 PRELIMINARY GRADING AND STORMWATER CONTROL ENLARGED PLAN

SCALE: 1/8"=1'-0"





VERIZON WIRELESS
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PINOLE, CA 94564

PRELIMINARY GRADING AND STORMWATER CONTROL ENLARGED PLAN

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Job No. N1401 4
Draw/Check By: BLL / EKU

GR-2

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
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DIAMOND ENGINEERING SERVICES
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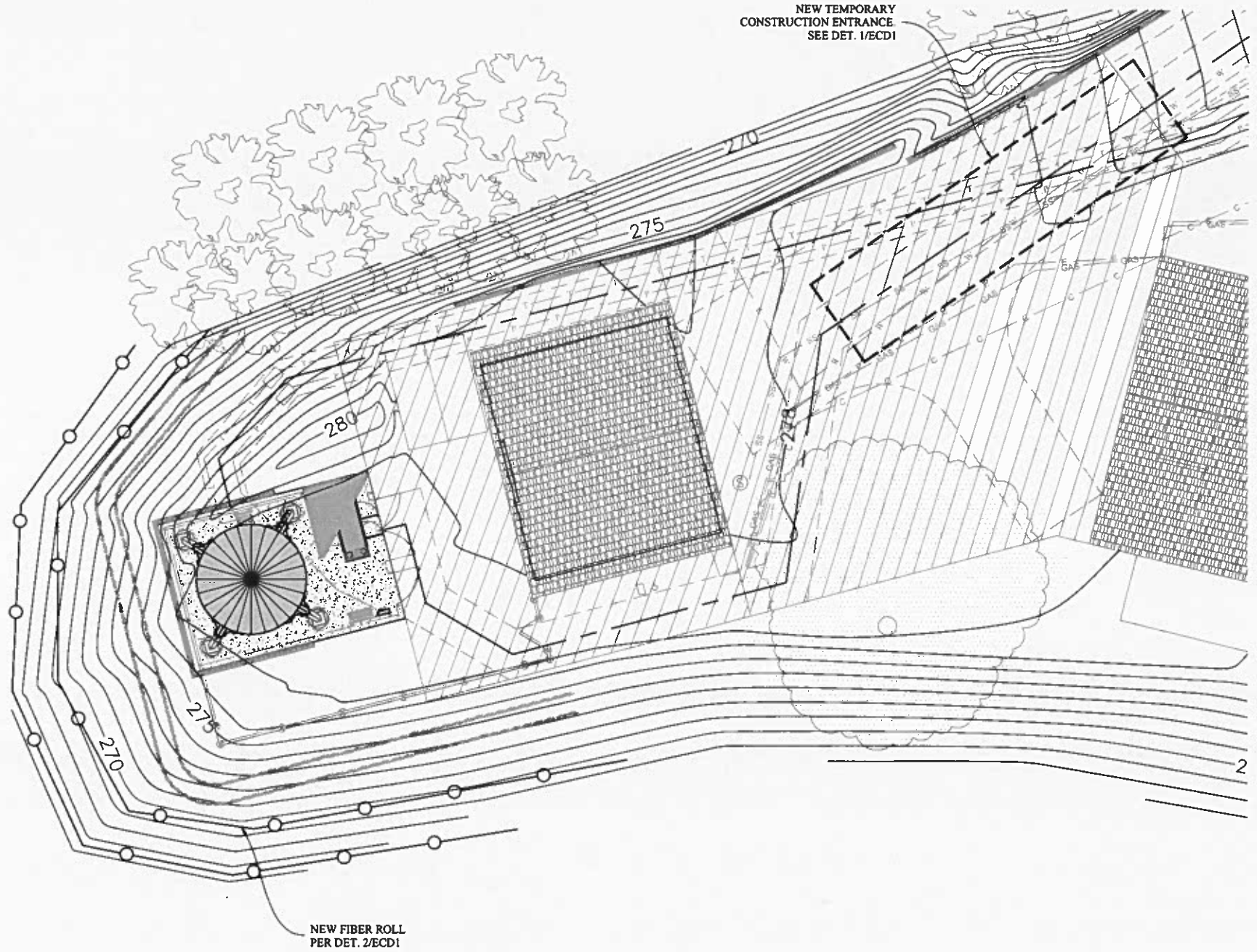

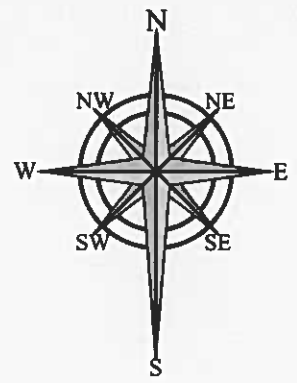

1 **EROSION CONTROL PLAN**

SCALE: 1/8"=1'-0"

DIAMOND ENGINEERING SERVICES
4255 PARK RD.
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EROSION CONTROL PLAN

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

EC-1

EROSION CONTROL NOTES

TEMPORARY EROSION CONTROL MEASURES EFFECTIVE DURING RAINY SEASON
OCTOBER 1 TO APRIL 15

1. Temporary erosion control devices shown on grading plan which interfere with the work shall be relocated or modified when the Inspector so directs as the work progresses.
2. Except as otherwise directed by the Inspector, all devices shown on the Erosion Control Plan shall be in place at the end of each working day. All erosion control facilities must be inspected and repaired at the end of each working day during the rainy season and maintained during the rainy season (October 1 to April 15).
3. All erosion and sediment control measures shall be constructed and maintained in accordance with the provisions of the Association of Bay Area Governments (ABAG) "Manual of Standards for Erosion and Sediment Control Measures" unless otherwise stated within these General Notes. Control measures are subject to the inspection and approval of the Engineering Division of the Jurisdiction. Schedule an engineering inspection by calling at least 48 hours prior to the start of any work.
4. All loose soil and debris shall be removed from the street areas upon starting operations and periodically thereafter as directed by the Inspector. The site shall be maintained so as to minimize sediment laden runoff to any storm drain system.
5. The Contractor shall place drain rock as a gravel roadway (6" minimum thickness for the full width and 50 feet long) at each road entrance to the site. Any mud that is tracked onto public streets shall be removed the same day as required by the Jurisdiction Engineer.
6. Stand-by crews shall be alerted by the Permittee or Contractor for emergency work during rainstorms.
7. After October 1, all erosion control measures will be inspected daily and after each storm. After October 1, breaches in dikes and swales will be repaired at the close of each day and whenever rain is forecast.
8. As a part of the erosion control measures, underground storm drain facilities and concrete shall be installed complete as shown on the improvement plans.
9. All storm drain inlet structures greater than four feet in depth shall have steps installed per the latest accepted safety standards. A 6" concrete cover slab shall be installed over pipe with less than 2.5 feet of cover to subgrade. All pipe to be Class III unless otherwise noted.
10. All graded areas, including, but not limited to, cut and fill slopes, streets, parking areas, and building pads shall be hydroseeded per ABAG. In addition to hydroseeding, application of straw with a tackifier or mulch may be required by the Jurisdiction Engineer.
11. If any grading operations, other than lot finish grading, are to be performed during the rainy season, October 1 through April 15, an erosion control plan must be submitted by September 1 and the plan must be approved by the Jurisdiction prior to the commencement of any such grading operations.
12. To minimize erosion of graded banks, all graded banks steeper than 2% and higher than 3 feet, shall be hydroseeded, landscaped, or seeded. In addition to hydroseeding, application of straw with a tackifier or mulch may be required by the Jurisdiction Engineer. If the permanent storm drain system is not installed by October 1, temporary ditches shall be constructed to contain the storm water and direct it, in a manner that avoids erosion of the banks, to the erosion and sediment control facilities.
13. All cut and fill slopes are to be protected to prevent overbank flow using 4" earth berms or silt fences.
14. All graded areas, including, but not limited to, cut and fill slopes, streets, parking areas, and building pads shall be hydroseeded per Jurisdiction's requirement. Suggested mix design follows:

'Blando' Brome	40 lbs/acre
Zorro Fescue	10 lbs/acre
Hykon Rose Clover	9 lbs/acre
Sub Clover	5 lbs/acre
California Native Wildflower	8 lbs/acre
Fertilizer	300 lbs/acre
Organic Binder	100 lbs/acre
Straw Mulch	4000 lbs/acre

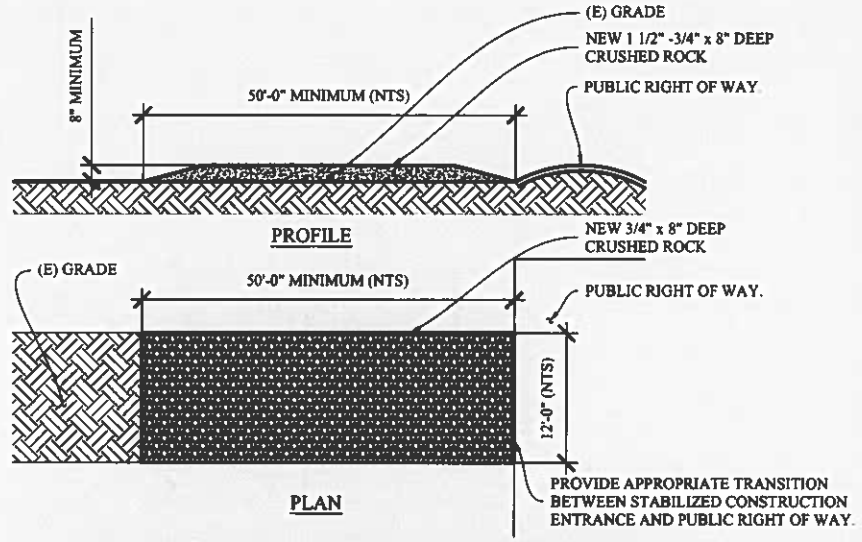
15. Borrow areas and temporary stockpiles shall be protected with appropriate erosion control measures to the satisfaction of the Jurisdiction Engineer.
16. Sandbags, straw wattles and/or straw bales shall be stockpiled on site and placed at intervals shown on erosion control plans, when the rain forecast is 40% or greater, or when directed by the Inspector.
17. Sandbags referred to in the preceding items must be full. Approved sandbag fill materials are decomposed granite and/or gravel, or other materials approved by the Inspector.
18. When directed by the Inspector, a 12-inch berm shall be maintained along the top of the slope of those fills on which grading is not in progress.
19. When pad elevations of adjacent lots or elevations between the street and the lot are separated by more than 6 feet, a minimum 12" berm shall be maintained along the property line separating the lots, and the berm shall direct the water to the outlet. VeloJurisdiction check dams shall be installed between the outlet on the lot and the street.
20. Provide veloJurisdiction check dams in all unpaved streets at the intervals indicated below in Note #21. VeloJurisdiction check dams may be constructed of straw bales, sandbags or other erosion resistant materials approved by the Inspector, and shall extend completely across the street or channel at right angles to the centerline. Earth dikes may not be used as veloJurisdiction check dams.
21. Provide veloJurisdiction check dams in all unpaved graded channels at the intervals indicated below:

Grade of Channel	Interval
Less than 3%	100 feet
3% to 6%	50 feet
Over 6%	25 feet

22. Sewer or storm drain trenches that are cut through basin dikes or basin inlet dikes, shall be plugged with sandbags from top of pipe to top of dike. Sewer lines shall first be encased in concrete before sandbags are placed.
23. All open utility trenches shall be blocked at the prescribed intervals from the bottom to top with a double row of sandbags prior to backfill. Sewer trenches shall be blocked at the prescribed intervals with a double row of sandbags extending downward, two sandbags from the graded surface of the street. Sandbags are to be placed with alternate header and stretcher courses. The intervals prescribed between sandbag locking shall depend on the slope of the ground surface, but not exceed the following:

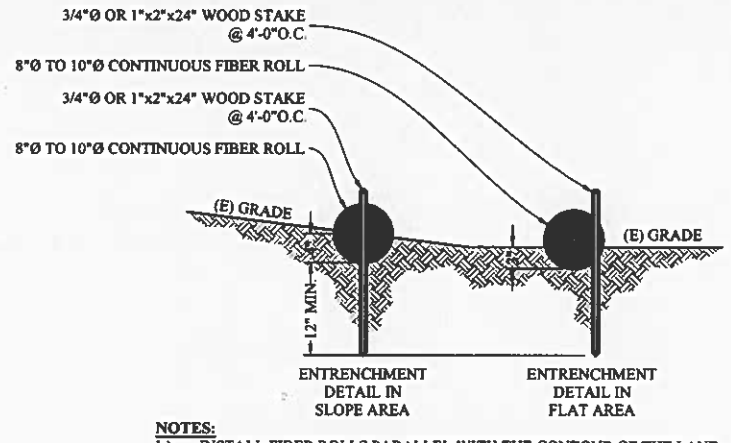
Grade of the Street	Interval
Less than 2%	As required
2% to 4%	100 feet
4% to 10%	50 feet
Over 10%	25 feet

24. After storm drain, sanitary sewer and utility trenches are backfilled and compacted, the surfaces over such trenches shall be mounded slightly to prevent channeling of water in the trench area. Care should be exercised to provide for cross flow at frequent intervals where trenches are not on the center line of a crowned street.



1 TEMPORARY CONSTRUCTION ENTRANCE

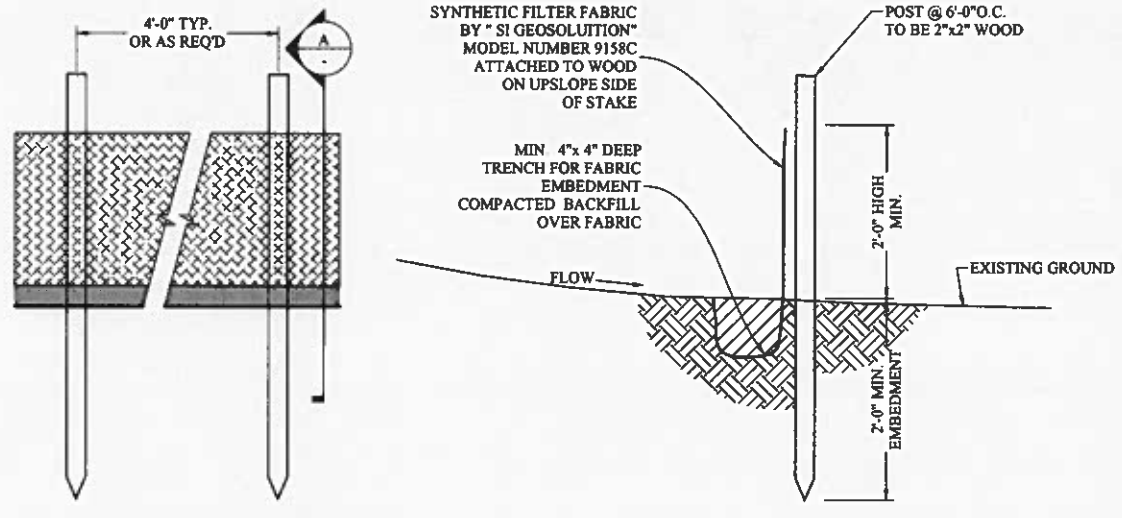
SCALE: 1-1/2"=1'-0"



NOTES:
1.) INSTALL FIBER ROLLS PARALLEL WITH THE CONTOUR OF THE LAND.
2.) ABUT ALL JOINING FIBER ROLL ENDS.
3.) ROLL TO HAVE INTIMATE CONTACT WITH THE GROUND TO PREVENT WATER FROM UNDERCUTTING THE ROLL.

2 FIBER ROLL DETAIL

SCALE: 1"=1'-0"



3 SILT FENCE DETAIL

SCALE: 1"=1'-0"

DIAMOND ENGINEERING SERVICES
4255 PARK RD.
BENICIA, CA 94510

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
94598TEL: (925) 904-3533
FAX: (925) 904-3613

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

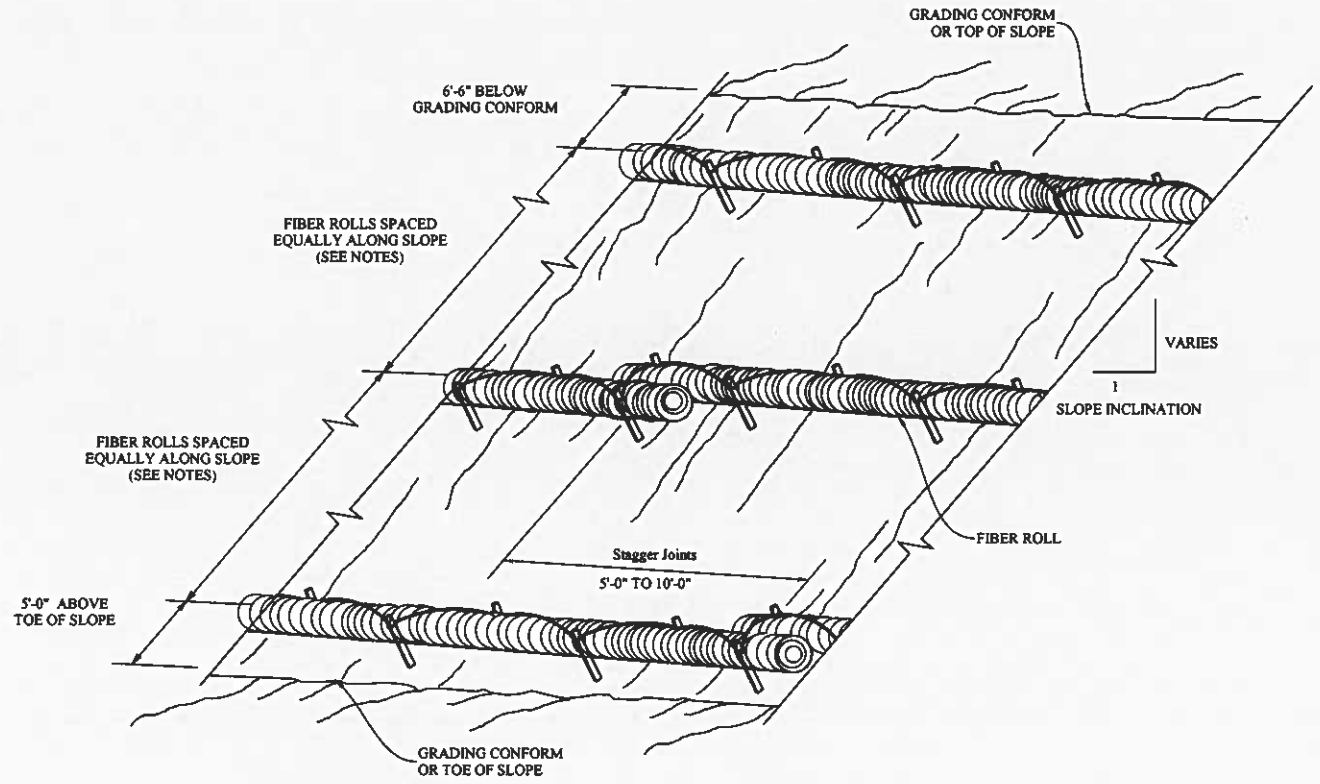
EROSION CONTROL DETAILS & NOTES

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

ECD1



PERSPECTIVE

FIBER ROLL (TYPE 2)

1 FIBER ROLL (TYPE 2)

SCALE: 1"=1'-0"

DIAMOND ENGINEERING SERVICES
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BENICIA, CA 94510

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FAX: (925) 904-3513

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

EROSION CONTROL DETAILS

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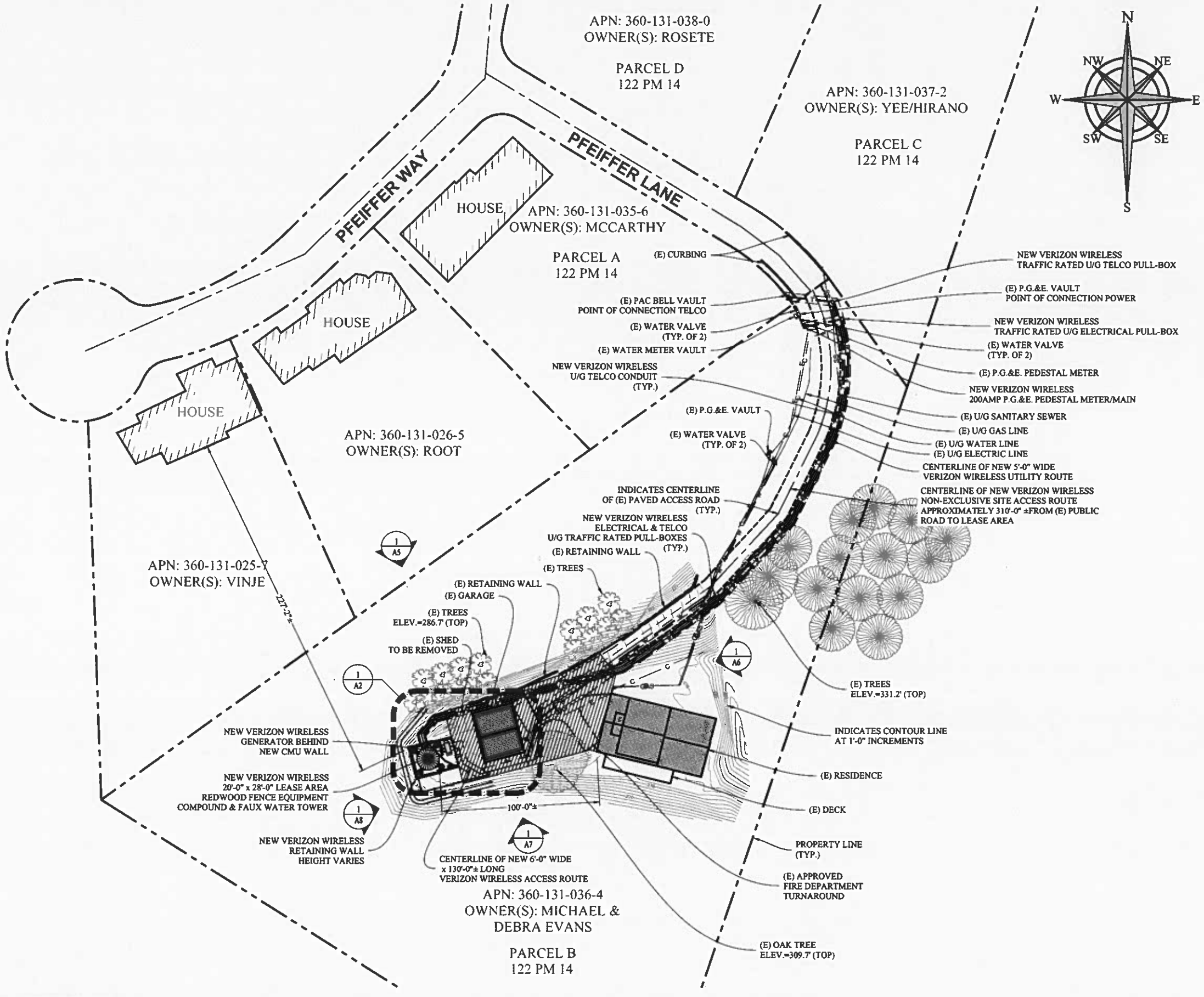
Job No.: N14014
Draw/Check By: BLL / EKU

ECD2



1 SITE PLAN

SCALE: 1"=30'-0"

DIAMOND ENGINEERING SERVICES
4255 PARK RD.
BENICIA, CA 94510

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

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

SITE PLAN

REVISIONS

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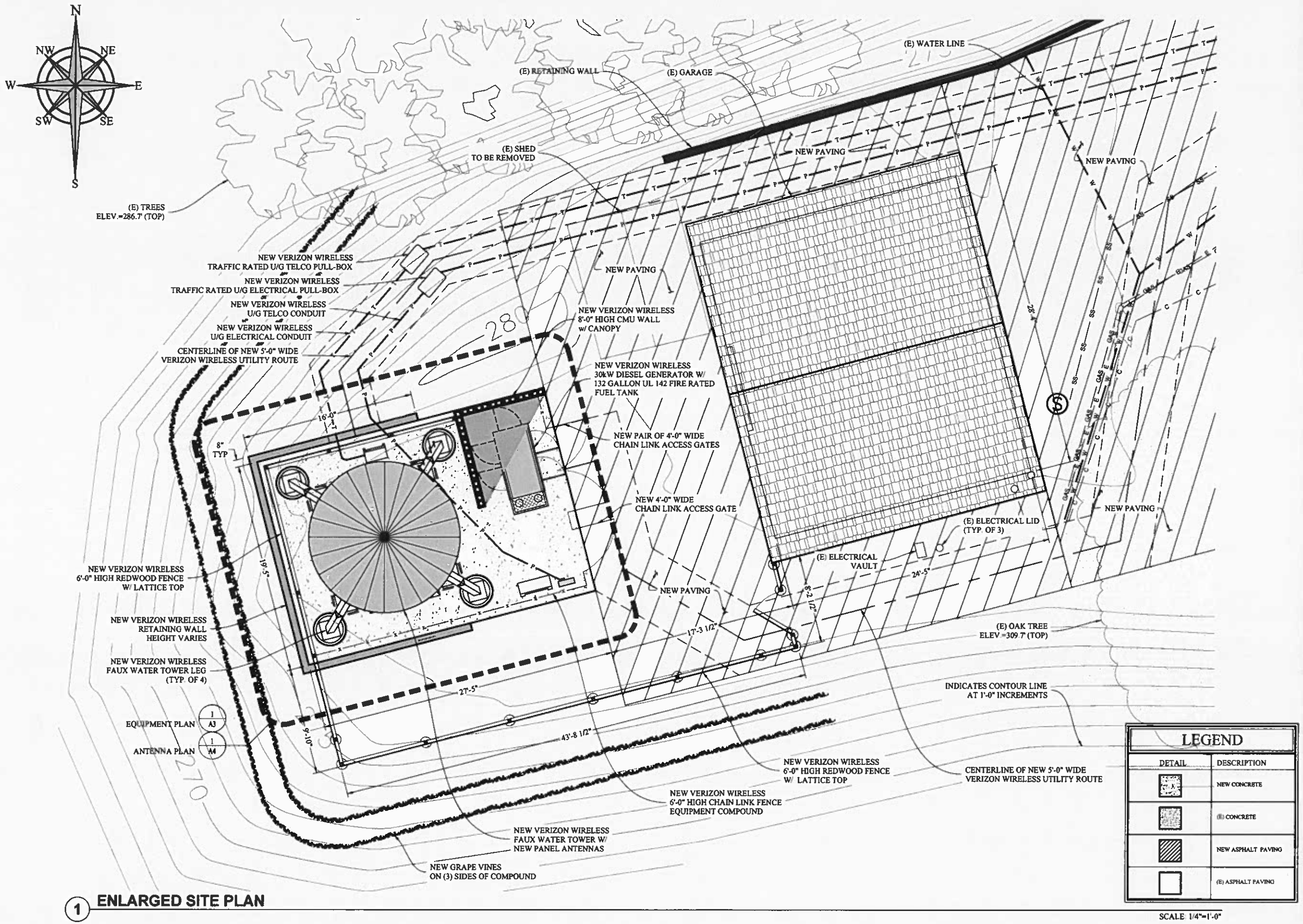
Job No.: N14014
Draw/Check By: BLL / EKU

A1



1 ENLARGED SITE PLAN

SCALE 1/4"=1'-0"

DIAMOND ENGINEERING SERVICES
4255 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

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W		05-28-2015

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

A2

EQUIPMENT PLAN

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

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
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FAX: (925) 904-3813

DIAMOND ENGINEERING SERVICES
4255 PARK RD.
BENICIA, CA 94510

REVISIONS			
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S	FOR REVIEW	03-19-2015	
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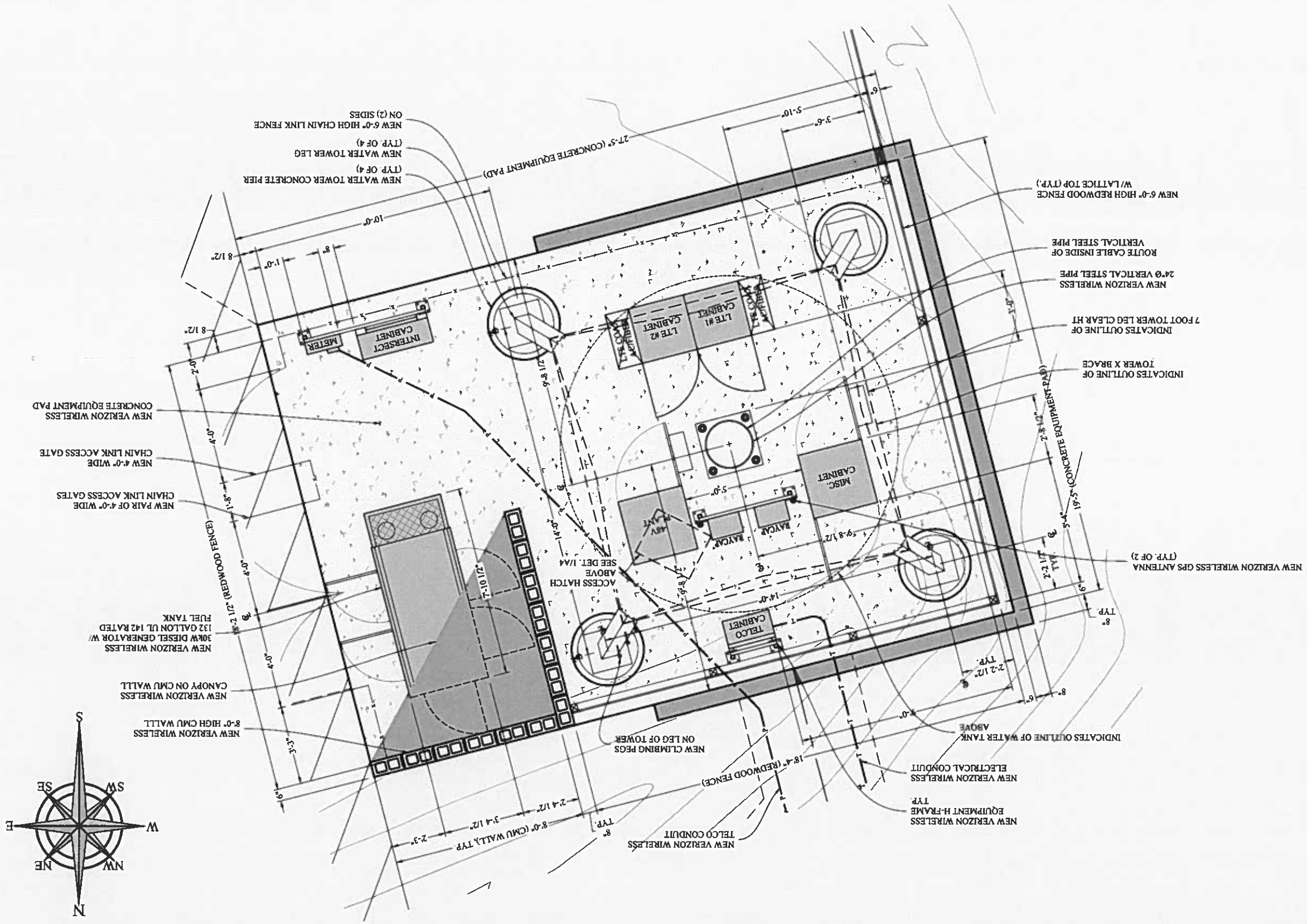
W	UPDATE EQUIPMENT LAYOUT	05-28-2015	

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

A3

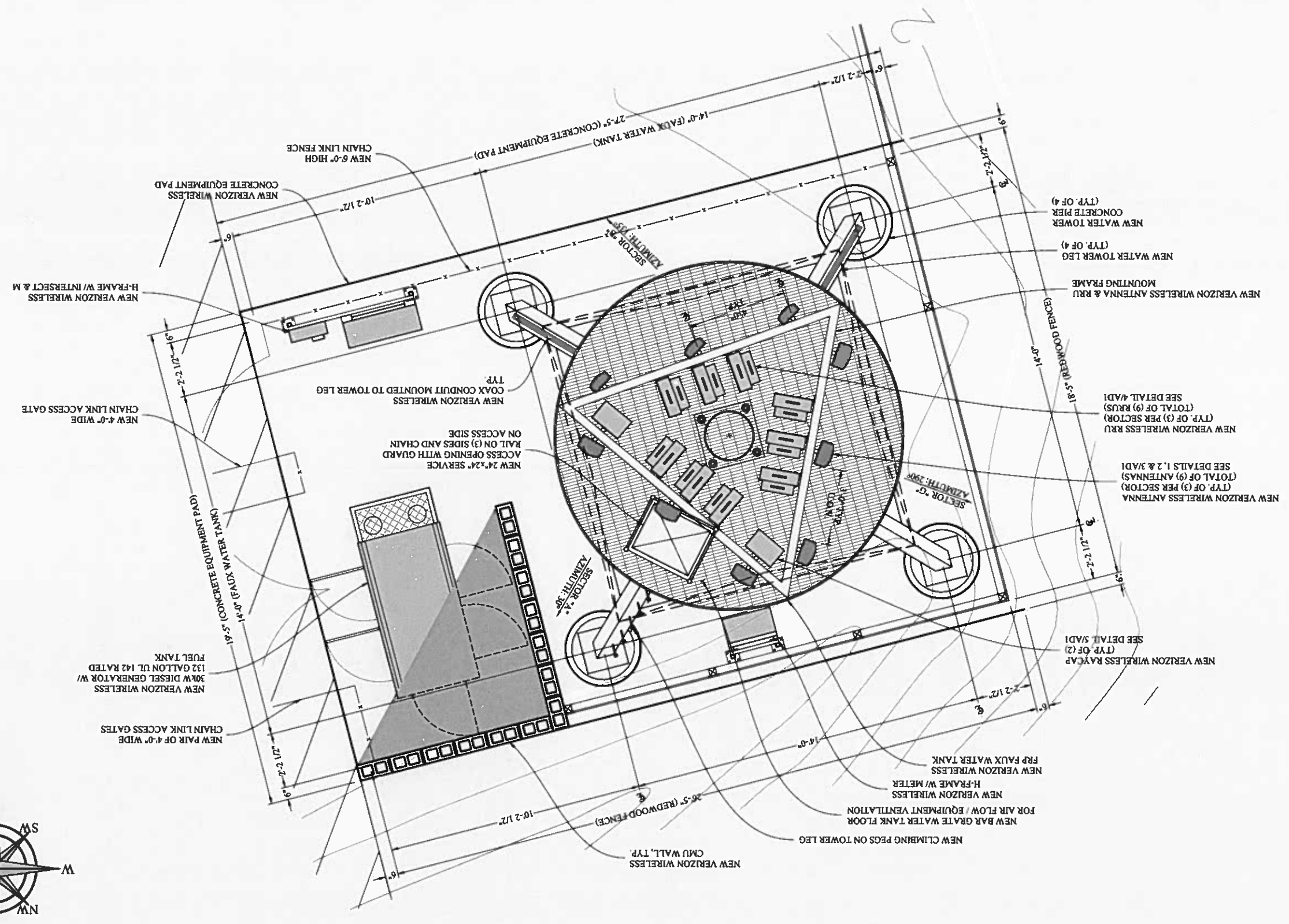
1 EQUIPMENT PLAN

SCALE: 1/2"=1'-0"



1 ANTENNA PLAN

SCALE: 1/2"=1'-0"



REVISIONS			
No	DESCRIPTION	DATE	
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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

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

ANTENNA PLAN

A4

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
94598TEL: (925) 904-3533
FAX: (926) 904-3613

DIAMOND ENGINEERING SERVICES
4256 PARK RD.
BENICIA, CA 94510

A5

REVISIONS		
No.	DESCRIPTION	DATE
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Job No.: N14014
Draw/Check By: BLL / EKU

NORTH ELEVATION

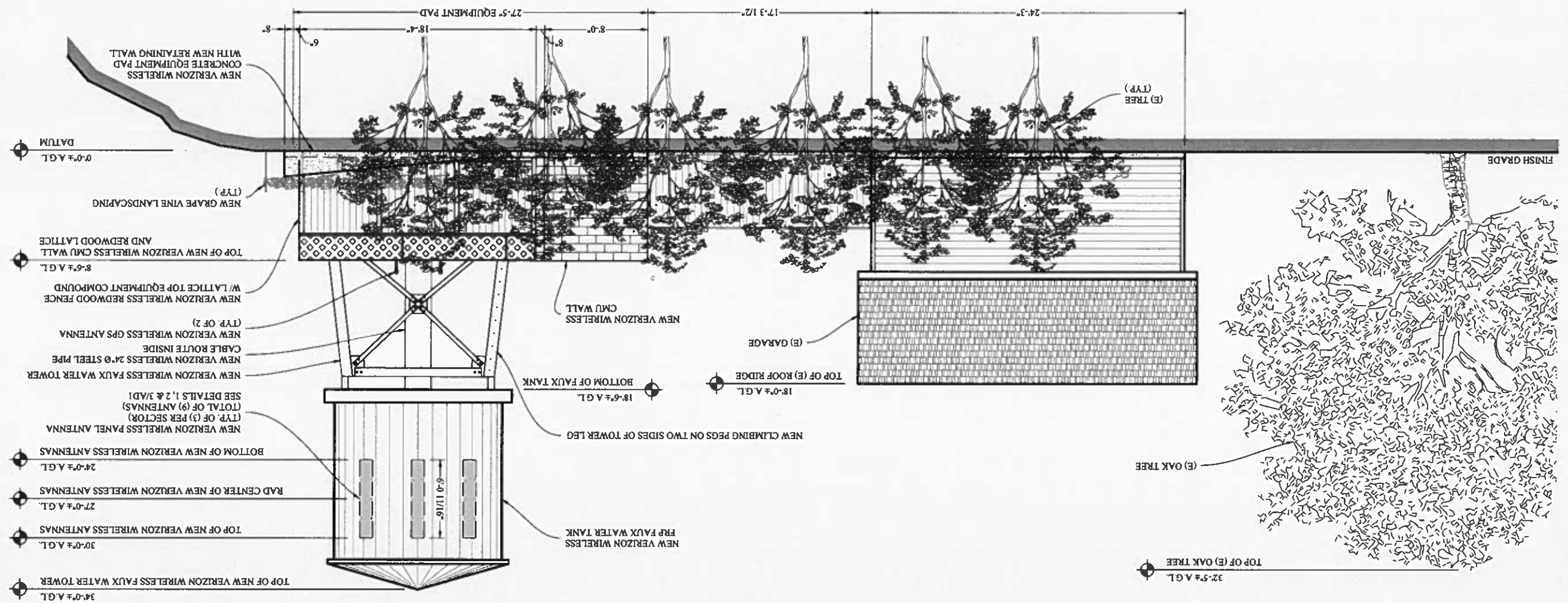
VERIZON WIRELESS
PSL #248125
2518 PFEIFFER LANE
PINOLE, CA 94564

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

DIAMOND ENGINEERING SERVICES
4265 PARK RD.
BENICIA, CA 94510

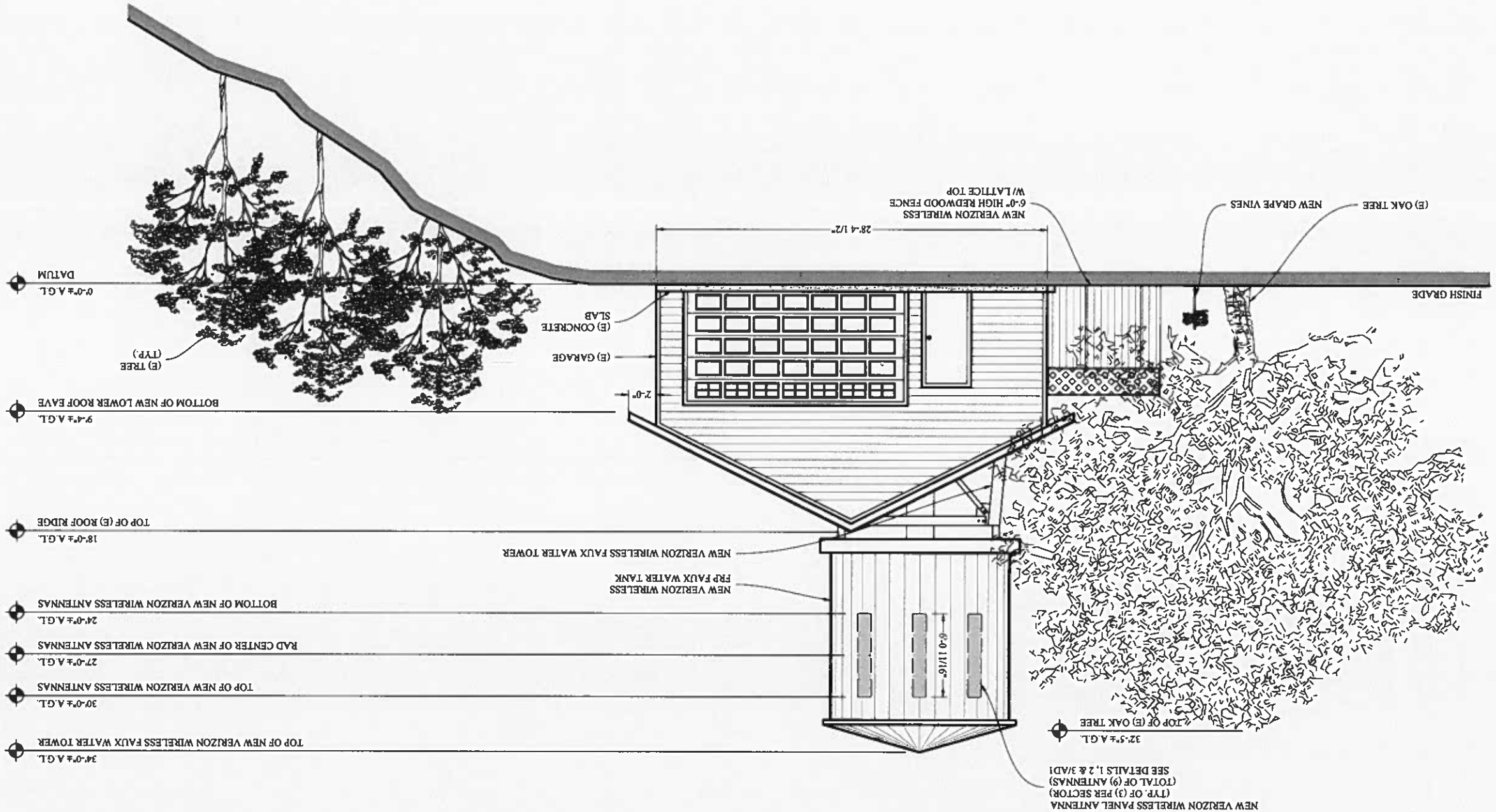
1 NORTH ELEVATION

SCALE: 1/4"=1'-0"



1 EAST ELEVATION

SCALE: 1/4"=1'-0"



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

EAST ELEVATION

REVISIONS		
No.	DESCRIPTION	DATE
P	FOR REVIEW	10-30-2014
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T	ADD PIPE	05-01-2015
W	UPDATE EQUIPMENT LAYOUT	05-28-2015

Job No.: N1401 4
Draw/Check By: BLL / EKU

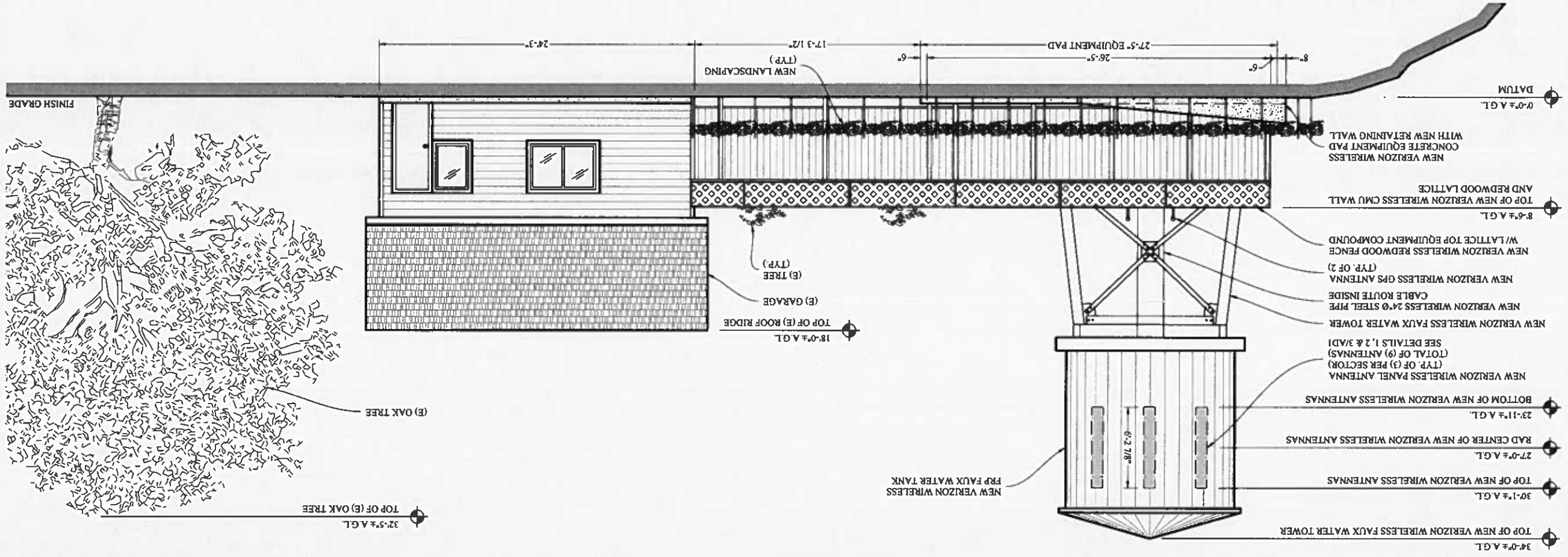
A6

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

DIAMOND ENGINEERING SERVICES
4265 PARK RD.
BENICIA, CA 94510

1 SOUTH ELEVATION

SCALE: 1/4"=1'-0"



REVISIONS		
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W	UPDATE EQUIPMENT LAYOUT	05-28-2015

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

A7

SOUTH ELEVATION

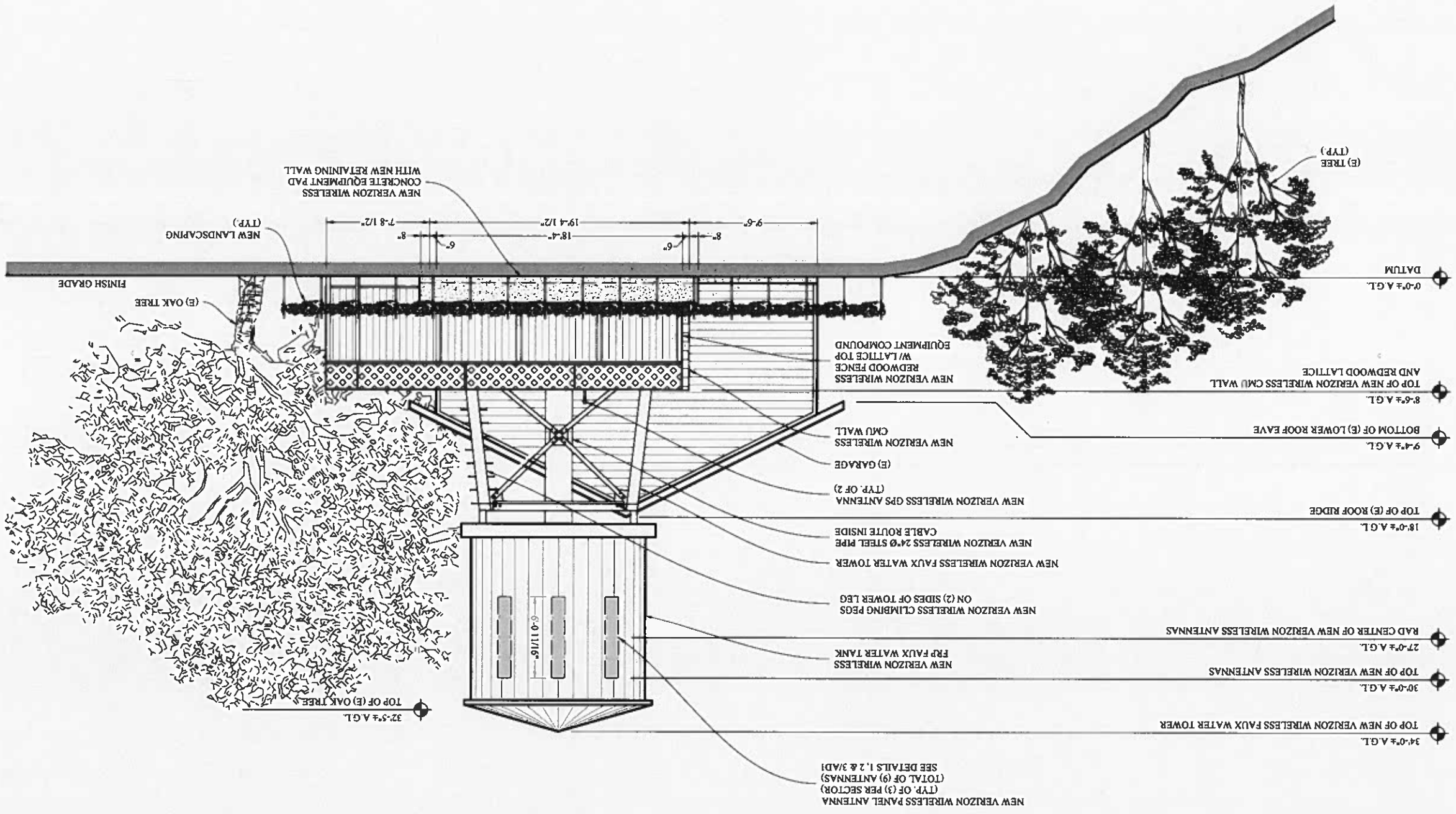
VERIZON WIRELESS
PSL #248125
2518 PFEIFFER LANE
PINOLE, CA 94564

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA
94598 TEL: (925) 904-3633
FAX: (925) 904-3613

DIAMOND ENGINEERING SERVICES
4255 PARK RD.
BENICIA, CA 94510

① WEST ELEVATION

SCALE: 1/4"=1'-0"



REVISIONS

No.	DESCRIPTION	DATE
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S	FOR REVIEW	03-19-2015
T	ADD PIPE	05-01-2015
W	UPDATE EQUIPMENT LAYOUT	05-28-2015

Job No.: N1401 4
Draw/Check By: BLL / EKU

A8

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

WEST ELEVATION

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

DIAMOND ENGINEERING SERVICES
4285 PARK RD.
BENICIA, CA 94510

LEGEND:

1. WAVE GUIDE ENTRY PORT
2. MASTER GROUND BAR
3. TELCO ENTRANCE PANEL (4' X 8' X 3/4")
4. a) GNB 3-7SA27 BATTERY MODULES (6V - 1015 AH)
   b) GNB 3-9GA27 BATTERY MODULES (6V - 1140 AH)
   c) GNB 3-8SA29 BATTERY MODULES (6V-1210 AH) MUST BE STACKED
   d) POWERSAFE VH-34 BATTERY MODULES (2V - 1040 AH)
   e) HZB2 H2V110 BATTERY MODULES (6V - 1100 AH)
5. AIR CONDITIONING UNIT
6. SECONDARY AC POWER DISTRIBUTION PANEL
7. TRANSFER SWITCH (MANUAL OR AUTOMATIC)
8. MAIN AC POWER DISTRIBUTION PANEL
9. COMMERCIAL POWER DISCONNECT SWITCH
10. FENWAL FIRE ALARM PANEL
11. ALARM TERMINAL CABINET
12. IRRIGATION CONTROLLER
13. HALON GAS STORAGE TANK/FM200 TANK
14. +24V POWER BUSBAR
15. -48V POWER BUSBAR
16. LIGHTNING ARRESTOR
17. ELECTROSTATIC DISCHARGE MAT (ESD MAT)
18. SNAP CONNECTOR FOR ESD MAT
19. TIME CLOCK PANEL
20. AIR CONDITIONING CONTROL PANEL
21. THERMOSTAT
22. EXHAUST FAN CONTROL PANEL
23. SURGE ARRESTOR
24. DEHYDRATOR
25. TRANSFORMER
26. FIRE EXTINGUISHER
27. EXHAUST FAN
28. AIR INTAKE
29. APPLETON PLUG

PBM +24V MODULAR POWER BAY
PB +24V STANDARD POWER DISTRIBUTION BAYS (E/W LORAIN RL200F25 RECTIFIERS)
PBR LORAIN RL200F25 RECTIFIER BAY
MISC MISCELLANEOUS BAY
AF AT&T ANTENNA INTERFACE FRAME
RCF AT&T RADIO CHANNEL FRAME
LAF AT&T LINEAR AMPLIFIER FRAME
MW MICROWAVE BAY
CDPD CELLULAR DIGITAL PACKET DATA
⚠ DENOTES FRONT OF BAY LINEUP

NOTES:

EFP = EQUIPMENT FLOOR PLAN
PPD = POWER PLANT DETAILS
EQR = EQUIPMENT RACK PROFILES
SID = SITE INTERCONNECT DETAILS
– – = FUTURE
—— = EQUIPPED

REVISIONS	
PROJ. NO. SEE ☐ = ☐	ASA
REV. 07/15/14 1	

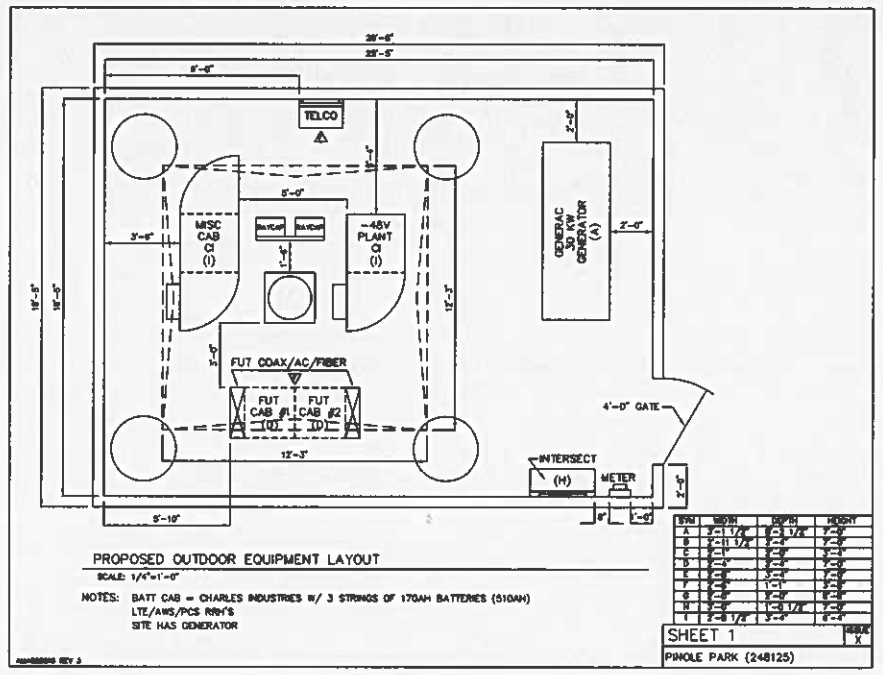
verizon wireless

ECP: PLEASANTON II	
DCS: X	
REGION: X	AREA: PINOLE
LOCATION CODE: 248125	
SWITCH SITE NO: X	
SITE NAME: PINOLE PARK	

FRONT RTN
TYP. RTN'S
TYP. RTN'S
TYP. RTN'S
RTN

2 EQUIPMENT LAYOUT

SCALE: NONE



1 LEGEND AND NOTES

SCALE: NONE

DIAMOND ENGINEERING SERVICES
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BENICIA, CA 94510

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WALNUT CREEK, CA
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FAX: (925) 904-3513

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

EQUIPMENT LAYOUT, LEGEND AND NOTES

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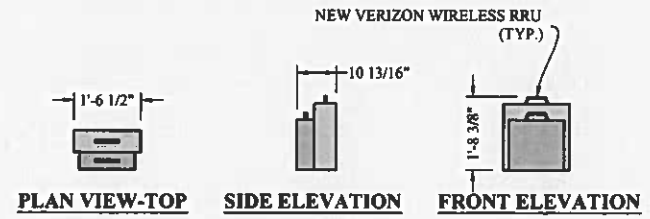
Job No.: N14014
Draw/Check By: BLL / EKU

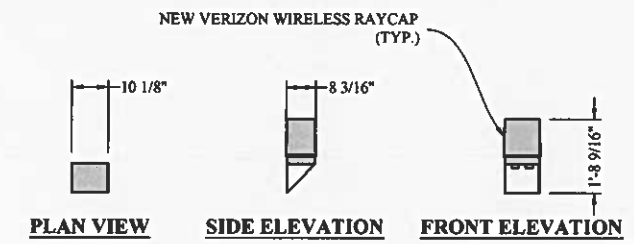
A9

RRU DATA			
DIMENSIONS:	WIDTH	DEPTH	HEIGHT
	18.5"	10.8"	20.4"
POWER CONSUMPTION:	200 WATTS		
TOTAL WEIGHT:	71.4 LBS		



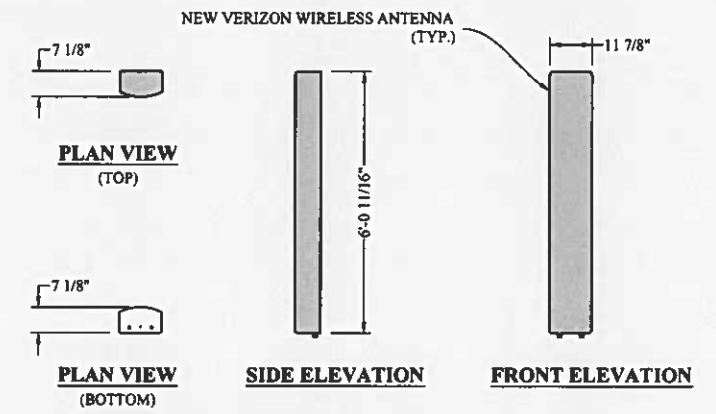
4 RRU DETAIL

SCALE: 1/2"=1'-0"



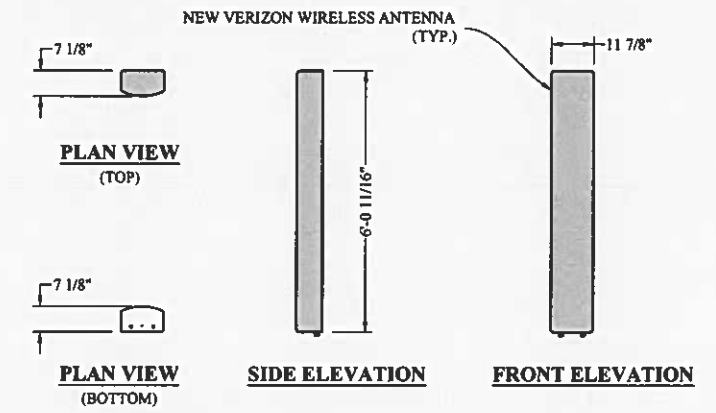
5 RAYCAP DETAIL

SCALE: 1/2"=1'-0"



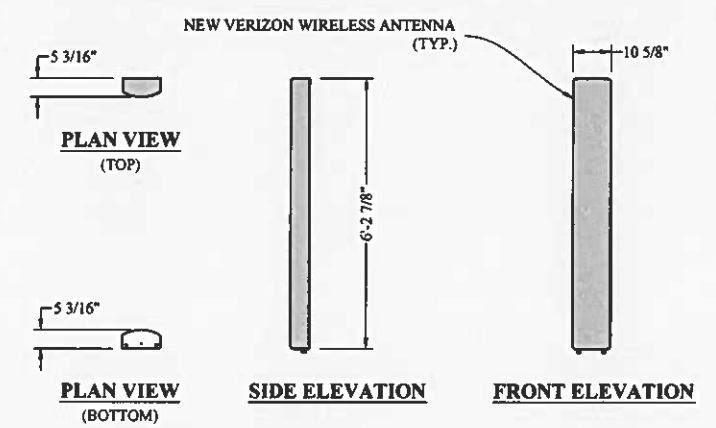
1 ANTENNA DETAIL

SCALE: 1/2"=1'-0"



2 ANTENNA DETAIL

SCALE: 1/2"=1'-0"



3 ANTENNA DETAIL

SCALE: 1/2"=1'-0"

DIAMOND ENGINEERING SERVICES
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BENICIA, CA 94510

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

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

ANTENNA, RRU & RAYCAP DETAILS

REVISIONS		
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S	FOR REVIEW	03-19-2015
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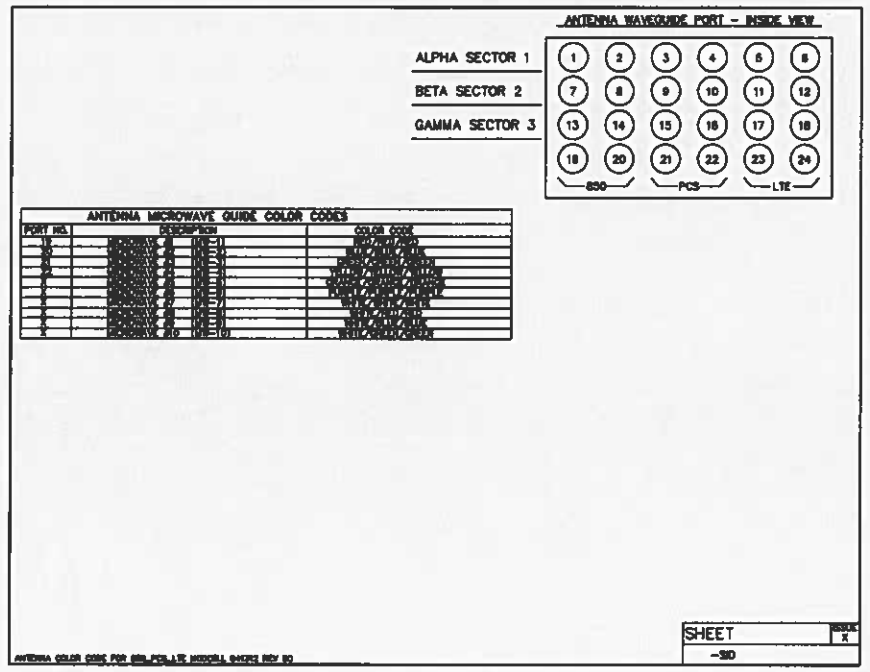
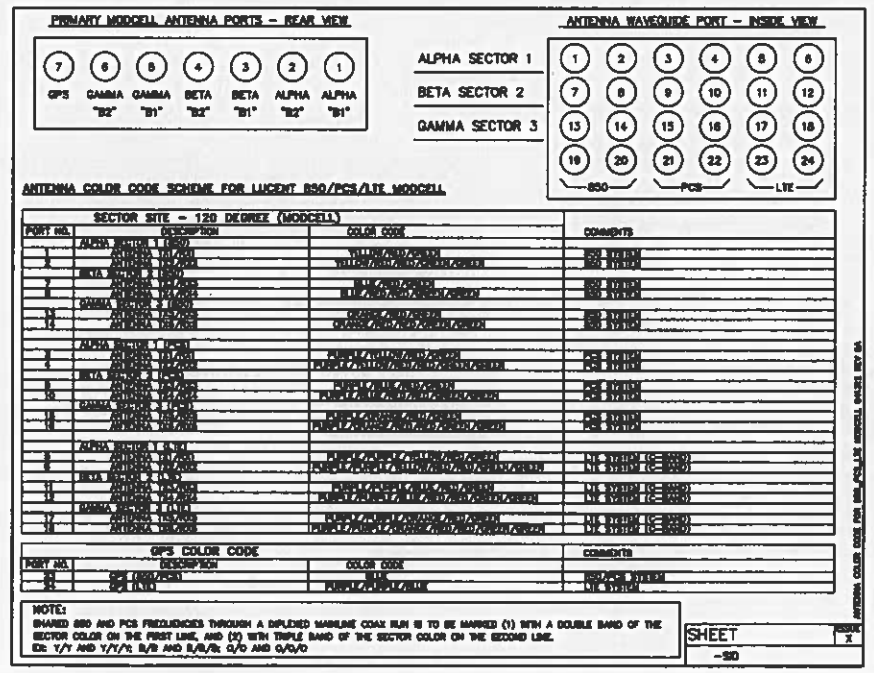
Job No.: N14014
Draw/Check By: BLL / EKU

AD1



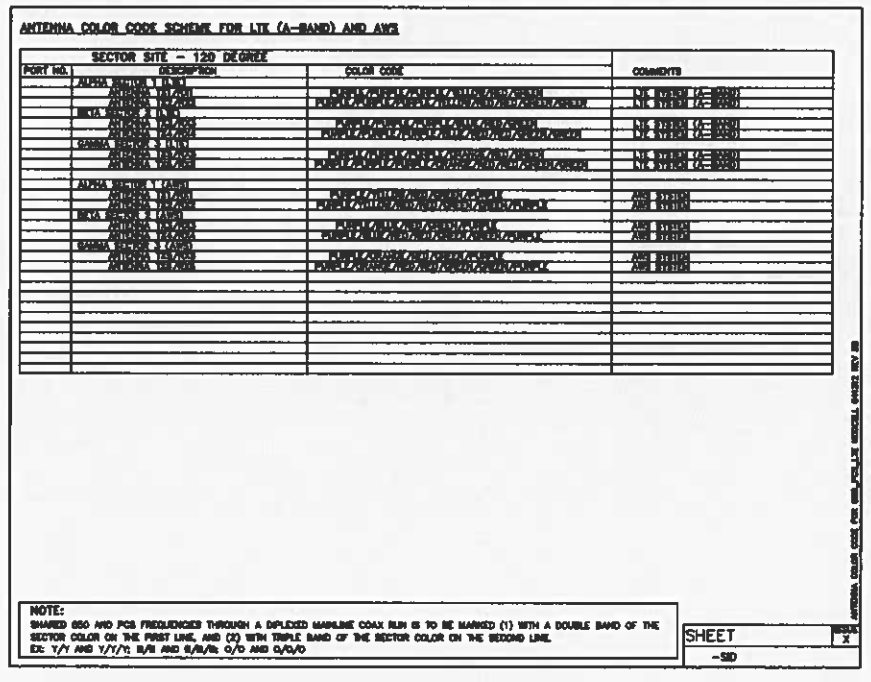
3 ANTENNA COLOR CODES (CONT.)

SCALE: NONE



1 ANTENNA COLOR CODES

SCALE: NONE



2 ANTENNA COLOR CODES (CONT.)

SCALE: NONE

DIAMOND ENGINEERING SERVICES
4255 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

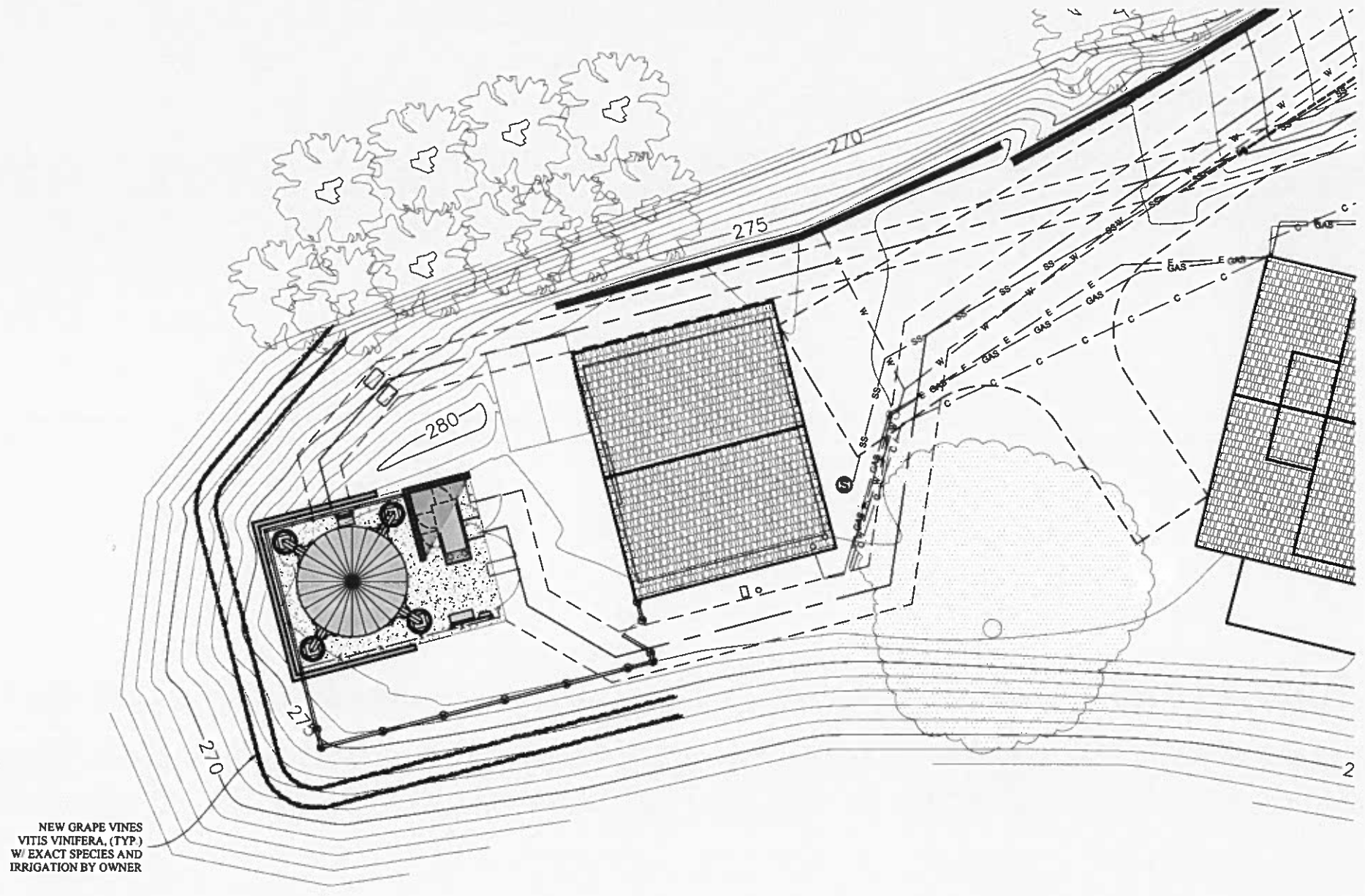
ANTENNA COLOR CODES

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

AD2



1 **LANDSCAPING PLAN**

SCALE: 1/8"=1'-0"

DCE DIAMOND ENGINEERING SERVICES
4255 PARK RD.
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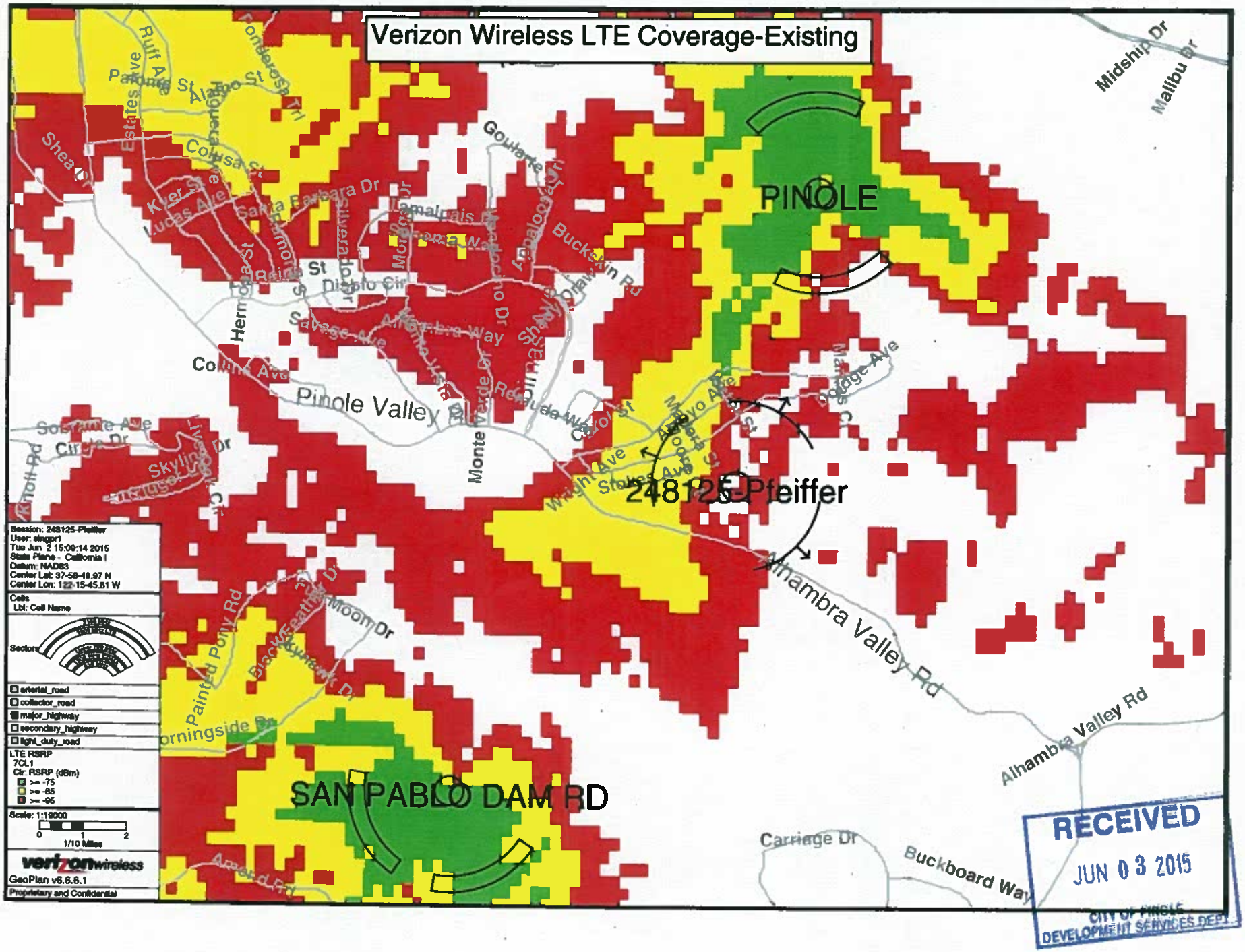
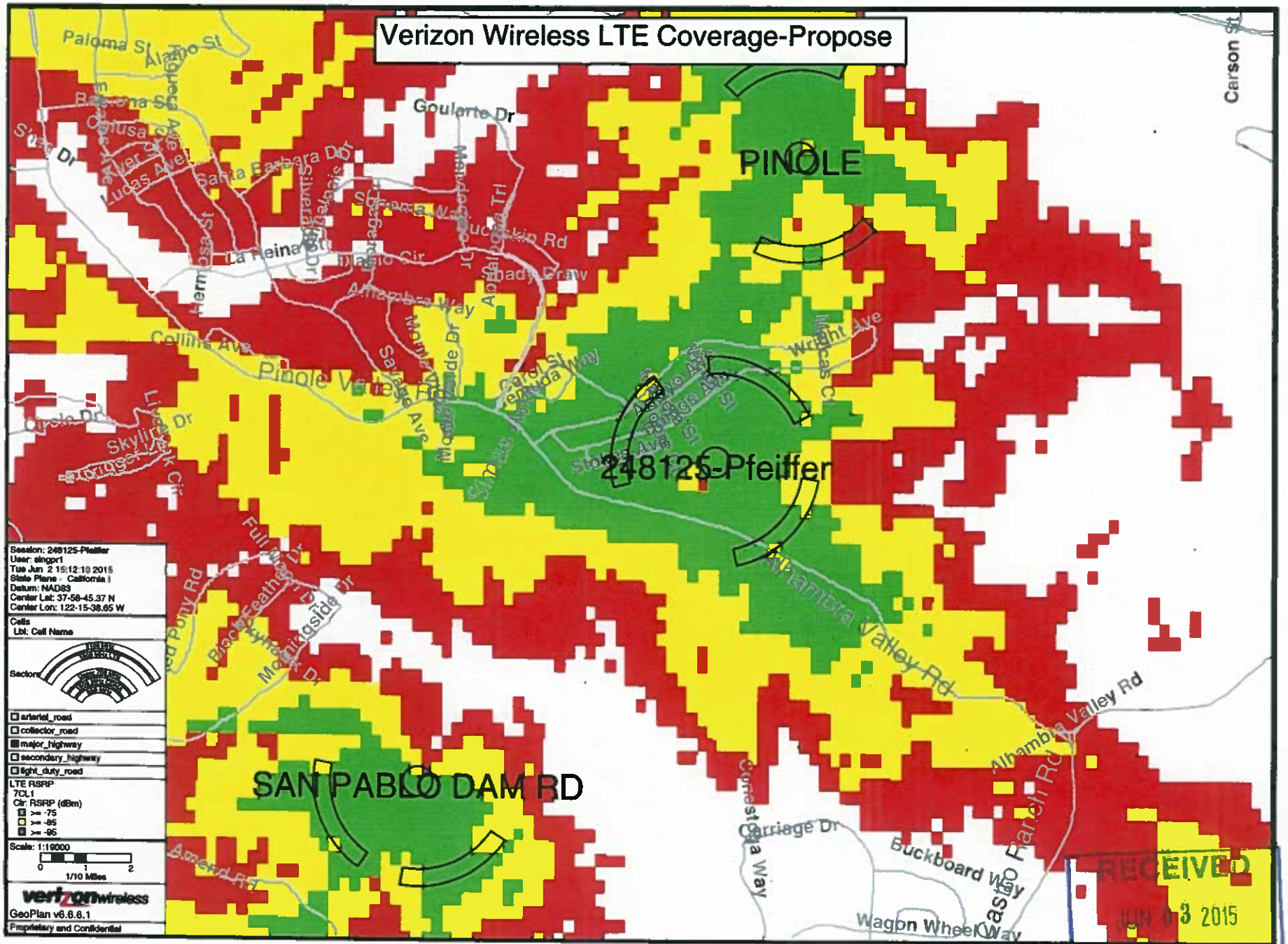
L-1

ATTACHMENT D




Verizon Wireless LTE Coverage-Propose
PINOLE
248125-Pfeiffer
SAN PABLO DAM RD
Paloma St
Alameda St
Goularte Dr
Santa Barbara Dr
La Reina Ct
Alhambra Way
Pinole Valley Rd
Alhambra Valley Rd
Carson St
Wright Ave
Buckboard Way
Carriage Dr
Wagon Wheel Way
Parsell Rd
Session: 248125-Pfeiffer
User: slingprt
Tue Jun 2 15:12:10 2015
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Sectors
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collector_road
major_highway
secondary_highway
light_duty_road
LTE RSRP
7CL1
Clr: RSRP (dBm)
>= -75
>= -85
>= -95
Scale: 1:19000
0
1
2
1/10 Miles
verizonwireless
GeoPlan v6.6.6.1
Proprietary and Confidential
RECEIVED
JUN 03 2015
CITY OF PINOLE
DEVELOPMENT SERVICES DEPT.

Project Description-Proposal

Verizon Site #248125

Proposed Verizon Wireless facility located at

2518 Pfeiffer Lane - Pinole, CA 94564

Owner: Mike and Debra Evans

APN: 360-131-036

Introduction

Verizon Wireless is the largest wireless communications provider in the U.S. with more than 27 million wireless voice and data customers. The coast-to-coast wireless provider was formed by the combination of the U.S. wireless businesses of Bell Atlantic Corp. and GTE Corp - now Verizon Communications (NYSE:VZ) - and Vodafone (NYSE and LSE: VOD). The new company includes the assets of Bell Atlantic Mobile, AirTouch Cellular, GTE Wireless and PrimeCo Personal Communications.

Verizon and its affiliates have acquired licenses from the Federal Communication Commission ("FCC") and the CPUC. These licenses include Sonoma County, California. The regional system operates under the name GTE Mobilnet of California Limited Partnership, a California limited partnership, d/b/a Verizon Wireless, by Cellco Partnership, its general partner.

Applicant's Request

Verizon Wireless formally requests under the City of Pinole Wireless Telecommunications Facilities Chapter 17.33 approval of a Conditional Use Permit for an unmanned telecommunications facility in the City of Pinole located at 2518 Pfeiffer Lane, currently zoned Suburban Residential.

Project Description

Installation of an unmanned Verizon Wireless telecommunications facility to be located at 2518 Pfeiffer Lane in the City of Pinole, California. The proposed facility will consist of the installation of nine panel antennas mounted within a new 34' faux water tank, painted a natural appearing reddish color to blend in aesthetically with the suburban rural environment. Placement of outdoor equipment cabinets and *generator on a new concrete pad foundation within a 27'-5" by 19'-5" fenced lease area below tank. Grape vines will be planted on three sides of the six foot plus 2 foot lattice fenced area to create a natural setting for the faux water tank and will blend in naturally with the hillside views.

*Verizon will include a new stand-by 30KW diesel generator with UL 142 fire rated with132-gallon diesel fuel tank that has a secondary containment with emergency vents, and heavy duty 7 gage side channels. This generator will supply power in emergency situations only. This is part of Verizon's homeland security initiative. Verizon wants the

entire network to be able to sustain itself in the event of blackout situations. The generator will meet all noise standards of the City of Pinole.

Maintenance

The facility will be unmanned and will be visited only monthly for routine maintenance. The facility will emit no glare, odor or noise above acceptable levels, and will not have any signage other than those required for identification as mandated by the FCC and FAA, which are designed to protect public safety. To ensure structural integrity of the facility, Verizon Wireless will construct and maintain the site in compliance with all federal, state and local building codes and standards. In addition, each facility is monitored 24 hours a day, electronically for intrusion and environmental disruption. The facility will also contain a sign identifying a 1-800 number to call in case of an emergency (manned 24 hours a day by Verizon employees) and identifying it as a Verizon facility. Verizon will be in compliance with all FCC regulations regarding signage at the facility.

Need for Site and Location Justification

Wireless phone systems operate on a "grid" system, whereby overlapping "cells" mesh to form a seamless wireless network. The technical criteria for establishing cell sites are very exacting as to both the height and location of the telecommunication facility. Based on a computerized engineering study, which takes into account, among other things, local population density, traffic patterns, and topography, Verizon Wireless's RF engineers have identified this location as being a necessary and appropriate location for a cell site in order to provide coverage along the Pinole Valley Road and to the neighborhood community of Pinole.

SEE COLOR CODED RF MAP FOR EXISTING AND PROPOSED COVERAGE and EXISTING AND PROPOSED SITES IN THE CITY OF PINOLE AND SURROUNDING AREA WITHIN ¼ MILE.

Alternative Site Analysis

Verizon Wireless investigated existing structures, towers and buildings high enough to accommodate the coverage objectives.

(1) PGE tower line along Pinole Valley Road/Alhambra Valley Road were investigated and rejected by Verizon Radio Frequency Engineer as too close to adjacent existing sites and would cause signal interference and not achieve coverage objective.

(2) The Fire Station located at Adobe and Pinole Valley Road did not have adequate available ground space. (Additionally, City Pinole is prohibited from leasing space for non-park purposes)

(3) A location closest to the left field corner of the baseball field in the parking lot of Pinole Valley Park was first proposed and visited on October 5, 2010 with the City of Pinole Planning Department and Department of Public Works Engineer. Location was deemed favorable to pursue, *"staff believes this site makes the most sense for a proposed*

collocation site", (October 6 email from city planner). A meeting with the Planning Committee Sub-Committee was held February 10, 2011 to review location, and Commissioners did not favor site and directed carriers to look for alternative locations in Park.

(4) Two locations were recommended by Sub-Committee Commissioners-the open space area behind the "Dog Park" off Adobe Road, and the location located at 1270 Adobe Road. After a Site Visit to the City land locations with Planning Staff and Commissioners on February 10, direction was given to assess both locations for RF Signal and Aesthetic viability. Verizon provided information based on a Drive Test and provided minimum height requirement for coverage objective. Both locations were reviewed and brought back to the Commissioners at a meeting on April 11, 2011 and direction was given by the Sub-Committee to pursue the 1270 Adobe Road location with a monopole favored over a Monopine, that would hold at least two carriers.

At the Civil Review held by Verizon Wireless on July 27, 2011 to prepare Zoning Design and Drawings, direction was provided by city planner to propose a 78 foot monopole that would be able to hold 3 future carriers. This Site was approved and a CUP was approved by the Planning Commission on March 25, 2013. Subsequently, the City Council preferred a monopine design. Verizon accommodated and changed design to a monopine design. Project approval was appealed and was put on hold pending an alternative search for a site location outside of Park Property.

(5) Mc Kay Property – 3950 Pinole Valley Road – Pinole
Landlord was willing to lease space on his property, however, access to the site location would require access easement from City of Pinole (Park Property). Deemed not viable to obtain easement right from City of Pinole due to restriction on Park property.

(6) 4001 Pinole Valley Road – Pinole
Willing landlord, however, no adequate space for tower and equipment.

(7) City of Pinole Land – APN: 360-240-025 -
Not available for development for telecom site. May be needed to exchange/replace the land taken for the Fire Department location in Pinole Park.

Radio Frequency

The proposed facility will be designed and constructed to meet applicable governmental and industry safety standards. Verizon Wireless continues to comply with all FCC governing construction requirements, technical standards, interference protection, power limitations, and radio frequency standards. Any and all RF emissions are subject to the exclusive jurisdiction of the FCC. A Radio Frequency Exposure Study was prepared by Hammett & Edison, dated November 4, 2014 showing compliance with FCC standards.

Noise & Acoustical Information

Standby Generator for emergency back up power supply

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 fired generator will be installed at time of construction. The generator itself is enclosed in a sound attenuated enclosure, utilizes a muffler with the exhaust pipe directed vertically approximately 8 feet above ground level. The generator would run for extended periods of time only in the event of a natural disaster, other emergency or prolonged power outage. Sound test results are available for the proposed generator and are attached for review.

Safety

The proposed site will be entirely self-monitored by sophisticated computers which connect directly to a central office and which alert personnel to equipment malfunction or breach of security. Moreover, no smoke, debris or other nuisance will be generated by the proposed facility.

The proposed facility will not be detrimental to nor will it endanger the public health, safety, morals, comfort, or general welfare of the community. The proposed facility will not pose a risk of explosion, fire or other danger to life or property due to proximity to other materials and the facility will be designed and a State of California qualified engineer will certify that the proposed facility will be structurally sound.

In Conclusion

Everyday, more than 296,000 "911" calls are made from wireless phones. According to the National Center for Health Statistics Interview Survey January – June 2010, 26.6% of U.S. Households are Wireless "Only" households. The proposed Verizon Wireless Telecommunications Facility enhances the general welfare of the community by providing the infrastructure for these calls, as well as providing vital means of communication during times of emergency when traditional land lines are not available or in cases of power failure. The carefully selected and designed facility allows these calls to occur while remaining a site that meets the needs of the community now and in the future.

For the purpose and duration of this application, the project manager is **NSA Wireless, Inc. located at 12893 Alcosta Blvd. Suite G, San Ramon CA 94583, contact Pamela Nobel direct at (707) 486-7252, email: pdnobel@earthlink.net** or NSA Wireless at (925) 244-1890, and Fax: (925) 355-0672.

Verizon Wireless long-term responsible party and agent for service of process is:

GTE Mobilnet of California Limited Partnership,
dba Verizon Wireless
180 Washington Valley Road
Bedminster, New Jersey 07921
Attention: Network Real Estate