



DRAFT ENVIRONMENTAL IMPACT REPORT

NORTH SIDE COMMUNICATIONS TOWER PROJECT

PREPARED BY THE
OAKDALE IRRIGATION DISTRICT
July 2018

EXECUTIVE SUMMARY

The Oakdale Irrigation District (OID) has over 80 automated canal gates and flow meters currently incorporated into its Supervisory Control and Data Acquisition (SCADA) system, and continues to expand canal automation as part of modernization and increased efficiency efforts identified in the District's Water Resources Plan and associated Programmatic EIR for the program. As the SCADA system continues to grow, the need has arisen for a new tower to intercept and relay radio communications to and from the OID office and the remote automated gate and meter sites.

The North Side Communications Tower Project (Project) will involve the installation of one 190' tall tower at the OID North Side Regulating Reservoir located approximately three miles northeast of the City of Oakdale in Stanislaus County. The proposed communications tower will be located at an area of the OID North Side Regulating Reservoir that is currently being used as a laydown area and inventory yard for OID materials. The tower will be a self-supporting lattice design and will be located approximately 2,100 feet from the nearest residence. It is anticipated that the tower will have daytime lighting as well as nighttime red obstruction lighting for the safety of low altitude aircraft. The tower's concrete pad foundation is anticipated to be approximately 26' x 26' x 4' deep, and the tower components will be manufactured at an existing facility and assembled onsite.

Due to the relatively short construction time frame, minimal area of ground disturbance during construction, and existing use of the site for OID operations, potential impacts are anticipated to be primarily limited to potential aesthetic effects. This Draft Environmental Impact Report (DEIR) has been developed to review and disclose all potential environmental impacts and identify measures designed to mitigate for such impacts.

Summary of Project Impacts

OID has determined with the safety and mitigation/avoidance measures stated herein, as well as limited potential impacts, the proposed Project will have a less than significant effect on the environment. Based on the results of a viewshed and visual analysis, the impacts to visual resources identified as potentially significant are anticipated to be negligent to minimal. The tower is sited approximately 2,100 feet from the nearest residence on OID owned property with no Williamson Act conflict in an agricultural zone. Per the recommendations made in a radio study (Appendix D) the 190 foot tower height is necessary to achieve reliable radio communications to and from the OID office and to and from remote automated canal gates located throughout the District on OID's SCADA system. While not subject to FAA regulations, OID chose to incorporate FAA tower lighting guidelines for the safety of low altitude aircraft and crop dusting operations in this agricultural region. The tower's lattice design allows for it to be freestanding without the use of guy wires.

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ACRONYMS & ABBREVIATIONS

ac-ft	acre- feet (foot)
AGL	above ground level
BMP	best management practice
CAAA	California Agricultural Aviation Association
CARB	California Air Resources Board
CDFW	California Department of Fish Wildlife
CEQA	California Environmental Quality Act
cfs	cubic feet (foot) per second
District	Oakdale Irrigation District
DSO	Distribution System Operator
EIR	Environmental Impact Report
NAAA	National Agricultural Aviation Association
NSRR	North Side Regulating Reservoir
NOA	Notice of Availability
NOP	Notice of Preparation
OID	Oakdale Irrigation District
PEIR	Programmatic Environmental Impact Report
PM _{2.5}	particulate matter 2.5 microns or less in aerodynamic diameter
PM ₁₀	particulate matter 10 microns or less in aerodynamic diameter
SCADA	supervisory control and data acquisition
SHPO	State Historic Preservation Office
SJVAPCD	San Joaquin Valley Air Pollution Control District
SWPPP	Storm water Pollution Prevention Plan
TCC	Total Channel Control
WRP	Water Resources Plan

SECTION 1- PROJECT DESCRIPTION AND ALTERNATIVES

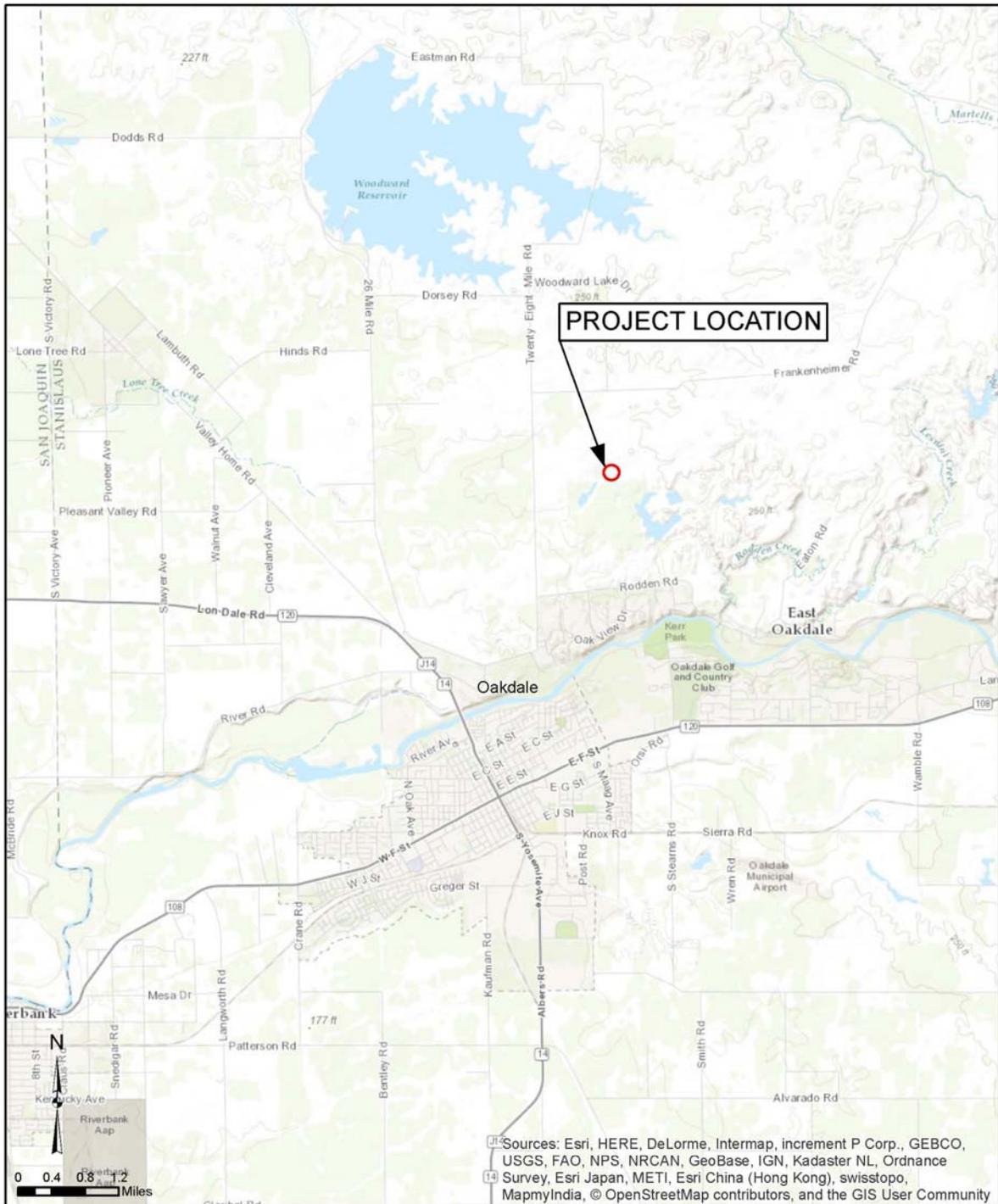
1.1 Project Objectives

Since its Water Resources Plan and subsequent PEIR were adopted in 2007, the OID has strategically invested in technology and equipment to enhance OID response times, provide more flexibility for customer irrigation events, and improve overall efficiency of the system which serves over 60,000 irrigated acres. One approach that is favored by OID is the installation of automated canal gates on its canals. These gates, which provide highly accurate flow measurement, may serve as “drop” structures where water is checked up to serve the irrigation demands of customers, or as “turnouts” which serve as the customer delivery point. OID also installs flow meters within its pipelines at customer delivery points. These devices help OID achieve compliance with California Water Code §10608.48, which requires implementation of efficient water management practices by agricultural water suppliers including, but not limited to, measurement of water delivered to customers and automation of canal structures. The automated canal gates and flow meters contain radios and are integrated into OID’s Supervisory Control and Data Acquisition (SCADA) system, allowing for remote monitoring and control by OID Staff. Given the current regulatory setting and system-wide benefits that have been realized by the use of these devices, OID anticipates installing more automated gates and flow meters in the future.

The communications associated with OID’s SCADA system are currently reliant on a single tower located on the OID office property. Not only are several canal gates situated in locations where topographic features hinder the line of sight necessary for reliable radio communications, but as the number of SCADA sites has increased, the amount of data being transmitted from all the SCADA sites directly to the OID office tower has also increased. This has resulted in slower response times and diminished operational control and efficiency of the automated system. As the SCADA system continues to grow, the need has arisen for a new communications tower to intercept and relay communications to and from the remote automated canal gate sites within a generally defined area (i.e. the northwest quadrant of the OID service area) to and from the OID office.

1.2 Project Location

The OID North Side Regulating Reservoir (NSRR) property was selected as the proposed tower site for several reasons: the property is currently owned by OID, the site is routinely accessed and maintained by OID, and there is an existing source of power at the site. The new tower is proposed to be located on the NSRR property, more specifically at the northeast corner of APN 002-052-018. The graded area is bordered by the NSRR, the OID North Main Canal, and the OID Rodden High Line Lateral. Access to the site is by OID’s existing rights-of-way along the OID Burnett or Cometa Laterals. The remainder of the proposed site not being utilized for regulation and intermittent storage of surface water during the irrigation season (approximately March through October) is graded, generally kept free of any vegetation, and is currently used as an overflow inventory yard for OID materials. The proposed tower would be located approximately 2,100 feet from the nearest residence.



North Side Communications Tower
Vicinity Map

Date: 12/4/17
 Drawn By: ECS
 Checked By: ECT



North Side Communications Tower

Project Location Map

Date: 12/4/17
 Drawn By: ECS
 Checked By: ECT

1.3 Project Characteristics

The tower is proposed to be a 190' tall self-supported lattice design structure. The proposed height was determined upon completion of a radio study commissioned by OID, which identified 190' as the suitable height to provide direct line of sight to the OID office tower.

Initially, the tower will house a 3 foot diameter parabolic reflector antenna operating at 5.8 GHz and a UHF Omni antenna for radio communications. It is possible however, that additional antennas and a microwave dish may be installed or replaced as needed to accommodate the evolution of technology and ensure sufficient capacity for OID's SCADA system into the future. The proposed tower will be designed with additional capacity, should the future antennas be needed. A waveguide assembly for cabling will be installed along with a safety climb ladder.

Given the distance that the proposed tower will be from the nearest airport (City of Oakdale Airport), and that the proposed tower height is less than 200', the tower is not subject to FAA regulations. However, due to the likelihood of regulation promulgation in the near future on towers under 200' in height, as well as for the safety of low altitude aircraft, OID will adhere to the FAA guidelines for tower lighting and marking. The applicable FAA light standard, FAA Style E1, will be incorporated into the design of the tower. Said standard calls for medium-intensity dual (white daytime and red nighttime) obstruction lights to be installed at the top of the tower, and two more red obstruction lights to be installed at an intermediate level, or approximately 95' AGL. Lights will flash every two seconds (30 flashes per minute) per industry standards. Specifications of the proposed lighting system are further described in Section 2.5.

Construction will consist of the excavation, forming and pouring of a 26' wide x 26' length x 4' deep concrete pad foundation by OID forces, utilizing the design provided by others. The tower components will be manufactured at an offsite facility and transported to the project site where they will be assembled in a laydown area, and the tower will be erected with the use of a crane. The existing power source at OID's NSRR Groundwater Well will serve the tower and a perimeter grounding system will be installed by OID around the tower foundation. An above ground cable bridge will be installed from the tower structure through the well pump house wall where it will be connected to the panel inside the pump house. OID staff will travel to the Project site on a daily basis, but it will not be a permanent work station. Therefore no additional public services, utility easements, or outbuildings will be necessary upon completion of the Project.

1.4 Alternatives Considered

Multiple alternatives were considered in the preparation of this Draft EIR. Those alternatives consist of the following:

Alternative 1: No Project

Under the No Project scenario, a communications tower would not be constructed. There would be no additional capacity for the SCADA system communication and therefore it is likely the number of automated canal gates installed in the District would reduce or halt completely. This alternative formed the basis of the existing conditions and baseline, since without construction of the Project there would be no change in the existing site conditions.

Alternative 2: Communications Tower Constructed at NSRR Property

This alternative consists of the characteristics and location setting described in Sections 1.2 and 1.3 above.

Alternative 3: Communications Tower Constructed at Alternate Remote Site

Under Alternative 3, a radio communications tower would be installed at a different and more remote site than the OID NSRR property. This alternative may lessen visual and agricultural impacts on neighboring properties due to a lack of residences and developed agricultural land in the Project vicinity, however the tower would be farther from the OID office and automated gates which would increase the likelihood of interference with communications. There would also be additional costs for OID to purchase such property and/or easements and the potential for environmental issues associated with access and initial construction. Power supplies would also likely need to be developed or extended in order to serve the tower, since it is probable an undeveloped parcel would have no existing utilities on site.

Selected Alternative: Upon consideration of the alternatives listed above, OID determined both Alternative 1 and Alternative 3 would hinder the efficiency and modernization goals of the District by restricting the SCADA communication capabilities. Alternative 3 would be cost prohibitive due to site acquisition and utility extensions, as well as the complications associated with such a remote tower site communicating to and from the OID office and automated gates. Alternative 2 would best suit the operational needs and enhanced performance objectives of the District while also resulting in the least cost. Therefore Alternative 2 was selected to be evaluated further under this Draft EIR.

1.5 Potentially Required Approvals or Permits

The Project is subject to the discretion of, and will ultimately need approval from, the OID Board of Directors. Existing laws and regulations applicable to the Project that OID will comply with include:

- SJVAPCD Regulation VII for dust mitigation
- Should the area of ground disturbance exceed one acre in size, OID will prepare a SWPPP in accordance with the General Construction Permit under the California State Water Resources Control Board.
- Traffic control plan approval by Stanislaus County, should it be necessary for lane shifts or closures during transportation of equipment and materials to and from the Project site.
- California Endangered Species Act (CESA) consultation.

A summary of the agencies consulted is provided in Section 4, Consultation and Coordination.

SECTION 2 – ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

2.1 Environmental Setting and Baseline

The 2007 Water Resources Plan Programmatic Environmental Impact Report (WRP PEIR) generally described the environmental setting and species with the potential to occur within the OID boundary. Measures to mitigate any potential impacts were also identified in the WRP PEIR. OID refers back to the WRP PEIR during subsequent environmental review of proposed projects within the District boundary, as many of the mitigation and avoidance measures identified in the WRP PEIR are applicable to various OID activities. The NSRR, constructed in 2009 and proposed location of the Project site, was generally reviewed under the WRP PEIR. The specific potential environmental impacts associated with the construction of the NSRR were identified and mitigated through the development and completion of a separate initial study/mitigated negative declaration (IS/MND) in 2009. The WRP PEIR and IS/MND is incorporated into this document by reference, and is available for public review on OID’s website at www.oakdaleirrigation.com.

In the absence of the proposed Project, it is anticipated that there would be no changes in the current site, including land use or OID operations and maintenance. Therefore for purposes of the proposed Project, it is appropriate to consider existing conditions as the baseline. The Project’s potential impacts on environmental resources are addressed in the following sections.

2.2 VISUAL RESOURCES

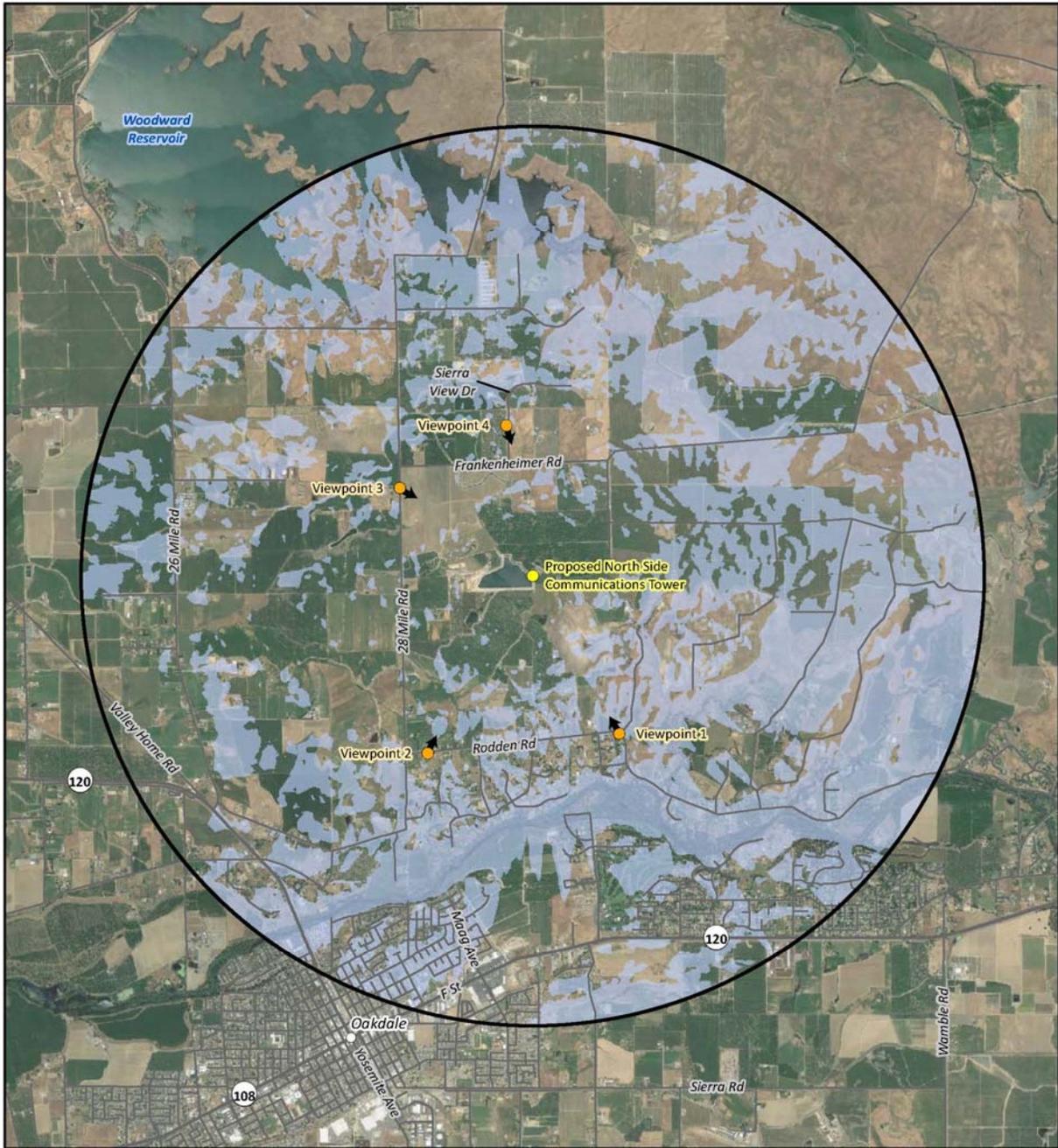
2.2.1 Existing Conditions

The surrounding rural agricultural land generally contains scattered houses and outbuildings for farming operations. The topography features rolling hills. In recent years, there has been an increase in crop conversion from pasture to permanent crops such as almond and walnut trees in the project area. There are no views in the project area that are designated as scenic vistas in adopted plans and there are no views toward the tower site from nearby parks or other public use areas that might be considered as scenic vistas.

2.2.2 Potential Impacts on Visual Resources

Since there are no existing structures similar in height to the proposed tower within the project area, a viewshed analysis with accompanying tower simulations was developed to assist in evaluating the potential visual impact of the project. The views from residential areas were considered to be the most sensitive, and therefore the visual analysis photo locations selected focused on those with the greatest potential to impact nearby residents while remaining within the public road right-of-way. Design drawings of proposed tower were incorporated into the photos to produce computer generated visualizations of what the tower and the surrounding area may reasonably look like after the tower is constructed. In general, the rolling hills topography coupled with the prevalent orchard trees obstruct much of the view of the tower, and the tower’s effect on the visual character of the project vicinity is low. The lattice design allows much of the tower to be visually absorbed into the background while the steel surface will

dull over time, and the proposed obstruction lighting system will not be major sources of light or out of character for the area. In addition, views from roads would be limited and of very short duration. Based on these findings, it is anticipated the tower's effect on visual and aesthetic resources will be less than significant. The results of the viewshed analysis and tower simulation photos are shown in Figures 1 through 5 on the following pages. The entirety of the analysis and its findings are located in Appendix B.



- Proposed North Side Communications Tower
- 3-mile Distance from Proposed North Side Communications Tower
- ➔ Simulation Viewpoint
- Areas within three miles of the communications tower where it will not be visible because of intervening topography.



Figure 1
Visibility Analysis
 Proposed North Side Communications Tower
 Oakdale Irrigation District
 Stanislaus County, California

Basemap Source: Google Earth Pro

\\gall\proj\Oakdale_Irrigation\356965\MapFiles\Visibility_Analysis_180405_104.mxd





a. Existing view from Rodden Road looking north-northwest in the direction of the proposed tower site.



b. Simulated view from Rodden Road that depicts the view with the proposed tower in place. Only the top of the proposed tower will be visible. It is detectable extending above the right side of the knoll located in the center of the view.

Figure 2
Viewpoint 1.
View Toward Project Site from Rodden Road
East of Redfox Drive
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California





a. Existing view from Rodden Road looking north-northeast in the direction of the proposed tower site.



b. Simulated view from Rodden Road that depicts the view with the proposed tower in place. The tower is visible in the distance on the right side of the photo, in the area to the left of the trees in the foreground of the view.

Figure 3
Viewpoint 2.
View Toward Project Site from Rodden Road
East of 28 Mile Road
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California





a. Existing view from 28 Mile Road looking southeast in the direction of the proposed tower site.



b. Simulated view from 28 Mile Road that depicts the view with the proposed tower in place. The top half of the tower is visible in the distance in the area visible between the rows of trees in the center of the view.

Figure 4
Viewpoint 3.
View Toward Project Site from 28 Mile Road at
Mettler Road
Proposed North Side Communications Tower
 Oakdale Irrigation District
 Stanislaus County, California





a. Existing view from Sierra View Drive looking south-southeast in the direction of the proposed tower site.



b. Simulated view from Sierra View Drive that depicts the view with the proposed tower in place. The tower is visible in the distance on the left side of the view.

Figure 5
Viewpoint 4.
View Toward Project Site from Sierra View Drive
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California

2.3 HAZARDS

2.3.1 Existing Conditions

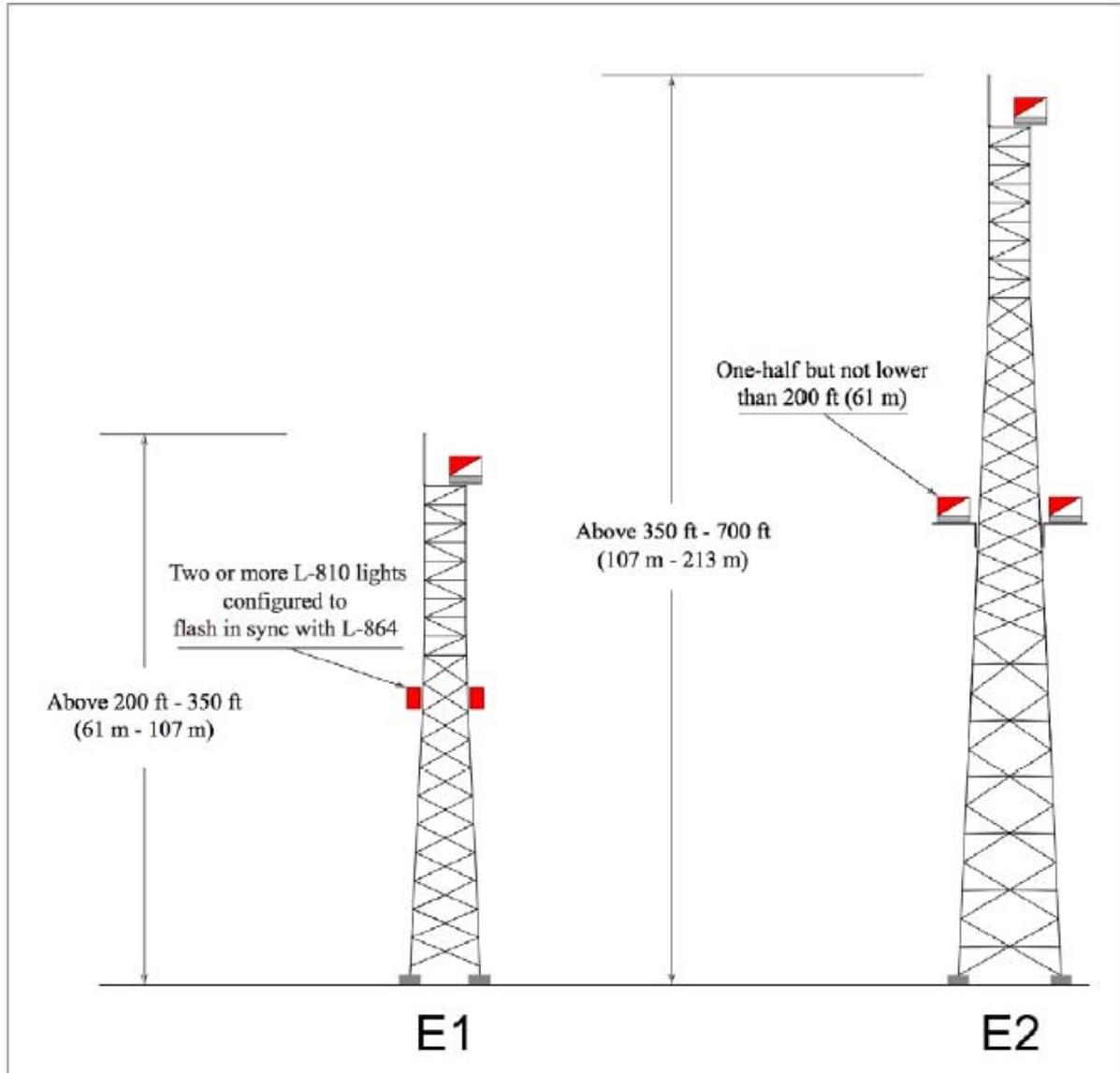
In the absence of the proposed Project, it is anticipated that working conditions at the site will remain the same. Existing hazards include operation of the groundwater well and reservoir gates, heavy equipment traffic, and working near a water body, all of which are typical hazards encountered at many OID job sites. Different OID job classifications require various levels of safety training specific to their duties. Only OID personnel or OID-escorted visitors access the proposed tower site, and the access gates typically remain locked when the site is vacant. There is no storage of oil, fuel, or other hazardous liquids at the site.

2.3.2 Potential Impacts on Hazards and Hazardous Materials

A search performed using the FAA TOWAIR program determined the proposed tower is located 6.19km from the Oakdale Municipal Airport and therefore FAA registration is not required. While the Project is not in the vicinity of a private airstrip, it is possible agricultural aircraft performing crop dusting activities could fly near the tower. Therefore, OID will install a flashing red nighttime obstruction light system on the tower, along with flashing white lights for daytime visibility for low altitude aircraft. While the proposed 190 foot tower is not currently required by the FAA to be lit and/or marked, OID anticipates such regulations will be promulgated in the near future and will adhere to the FAA lighting/marking guidelines that are currently enforced for towers over 200 feet above ground level (AGL). As such, FAA Medium-Intensity Dual Obstruction Light Standard Style E1 will be applied in the tower design. Lights will flash every two seconds (30 flashes per minute) per industry standards. A graphic of the FAA Style E1 is shown on the following page.

MEDIUM-INTENSITY DUAL OBSTRUCTION LIGHT STANDARDS (FAA STYLE E)

Day / Twilight Protection = 20,000 cd White Light
 Night Protection = 2,000 cd Red Light and 32 cd side lights
 (Painting of tower is typically not required)



-  = L-864 / L-865 (Flashing Dual [Red / White] Light
L-864 configured to flash at a rate of 30 fpm (\pm 3 fpm)
-  = L-810 (Single Light)
Configured to flash in sync with L-864

Source: FAA Obstruction Marking and Lighting Advisory Circular dated 10/8/2016, Appendix A

Additionally, the California Agricultural Aviation Association (CAAA) has provided guidance to OID on preferred safety measures from the National Agricultural Aviation Association (NAAA) for tower construction. The applicable guidelines that OID has incorporated as mitigation are included in Table 1 below.

Table 1 Tower Safety Measures

NAAA Tower Safety Guideline	Proposed OID Action
Towers should not be erected on prime agricultural land that may inhibit aerial applicators' access and ability to treat the land.	The proposed tower is sited to be located on OID-owned property that is not under agricultural production.
Petitions for constructing towers should be provided to the local government zoning authority, landowners, and/or farmers and aerial applicators within at least half mile radius of the proposed tower, as well as the state or regional agricultural aviation association, no later than 30 days before construction permits are considered for approval.	The Project Notice of Preparation was distributed to the Stanislaus County Planning Department, local aerial applicators and mosquito abatement, and landowners within a ½ mile radius for comment. The Draft EIR will also be distributed to the above mentioned parties, among others.
If a proposed tower is to be constructed on or within the vicinity of prime agricultural land in a way that may inhibit an aerial applicator's access, the landowner should be made aware that it may result in the land no longer being accessible to aerial applicators.	The tower lighting and notification measures proposed to be put in place for the safety of pilots would reduce the potential impact on their ability to treat land with aerial applications. The neighboring landowners within ½ mile of the Project site will be provided the Draft EIR Notice of Availability (NOA) to inform them of the potential that the proposed tower may inhibit an aerial applicator's access to treat their property.
A proposed tower constructed on prime agricultural land should be freestanding, without guy wires, and well-lit or equipped with strobe lights or properly marked so they are clearly visible to aerial applicators.	The proposed tower will be a freestanding lattice design with no guy wires. It will also have flashing white lights during daytime that transition to flashing red obstruction lights for nighttime visibility. The lights will be located at intermediate and top of structure levels on the tower (approximately 95' AGL and 190' AGL, respectively).
Obstacles' exact locations should be logged in available databases that exist providing precise geographic coordinates of the obstacles.	There are currently no local databases for towers this height. OID will remain apprised

	of developing laws and will comply with all current regulations.
Transponders or ADSB Out signals should be equipped on all towers.	At this time, ASDB Out signals are not required on aircraft or towers of this height. Based upon feedback received from contractors, consultants and operators, OID has found there to be minimal technical support and implementation of this technology. Therefore this recommended guideline has been determined to be underutilized and not cost effective at the current time. OID will remain apprised of developing laws and advancements in technology and will comply with all current and future regulations.
During construction and upon completion, the owner should provide detailed field layout information to the local government zoning authority and make this information available to those working in close proximity to that area.	OID will notify Stanislaus County as well as the adjacent landowners and local aerial applicators of the proposed construction start date, once it has been determined.

Source: NAAA Fact Sheet on the Dangerous Effects Low-Level Obstacles Pose to the Aerial Application Industry, Updated March 2014.

A perimeter grounding system will be installed by OID at the time of the tower foundation construction. The electrical wiring will be connected to the NSRR Groundwater Well pump house via a cable bridge. A safety climb system will be installed on the tower ladder, and fencing will be installed around the completed tower to deter unauthorized individuals from accessing the tower. OID will contract with a third party to construct the tower, which consists of the installation of all tower appurtenances including the lights, cabling, antennas and dish mounts. All future activities that require climbing of the tower, including routine maintenance and appurtenance replacement, will be performed by trained personnel. In accordance with the siting standards of Stanislaus County Code 21.91.030, the proposed tower is proposed to be located a distance of more than twice the tower height from residential properties on adjoining properties.

A search on the California Department of Toxic Substances Control Envirostor Database was conducted and no hazardous materials sites are located within the project area. The only hazardous materials transported to the Project site will be fuel and oil for the vehicles and equipment. To prevent an accidental release of these materials due to a spill, OID will designate equipment repair and cleaning areas within the Project site as part of the project and continue to keep spill cleanup and containment material onsite for quick response and cleanup. It is anticipated that the above noted lighting and safety measures will reduce hazardous conditions to individuals working at or in the Project vicinity to a less than significant level.

2.4 AIR QUALITY, GREENHOUSE GAS EMISSIONS AND GLOBAL WARMING

2.4.1 Existing Conditions

Without construction of the Project, it is anticipated that OID operations at the NSRR property would continue to consist mainly of routine water operations, maintenance and inspection activities. OID staff currently access the site on a daily basis during the irrigation season (March 1 – October 31), resulting in 4-6 vehicle trips per day, and these conditions are anticipated to remain consistent after project completion. Existing equipment at the site consists of a variable frequency drive (VFD) electric pump for the NSRR Groundwater Well, multiple solar-powered flow control gates and measurement devices, and two electrically actuated canal sluice gates which serve as the OID Burnett Lateral Headgate. Maintenance activity occurs on an as-needed basis, and most often consists of routine inspection and maintenance of the reservoir inlet, outlet, and other canal gates within the vicinity.

2.4.2 Potential Impacts on Air Quality, Greenhouse Gas Emissions and Global Warming

Fugitive dust and vehicle/equipment emissions generated during construction are anticipated to be the primary source of any criteria pollutant. OID will adhere to Regulation VIII of the SJVAPCD *Guide for Mitigation and Assessing Air Quality Impacts*. Regulation VIII provides measures that are by law required for all construction projects, aimed at reducing the impacts of PM₁₀. The tower footprint is not expected to exceed 26' x 26', and the tower components will be manufactured at an existing facility and assembled on site. The time necessary to construct the foundation is estimated to take 3-4 weeks, and assembly and stacking of the tower is estimated at 2-3 weeks with a 4 member crew. Given the relatively limited footprint size and short construction timeframe, increases in emissions during the tower construction would be minimal and short-term in nature.

Upon completion of construction, operation-related impacts are anticipated to be insignificant. OID staff currently access the site on a daily basis during the irrigation season (March 1 – October 31), resulting in 4-6 vehicle trips per day, and these conditions are anticipated to remain consistent after project completion. Beyond an annual inspection of the tower lights and cabling, only a visual check of the tower by OID staff tending to their routine duties is anticipated to be required. Six vehicle trips per day falls below the SJVAPCD's threshold for significance for small projects (SJVAPCD, 2012). Less than six daily vehicle trips are anticipated during the non-irrigation season.

The tower foundation will consist of approximately 100.2 cubic yards of concrete, and will be constructed by OID crews. OID is compliant with California Air Resources Board (CARB) regulations, and approximately 80% of OID's equipment is Tier 4. The tower itself would be assembled with the use of a third-party crane operator. The Project is not anticipated to interfere with CARB's long-term goal to reduce greenhouse gas emissions to 1990 levels by 2020. No development would occur as a result of the Project, and the Project's impacts on greenhouse gas emissions are anticipated to be insignificant.

The potential exists for the Project to have a beneficial impact on air quality and global warming by providing a reduction in greenhouse gas emissions. Once operational, the tower will relay

communications from 40 or more automated canal gates and flow measurement devices. The reliable communication will allow the automated Rubicon gates to operate in Total Channel Control (TCC), where they communicate with one another to automatically adjust to changes in downstream water level or flow rate. Traditionally, the canal control structures had gates that were manually adjusted by OID Distribution System Operators (DSOs). With the ability to remotely control the canal gates, it is anticipated that the DSOs will reduce the amount of trips to each canal gate, thereby reducing their overall time spent driving. OID sees this increased efficiency as not only a benefit to OID operations, but to air quality as well.

2.5 LAND USE AND AGRICULTURAL RESOURCES

2.5.1 Existing Conditions

The project site is located within an agricultural zoned area, and the surrounding land use consists mainly of orchards. As previously stated, the property on which the tower is proposed to be constructed has been developed into the NSRR/overflow inventory yard and is not currently under agricultural production. OID expects to maintain ownership of the Project site property into the foreseeable future regardless of the proposed tower construction, and therefore it is reasonable to assume that the Project site would not be placed under agricultural production in the absence of the Project.

2.5.2 Potential Impacts on Land Use and Agricultural Resources

While it is not a direct agricultural use, the proposed tower falls within the Tier Three use classification of the A-2 zoning requirements of Stanislaus County. The tower is intended for OID's SCADA communication, and is not anticipated to induce growth or alter the neighboring land use. Land use on the surrounding parcels currently consists of almond and walnut orchards and irrigated pasture with livestock barns and corrals. Due to the height of the proposed tower, the ability of the neighboring landowners to have their property treated with aerial applications could be impacted, and the Draft EIR NOA will be provided to landowners with ½ mile of the Project site to inform them of such potential impact. The proposed tower will have daytime flashing white lights and flashing red obstruction lights for nighttime visibility. It is anticipated that these safety measures will minimize any impacts to crop dusting activities. Local crop dusting pilots, mosquito abatement, and the California Agricultural Aviation Association (CAAA) have been notified of and provided an opportunity to comment on the proposed project.

2.6 BIOLOGICAL RESOURCES

2.6.1 Existing Conditions

The existing biological setting of the OID service area was reviewed in the WRP PEIR. Vegetation and wildlife communities occurring within the service area were identified, and mitigation and avoidance measures were developed to reduce potential impacts of the proposed WRP projects on biological resources. As it relates to this project specifically, an IS/MND was prepared for the construction of the NSRR which, as previously stated, is located on the same property as the proposed communications tower. Since the construction of the NSRR, the site on which the

tower is proposed to be built has been graded, graveled, and is used to house overflow OID materials inventory.

2.6.2 Potential Impacts on Biological Resources

A search of the California Natural Diversity Database (CNDDDB), the U.S. Fish and Wildlife Information for Planning and Conservation, and Wetlands Mapper was conducted within the Project site. Although there are several species identified by the CNDDDB as threatened or endangered species within the Oakdale Quadrant, the Project site is already developed to support existing OID operations and material storage. There is no evidence to suggest that the Project would result in impacts to sensitive and endangered species or habitats. All construction will occur within OID's existing facility footprint and right of way. The Project site, being an inventory storage area, is routinely maintained and generally kept clear of vegetation. Additionally, the surrounding land use is agricultural, which can be poor habitat due to the agricultural activities (i.e, deep ripping and plowing, harvest, weed abatement, etc.). The project will not conflict with a Habitat Conservation Plan, a Natural Community Conservation Plan, or other locally approved conservation plans.

The avoidance measures that will be incorporated during construction to further reduce any impacts on sensitive species include, but are not necessarily limited to:

- If any species of concern, threatened, or endangered wildlife or wildlife of any kind is discovered in the excavation, it will be allowed to leave of its own volition. If necessary, a qualified wildlife biologist will remove and relocate the animal to a suitable area upon approval of the appropriate state or federal agency.
- Where it is not feasible to schedule construction outside the nesting bird season (generally February 15- August 15), a qualified wildlife biologist will be employed to perform a clearance survey within 72 hours of the proposed start of construction. If active nests are located within the Project site, avoidance buffers will be established as necessary, dependent on the bird species, status, and location of the nest.
- Any equipment left in the Project area will be inspected for wildlife before use each morning.
- Pre-existing access roads will be used and a maximum speed limit of 15 mph will be observed on gravel roads and dirt roads.
- All food and food-related trash items will be removed from the Project site every day to avoid attracting wildlife.
- OID employees will not bring pets onto the Project site.
- All equipment will be maintained to prevent automotive fluid leaks, such as gasoline, oils, or solvents.
- Spill cleanup and containment material will be kept onsite for quick response and clean up.

Once operational, the tower is not anticipated to cause significant impacts on biological resources. The area of largest concern would likely be avian species. When it is necessary to

climb and/or perform maintenance on the tower during the nesting season bird season, a qualified wildlife biologist will conduct a clearance survey prior to the climbing event. Should an active nest be identified on the tower, a work delay or buffer appropriate for the species and nest status will be established per the biologist's recommendation. The proposed tower will be less than 199 feet tall, and be of a lattice self-supporting design that will not require the use of guying or anchor wires. Additionally, the proposed location of the tower consistent with an "already degraded area" considering the location is currently used as an OID material storage area with no vegetation and OID equipment routinely onsite. These features are identified as recommended best practices for communication tower design developed by the U.S. Fish and Wildlife Service to reduce the potential impacts to birds flying through the Project site (USFWS, 2016).

It is anticipated that with the incorporation of the above noted existing conditions, avoidance and mitigation measures, the Project's impacts on biological resources will be less than significant.

2.7 UTILITIES AND PUBLIC SERVICES

2.7.1 Existing Conditions

The existing utility services located at the Project site consist of PG&E-supplied electricity via an underground conduit to serve the OID NSRR Groundwater Well and the actuated canal gates at the Burnett Lateral headgate/reservoir outlet. There are no existing water or sewer services at the site since it is not a permanent work station. A portable toilet is transported to the site as necessary for extended work days. The remaining canal gates on the property are solar powered.

2.7.2 Potential Impacts on Utilities and Public Services

No development is anticipated occur as a result of the Project. Any solid waste generated by construction such as paper, wood, and plastic will be removed from the Project site at the end of each work day and disposed of by OID using existing waste management services. Due to the rural location of the Project site, it is not likely any existing gas, treated water or wastewater pipelines will be affected during construction, however OID will confirm the absence of any such utilities with an Underground Service Alert prior to the start of any construction. Existing electric service at the Project site will be extended from the existing NSRR Groundwater Well (located on the same parcel) to serve the proposed communications tower. OID will coordinate with service providers to extend the facilities without interrupting service to customers. No long term impacts to public services are anticipated as a result of the Project, and no new or expanded entitlements will be necessary.

Once operational, the Project may enhance the performance objectives for OID. The proposed tower will increase the reliability of the SCADA system, which will in turn benefit the District overall by improving the effectiveness of the automated canal gates. The enhanced efficiency of the conveyance systems is expected to allow for better irrigation performance with faster response time and reduced travel time by OID Water Operations personnel.

It is possible that the height of the tower may be attractive to cellular or other communications utilities. Any utility that approached OID for shared use of the tower would be required to complete separate permitting and private access easement acquisition as necessary.

2.8 NOISE

2.8.1 Existing Conditions

The Project site is located in a rural agricultural area, where noise from agricultural practices (i.e. pump and filter stations, equipment used for harvest and orchard maintenance, etc.) currently exists.

2.8.2 Potential Impacts on Noise

A temporary increase in ambient noise levels may be generated during the construction of the proposed communications tower. Work will generally take place during the weekdays between 7:00 am and 4:30 pm. As a public utility, OID construction activities are exempt from the noise level standards of Stanislaus County Code Chapter 10.46.

Permanent noise resulting from the Project would generally occur from operation of a fan or air conditioning unit used to lower the temperature of the electronics housing cabinet in the NSRR Groundwater Well pump house. The air conditioner in the proposed electronics housing cabinet will only be powered on when temperatures exceed the acceptable operating limit for the SCADA communications equipment, which is expected to be a rare occurrence in the summer months. It is not anticipated that the maximum daytime and nighttime noise levels allowed per Stanislaus County Code Chapter 10.46, being 50dB and 45dB, respectively, will be exceeded as a result of the intermittent operation of a fan or air conditioning unit. The proposed communication tower and its appurtenances will be connected to an existing electricity source at the Project site and no generator will be necessary. Therefore, permanent noise resulting from the Project is not anticipated to be greater than existing ambient levels and is therefore insignificant.

2.9 HYDROLOGY AND WATER QUALITY

2.9.1 Existing Conditions

The Project site is bordered by the OID North Main Canal, Rodden High Line Canal, and North Side Regulating Reservoir, all of which are man-made facilities constructed for the sole purpose of conveying irrigation water. The OID facilities typically convey irrigation water between March 1 and October 31 each year. During the non-irrigation season storm water naturally drains into the facilities from the surrounding landscape, however OID is not responsible for the conveyance of storm water. The tower foundation will be located on a level, graded and graveled area, with an existing drain inlet to discharge storm water runoff into the OID Rodden High Line Canal.

2.9.2 Potential Impacts on Hydrology and Water Quality

Given that the proposed tower footprint and area of ground disturbance are relatively small and located on a site that is already graded and graveled, any impacts to hydrology and water quality are anticipated to be less than significant. BMPs included as part of the project such as silt fences and fiber rolls will be utilized as necessary to minimize sediment and erosion during construction of the communications tower. It is anticipated that the maximum area of disturbance will be approximately 0.23 acres, however OID will obtain a SWPPP for the Project should it become necessary to disturb more than 1 acre. It is anticipated that any impacts to storm water quality will be further lessened by the high likelihood that foundation excavation and tower construction will take place during the dry summer months. Construction will be accomplished so as to maintain existing drainage contours to ensure that existing stormflow conveyance will not be affected by the proposed tower. Once the tower is operational, there are no foreseeable impacts to hydrology and water quality. Groundwater supplies will not be depleted or substantially lowered as a result of tower construction or operation.

2.10 CULTURAL AND TRIBAL RESOURCES

2.10.1 Existing Conditions

All OID owned canals and laterals were determined to be ineligible for the National Register of Historic Places by consensus through the Section 106 process (Office of Historic Preservation, 2008). Although many of the canals in OID were constructed between 1910 and 1913, none of these facilities retain integrity to this period, due to alterations during normal OID operations. All ground disturbance and construction will take place within the existing OID canal footprint and right of way.

2.10.2 Potential Impacts on Cultural and Tribal Resources

The site selected for the proposed communications tower is bordered by the OID North Main Canal, Rodden High Line Canal, and the North Side Regulating Reservoir. This site was extensively graded during the excavation and construction of the North Side Regulating Reservoir in 2009. While it is unlikely that any human remains will be discovered during the Project, should there be an incidental discovery of that nature, OID will halt all disturbance of the site until the remains can be identified and relocated, in accordance with Section 15064.5(e) of the CEQA guidelines and statutes.

A search of California Historical Resources was conducted, and there are no currently listed historical resources within the Project area. OID will comply with PRC 21080.3.1 as well as distribute the Draft EIR NOA to local Native American tribes during the public comment period. Should a potential cultural resource be identified during the Project, OID will consider the significance of the resource to California Native American tribes pursuant to Public Resources Code section 21074.

No California Native American tribes have requested to be informed by OID of any proposed projects in their affiliated geographic area. However, local tribes traditionally and culturally

affiliated with the Project area have been included on the distribution list and were sent a Notice of Preparation for the Project; they will also have the opportunity to review and comment on the Draft EIR.

2.11 REMAINING AREAS OF INTEREST ANALYZED

2.11.1 Geology and Soils, Mineral Resources, Population and Housing, Recreation, Transportation and Traffic

The remaining areas of interest reviewed for potential impacts include Geology and Soils, Mineral Resources, Population and Housing, Recreation, Transportation and Traffic. The proposed Project was determined to have either no impact or a less than significant impact on these interests, and as such no further evaluation was deemed necessary. Mineral resources and soils are not anticipated to be impacted by the foundation excavation, and the Project site is not located in a fault zone. Impacts to population and housing, recreation, transportation and traffic would not occur given there would be no increase in growth or commercial development. Operation of the proposed tower would not result in an increase in the traffic to and from the site, and would not contribute to residential or commercial growth in the area.

SECTION 3 – OTHER CEQA CONSIDERATIONS (CUMULATIVE IMPACTS)

OID anticipates that the installation of automated canal gates will continue for the foreseeable future. It is reasonable to predict that two to three additional radio towers will eventually be needed in other regions of the District. The proposed radio tower at the NSRR is necessary at this time due to recent expansion of the TCC system and installation of automated gates in the northwestern quadrant of the District. The need for additional radio towers, in particular on the south side of the District, may be warranted as the District's system is expanded in that region. At this point in time however, the SCADA communication traffic resulting from the south side of the District can and will continue to be facilitated by the existing tower at the OID office and an additional tower is not necessary. There have been no preliminary review or siting studies performed, nor does OID have an estimated time frame of when additional towers would be required. If and when future radio towers are necessary for OID SCADA operations, a separate radio analysis and survey will be completed to determine suitable location(s) and additional environmental documentation will be prepared.

It is possible that the height of the tower may be attractive to cellular or other communications utilities. Any utility that approached OID for shared use of the tower would be required to complete separate permitting and private access easement acquisition from the neighboring landowners as necessary. Potential impacts to resources such as air quality, traffic, public services, noise, etc. could be anticipated with the shared use of the tower by a third party utility. OID would require any such utility to complete a separate environmental assessment to address and mitigate for these impacts. At this point in time such a possibility is more speculative rather than a foreseeable condition, since OID has not been approached by any utilities and therefore the scope of such impacts are unknown.

Reasonably foreseeable projects of a similar nature currently under environmental review within Stanislaus, San Joaquin and Tuolumne Counties were reviewed. The applicable proposed projects include two cellular towers and one radio broadcast tower. The Project is not anticipated to impact those proposed communication facilities for the following reasons: the facilities would be located between 14 and 32 miles from the OID tower, during the FCC licensure process for OID's 900 MHz frequencies it was determined there are no existing licensed sources of interference within 90 miles of the OID tower, and the 5.8GHz frequency is unlicensed and open to all users. There are various tentative parcel and subdivision maps for land within the District boundary currently under review with Stanislaus County. The proposed parcel splits will not create significant growth, and none are located in the immediate vicinity of the Project site. The proposed tower is not anticipated to cause any additional cumulative impacts on those developments.

SECTION 4 – CONSULTATION AND COORDINATION (APPLICABLE LAWS, POLICIES AND PROGRAMS)

- SJVAPCD: jurisdiction over any potential impacts on air quality within the project area. OID will comply with the SJVAPCD Regulations, including Regulation VIII for dust abatement.
- CDFW has jurisdiction over state-listed species and any potential take of these species.
- OID will prepare a SWPPP if necessary (i.e, project area of ground disturbance becomes larger than 1 acre) in accordance with the State Water Resources Control Board.
- OID has not received any requests for consultation from any Native American Tribes, however the NOP and Draft EIR NOA were distributed to tribes traditionally and culturally affiliated with the Project area.
- The CAAA was consulted regarding the NAAA proposed regulations for towers under 200 feet, and safety measures for low altitude agricultural aircraft.
- FCC approval was required for a licensed 900 Hz radio frequency that will be used for the tower communications. OID may incorporate other frequencies for communication as necessary in the future, and FCC approval will be required for any of those licensed frequencies.
- The tower is not subject to current FAA regulations since it is under 200 feet above ground level (AGL).

SECTION 5 - LIST OF PREPARERS

- Steve Knell, General Manager, OID – Draft EIR Technical Input and Review
- Eric Thorburn, Water Operations Manager, OID - Draft EIR Technical Input and Review
- Emily Sheldon, Associate Engineer, OID – Draft EIR Preparation

Counsel and consultants who participated in the preparation of the Draft EIR include the following:

- William C. Paris, III, O’Laughlin & Paris LLP
- Mark Oliver, CH2M HILL, a Jacobs Company
- Tom Priestley, CH2M HILL, a Jacobs Company

SECTION 6 – REFERENCES

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Appendix A

Notice of Preparation Comments Received and Responses

NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
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Received
Edmund G. Brown Jr., Governor

FEB 06 2018

Oakdale ID



No. 1 Native American Heritage Commission
January 31, 2018

January 31, 2018

Steve Knell
Oakdale Irrigation District
1205 East F Street
Oakdale, CA 95631

RE: SCH#2018012019, North Side Communications Tower, Stanislaus County

Dear Mr. Knell:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). **If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared.** (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

1-1 OID will comply with all applicable laws including AB 52 and SB 18. OID has not been contacted by any Native American tribes requesting to be notified of projects, nor received a consultation request for this specific Project. OID has distributed the Notice of Preparation to the Native American tribes traditionally and culturally affiliated with the Project area, and those tribes will receive the Draft EIR for review as well. To date OID has not received any comments from the tribes.

1-1

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. **Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:** Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
 - a. A brief description of the project.

- b. The lead agency contact information.
 - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
 - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).
2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subs. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
 - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).
 3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
 - a. Alternatives to the project.
 - b. Recommended mitigation measures.
 - c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).
 4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
 - a. Type of environmental review necessary.
 - b. Significance of the tribal cultural resources.
 - c. Significance of the project's impacts on tribal cultural resources.
 - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).
 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).
 6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
 - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
 - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).
 7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
 - a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
 - b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).
 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources

Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. **Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).
10. **Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
 - a. Avoidance and preservation of the resources in place, including, but not limited to:
 - i. Planning and construction to avoid the resources and protect the cultural and natural context.
 - ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - i. Protecting the cultural character and integrity of the resource.
 - ii. Protecting the traditional use of the resource.
 - iii. Protecting the confidentiality of the resource.
 - c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
 - d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
 - e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
 - f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).
11. **Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
 - a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
 - b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
 - c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
 - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
 - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at:
<http://nahc.ca.gov/resources/forms/>

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
 - a. If part or all of the APE has been previously surveyed for cultural resources.
 - b. If any known cultural resources have been already been recorded on or adjacent to the APE.
 - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
 - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
 - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.
3. Contact the NAHC for:
 - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
 - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
- a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
 - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
 - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subs. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov.

Sincerely,



Sharaya Souza
Staff Services Analyst
(916) 573-0188

cc: State Clearinghouse



RECEIVED
FEB 12 2018
OAKDALE ID



Central Valley Regional Water Quality Control Board

8 February 2018

Steve Knell
Oakdale Irrigation District
1205 East F Street
Oakdale, CA 95361

CERTIFIED MAIL
91 7199 9991 7035 8419 4089

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, NORTH SIDE COMMUNICATIONS TOWER PROJECT, SCH# 2018012019, STANISLAUS COUNTY

Pursuant to the State Clearinghouse's 17 January 2018 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the North Side Communications Tower Project, located in Stanislaus County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases,

2-1

**No. 2 Central Valley Regional Water Quality Control Board
February 8, 2018**

2-1 The proposed Project will be consistent with existing Basin Plans. The Project is not anticipated to have any impact on water quality objectives of the Basin Plans.

the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

2-1 cont.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:
http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

2-2

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan

2-3

2-2 The Project will not involve the discharge of wastewater. The Best Management Practices (BMPs) that are proposed to be incorporated into the Project are anticipated to minimize any impact to surface or groundwater quality altogether.

2-3 A SWPPP is not required for the Project given that the construction site and area of ground disturbance is anticipated to be considerably less than one acre.

(SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits¹

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

} 2-4

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Caltrans Phase I MS4 Permit, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/caltrans.shtml.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

} 2-5

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the

2-4 There is no development or redevelopment included in the Project, therefore this permit is not required.

2-5 There is no industrial site development included in the Project, therefore this permit is not required.

¹ Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

2-6

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance (i.e., discharge of dredge or fill material) of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

2-7

Waste Discharge Requirements (WDRs)

Discharges to Waters of the State

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

2-8a

Land Disposal of Dredge Material

If the project will involve dredging, Water Quality Certification for the dredging activity and Waste Discharge Requirements for the land disposal may be needed.

2-8b

Local Agency Oversight

Pursuant to the State Water Board's Onsite Wastewater Treatment Systems Policy (OWTS Policy), the regulation of septic tank and leach field systems may be regulated under the local agency's management program in lieu of WDRs. A county environmental health department may permit septic tank and leach field systems designed for less than 10,000 gpd. For more information on septic system regulations, visit the Central Valley Water Board's website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/owts/sb_owts_policy.pdf

2-8c

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

2-6 There is no discharge of dredged or fill material into navigable waters or wetlands included in the Project, therefore a 404 Permit is not required. No surface water drains will be realigned as part of the Project.

2-7 A 404 permit or other federal permit is not required; therefore a 401 Water Quality Certification is not required.

2-8a Construction will not take place within waters of the State. OID will incorporate BMPs to prevent discharge to any waterway.

2-8b The Project will not involve dredging and/or disposal of dredged material; therefore neither a Water Quality Certification nor a WDR for land disposal is required.

2-8c The Project does not include the installation of any septic tank and leach field systems.

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

2-9

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

2-10

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.
2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100.** Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently \$1,084 + \$6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the

2-9 The Project does not include construction or groundwater dewatering to be discharged to the land; therefore coverage under these permits is not required.

2-10 The land use of the surrounding private property is agricultural; however, all work will take place within OID's existing right-of-way and therefore this coverage is not required for the Project.

Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

2-11

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of the waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit.

2-12

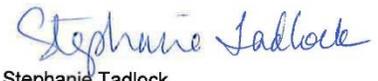
For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit3.shtml

2-11 There will be no discharge to groundwater or waters of the United States.

2-12 The Project will not involve the discharge of water into waters of the State.

8 February 2018

If you have questions regarding these comments, please contact me at (916) 464-4644 or
Stephanie.Tadlock@waterboards.ca.gov.



Stephanie Tadlock
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

O.I.D.
RECEIVED
FEB 14 2018
OAKDALE ID

February 14, 2018

Oakdale Irrigation District
1205 East F Street
Oakdale, CA 95361
Attention: Steve Knell, General Manager

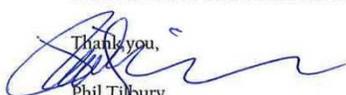
Subject: North Side Communications Tower Project
Site Construction Questions/Comments

Dear Mr. Knell,

Thank you for the notification of the proposed 190' tall tower to be installed at the OID north side regulating reservoir? The Tilbury residence is in clear site line to the proposed project location, therefore I have the following questions and concerns:

1. Will an artist rendering be made available of the finished tower installation from our residence? } 3-1
2. Will any additional electrical power lines, above or below ground, be required to cross our property } 3-2
3. Will any disruptions to satellite, cell, over air television service, etc. be experienced? } 3-3
4. What will be the amount of increased maintenance personnel, equipment and traffic? What is the estimated number of construction workers on site during the tower construction? } 3-4
5. What is the anticipated route to the jobsite that will be used by OID's subcontractors/suppliers? } 3-5
6. What will be the construction schedule? } 3-6
7. Construction access road maintenance and dust control } 3-7
A) Road access maintenance from 28 Mile Road to the tower site
8. Erection crane move-in/mobilization } 3-8
A) What will be the route of travel for the erection crane (wide permit load and overweight permits)?
9. What will be the tower sections delivery route to the installation site? } 3-9

Please call me so that we can discuss my questions and concerns.

Thank you,

Phil Tilbury
Phone No. 209-838-6550

**No. 3 Tilbury
February 14, 2018**

3-1 OID will provide a visual analysis of the proposed tower, however the analysis will not include a view from the Tilbury residence. OID selected viewpoints with the potential to impact the largest amount of sensitive viewers, and therefore the viewpoints are located within the public road right-of-way in residential areas.

3-2 The existing power source at the NSRR Groundwater Well is sufficient to power the proposed tower and there will not be any additional electrical power lines required for the Project.

3-3 Reliable radio communication is essential for effective and efficient operations through OID's SCADA system. The radio site survey was completed to test for interference from existing sources over a range of different frequencies. OID has acquired a licensed and designated 900 MHz radio frequency to prevent interruption to and/or from other current or future users of radio communications in the surrounding area. The licensed 900MHz frequency will be used for communication to/from remote sites and the new tower. A higher frequency or licensed microwave equipment is recommended in the radio study for communications to/from the new tower and the OID office due to the amount of data being transmitted. The unlicensed 5.8GHz was found to have limited surrounding interference and was selected as a viable option at this time, given the existing tower structure at the OID office is not adequate to support microwave equipment. Should this be found to be an issue in the future due to other competing users of the unlicensed frequency, licensed microwave equipment will be deployed and a new tower constructed at the OID office. OID does not anticipate any disruption to existing satellite, cell, or over air television service at the Tilbury residence or elsewhere.

3-4 It is estimated that up to 6 OID crew members will be on site during the excavation, forming and pouring of the concrete foundation. Tower assembly is likely to include a contracted 4 member crew in addition to 2-3 OID staff members.

3-5 OID and its contractors/suppliers will access the Project site from 28 Mile road via the OID Burnett Lateral canal bank.

3-6 Foundation construction is estimated to take 3-4 weeks, followed by an estimated tower assembly time of 2-3 weeks.

3-7 OID will comply with Regulation VIII fugitive dust mitigation requirements, and a water truck will be used for dust control as necessary.

3-8 OID and its contractors/suppliers will access the Project site from 28 Mile road via the OID Burnett Lateral canal bank. The tower manufacturer has visited the Project site and believes the Burnett canal bank is sufficient for the crane mobilization.

3-9 OID and its contractors/suppliers will access the Project site from 28 Mile road via the OID Burnett Lateral canal bank. The tower manufacturer has visited the Project site and believes the Burnett canal bank is sufficient for delivery of the tower materials.



CHIEF EXECUTIVE OFFICE
 Received
 FEB 19 2018
 Oakdale ID
 Jody L. Hayes
 Chief Executive Officer
 Patricia Hill Thomas
 Chief Operations Officer/
 Assistant Executive Officer
 Keith D. Boggs
 Assistant Executive Officer
 Patrice M. Dietrich
 Assistant Executive Officer

**No. 4 Stanislaus County Environmental Review Committee
 February 15, 2018**

4-1 OID has received and responded to the comments provided by the Stanislaus County Planning and Community Development Department.

STANISLAUS COUNTY ENVIRONMENTAL REVIEW COMMITTEE

February 15, 2018

Steve Knell, P.E. General Manager
 Oakdale Irrigation District
 1205 East F Street
 Oakdale, CA 95361

SUBJECT: ENVIRONMENTAL REFERRAL – OAKDALE IRRIGATION DISTRICT – NORTH SIDE COMMUNICATIONS TOWER PROJECT – NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT

Mr. Knell:

Thank you for the opportunity to review the above-referenced project.

The Stanislaus County Environmental Review Committee (ERC) has reviewed the subject project and submits the attached comments provided by the Planning and Community Development Department.

} 4-1

The ERC appreciates the opportunity to comment on this project.

Sincerely,

Patrick Cavanah
 Sr. Management Consultant
 Environmental Review Committee

PC:ss

cc: ERC Members

Attachments (5 pages)



**PLANNING AND COMMUNITY
DEVELOPMENT DEPARTMENT**

**Angela Freitas
Director**

1010 10th Street, Suite 6800, Modesto, CA 95354
Post Office Box 3404, Modesto, CA 95353-3404

Phone: 209.525.6330 Fax 209.525.5911

**No. 5 Stanislaus County Planning and Community Development
Department
February 14, 2018**

February 14, 2018

Steve Knell
Oakdale Irrigation District
1205 East F Street
Oakdale, CA 95361

Received

FEB 14 2018

Oakdale ID

**SUBJECT: ENVIRONMENTAL REFERRAL – OAKDALE IRRIGATION DISTRICT–
NOTICE OF PREPARATION NORTHSIDE COMMUNICATIONS TOWER
PROJECT EIR**

Mr. Knell:

Thank you for the opportunity to review the Notice of Preparation (NOP) of the Environmental Impact Report for the above-referenced project. The description of the project stated in the NOP is as follows:

“The OID has over 80 automated canal gates and flow meters currently incorporated into its Supervisory Control and Data Acquisition (SCADA) system, and continues to expand canal automation as part of modernization and increased efficiency efforts identified in the district’s Water Resources Plan and associated Programmatic EIR for the program. As the SCADA system continues to grow, the need has arisen for a new tower to intercept and relay radio communications to and from the OID office and the remote automated gate and meter sites.

“The North Side Communications Tower Project (Project) will involve the installation of one 190’ tall tower at the OID North Side Regulating Reservoir located approximately three miles northeast of the City of Oakdale in Stanislaus County. The proposed communications tower will be located at an area of the OID North Side Regulating Reservoir that is currently being used as a laydown area and inventory yard for OID materials. The tower will be a self-supporting lattice design and will be located approximately 2,100 feet from the nearest residence. It is anticipated that the tower will have either daytime lighting or aviation orange and white marking, as well as nighttime red obstruction lighting for the safety of low altitude aircraft. The tower’s concrete pad foundation is anticipated to be approximately 26’ x 26’ x 4’ deep, and the tower components will be manufactured at an existing facility and assembled onsite.

“Due to the relatively short construction time frame, minimal area of ground disturbance during construction, and existing use of the site for OID operations, the only potentially significant impact OID has identified upon completion of an Initial Study pertains to aesthetic issues. OID intends to prepare a project Environmental Impact Report (EIR) to address the potentially significant aesthetic impacts, which may be unavoidable.”

ENVIRONMENTAL REFERRAL – OAKDALE IRRIGATION DISTRICT– NOTICE OF PREPARATION NORTHSIDE COMMUNICATIONS TOWER PROJECT EIR
Page 2

The Stanislaus County Planning and Community Development Department has reviewed the project description and has the following comments:

Stanislaus County’s Zoning Ordinance Chapter 21.91.030(A)(3) Siting Standards, states, “The communication facilities shall not significantly displace or impair agricultural operations, including crop dusting, on the subject parcel or surrounding parcels.” Planning staff suggests that potentially significant environmental impacts to agricultural resources be considered and evaluated in the proposed environmental assessment, specifically in terms of ensuring the project does not negatively impact crop dusters currently operating in the area.

5-1

Additionally, in accordance with Stanislaus County’s Zoning Ordinance Chapter 21.91.030(B)(1) Siting Standards, the County encourages new communication towers to be a monopole design, rather than a lattice tower.

5-2

Planning appreciates the opportunity to comment on this project.

Sincerely,



Kristin Doud
Senior Planner

Attachment: Chapter 21.91 Communication Facilities (Stanislaus County Zoning Ordinance)

5-1 OID has considered the impacts to agricultural resources, and incorporated safety measures as part of the Draft EIR development. The impacts to agricultural resources and crop dusting activities are anticipated to be less than significant.

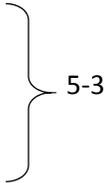
5-2 The lattice design was selected for its feasibility, given the proposed 190 foot tower height and site location.

CHAPTER 21.91

COMMUNICATION FACILITIES

SECTIONS:

- 21.91.010 **APPLICABILITY**
- 21.91.020 **APPROPRIATE AUTHORITY**
- 21.91.030 **SITING STANDARDS**
- 21.91.040 **CO-LOCATION PREFERRED**
- 21.91.050 **AESTHETIC CONSIDERATIONS**
- 21.91.060 **OTHER REQUIREMENTS**



5-3 The Stanislaus County siting standards and other preferences have been considered by OID, and incorporated into the Project where feasible.

21.91.010 APPLICABILITY

The regulations set forth in this chapter shall apply to the location in all zoning districts of all communication facilities, including communication towers, antennas, microwave dish antennas, and equipment shelters, except the following:

- A. Conventional television antennas, amateur radio antennas and similar types of communication equipment for personal, non-commercial use, and that are not over 60 feet above ground level, are not subject to the requirements of this chapter.
- B. Commercial communication facilities in industrial or commercial zoning districts that are not over 75 feet above ground level are not subject to the requirements of this chapter.
- C. Microwave dish antennas for personal, non-commercial use, and commercial microwave dish antennas less than three feet in diameter that receive signals only are not subject to the requirements of this chapter. (Commercial microwave dish antennas that are greater than three feet in diameter or that send signals are subject to the requirements of this chapter.)

21.91.020 APPROPRIATE AUTHORITY

Communication facilities, including communication towers, antennas, microwave dish antennas, and equipment shelters, may be permitted in any zoning district subject to approval of a use permit or staff approval permit by the appropriate authority as follows:

- A. Planning Director--Any communication facilities that meet the siting standards of this chapter are subject to a staff approval permit, pursuant to Chapter 21.100. Prior to action by the Planning Director on communication facilities in the A-2 (General Agriculture) district, surrounding property owners and appropriate agencies shall be notified as provided in Section 21.96.040(A).
- B. Planning Commission--Any communication facilities, including ancillary equipment buildings, that do not meet the siting standards of this chapter are subject to issuance of a use permit by the Planning Commission, pursuant to Chapter 21.96.

21.91.030 SITING STANDARDS

A. General standards

The following standards apply to all communication towers, antennas, microwave dish antennas, and equipment shelters:

1. The facility shall be located in any area other than a residential district or historical site (H-S) district or an area designated Residential on the General Plan map.
2. The facility shall meet all yard requirements for structures in the particular zoning district in which it is located.
3. The communication facilities shall not significantly displace or impair agricultural operations, including crop dusting, on the subject parcel or surrounding parcels.
4. Identification signs, including emergency phone numbers of the service provider, shall be posted at all tower and equipment sites.
5. All unused or obsolete towers and equipment shall be removed from their respective sites within six months after their operation has ceased, at the landowner's expense.

B. Siting standards for communication towers

1. The tower shall be a monopole design unless the Planning Director determines that it would not be visible to the general public, in which case a lattice tower design may be approved.
2. The height of the tower shall not exceed 130 feet above ground level.
3. The tower shall be located a distance equal to at least twice the height of the tower from residential structures on adjoining properties.

C. Siting standards for antennas, including microwave dish antennas

1. Antennas may be mounted on communication towers, water towers, billboards, building facades, or other structures if they are screened or mounted in an aesthetically acceptable manner. Both the antenna and any screening structure are subject to all applicable building code requirements including building structure and wind load integrity.
2. The overall height of the antenna, including mounting hardware or base, shall not exceed ten feet above the height of the building or structure on which it is mounted, or the height of the building plus the horizontal distance from the antenna to the edge of the roof, whichever is greater.

D. Equipment shelters shall be a maximum of 600 square feet in size.

21.91.040 CO-LOCATION PREFERRED

To minimize the number of communication towers throughout the County, service providers shall employ all reasonable measures to co-locate their antenna equipment on existing towers prior to applying for approval of new towers. All County agencies and service providers shall be encouraged to permit co-location of microwave dishes and cellular facilities on appropriate existing structures subject to reasonable engineering requirements.

21.91.050 AESTHETIC CONSIDERATIONS

Decisions on use permits or staff approval permits may take into consideration the aesthetic impact of the proposed microwave dish antennas and/or communications facilities and may include conditions of approval for the purpose of reducing the visual impact of the antenna and/or facility as seen from adjacent properties or for the purpose of reducing the potential of safety or health hazards. Such conditions may include, but are not limited to partitions, screening, landscaping, mountings, fencing, height of antenna, and site location within the parcel.

21.91.060 OTHER REQUIREMENTS

In addition to the requirements listed herein, cellular communication facilities are subject to all other applicable regulations and permits, including those of the Public Utilities Commission (PUC) of the State of California and the Federal Communication Commission (FCC).

Appendix B

Viewshed Study and Visual Analysis
Prepared by CH2MHill, a Jacobs Company

Viewshed Analysis/Simulations of Proposed North Side Communications Tower

PREPARED FOR: Emily Sheldon – Oakdale Irrigation District
COPY TO: Mark Oliver - CH2M HILL/Jacobs
PREPARED BY: Thomas Priestley, Ph.D., AICP/ASLA - CH2M HILL/Jacobs
DATE: April 26, 2018

In response to your request, CH2M HILL has prepared a viewshed analysis to identify the areas from which the proposed North Side Communications Tower would be visible, and simulations that provide an understanding of the effects that these towers would have on four representative views in the project area. The results of the viewshed analysis are presented on Figure 1, and photos of the existing views from four viewpoints (an additional viewpoint and simulation was developed in addition to the originally identified three locations) and simulations of the appearance of these views with the project in place are presented on Figures 2 through 5. These figures are attached. The remainder of this letter describes the methods used to generate the viewshed analysis and prepare the simulations and provides a brief evaluation of the anticipated visual changes.

Viewshed Analysis

The Northside Communications Tower viewshed analysis was undertaken to identify the areas in the project vicinity where the proposed communications tower would have the potential to be visible, and the areas where the tower would not be visible because views toward it would be blocked by intervening topographic conditions. The viewshed analysis was conducted using geographic information system (GIS) software to generate an understanding of the proposed tower's visibility in the area that extends up to 3 miles (the approximate maximum distance the tower would be of potential visual concern) from the tower site. The analysis took into account the maximum height of the proposed tower (190 feet) to identify locations where there would be unobstructed or partial line-of-sight views toward it. This analysis considered the extent to which topography would block views toward the tower, but conservatively did not account for the potential screening effects of existing buildings and vegetation. The results of the viewshed analysis are presented in Figure 1, which indicates the areas within 3 miles of the project in which the proposed Northside Communications Tower would have the potential to be visible, as well as the areas where views toward the communications tower would be blocked by topography. Because of the extensive orchard development and other tree cover in the analysis area, in many of the areas where the viewshed analysis indicates that the proposed tower is not screened by topography, actual views would generally be limited due to screening by trees.

Selection of Viewpoints and Preparation of Simulations

To provide an understanding of the anticipated appearance of the proposed communication tower and how/the extent to which it will change existing views toward the tower site, four views were selected based on potential visibility and the visual sensitivity and representativeness of the view locations. During visits to the project area in March 2018, OID staff visited locations around the project site where the proposed tower would have the potential to be seen by members of the public. From each of the views, photographs were taken to provide the basis for development of a simulation to depict the view

as it would appear with the proposed tower in place. The photographs used as the basis for the simulations were all taken with a digital camera with a lens whose focal length was set to take photos equivalent to photos taken with a 35-mm film camera with a 50-mm lens. Based on consultation with OID staff, four representative views were selected for simulation:

- Viewpoint 1 - looking north from Rodden Road at the curve in the road east of Redfox Drive.
- Viewpoint 2 - view from Rodden Road at a location east of 28-Mile Road.
- Viewpoint 3 - looking southeast from 28 Mile Road at Mettler Road.
- Viewpoint 4 - view looking south from Sierra View Road

In preparing the simulations, a single photo frame was used for each of the views. Computer modeling and rendering techniques were used to produce the simulated images. Existing topographic and site data provided the basis for developing an initial digital model. OID staff provided site plans and data on the design of the proposed communications tower. These were used to create a three-dimensional (3-D) digital model of the proposed tower. This model was then combined with the digital site model to produce a complete computer model of the proposed project.

For each simulation viewpoint, a viewer location was digitized from topographic maps and scaled aerial photographs, using five feet as the assumed viewer eye level. Computer “wire frame” perspective plots were then overlaid on the photographs of the views from the simulation viewpoints to verify scale and viewpoint location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of base photographs. The final “hardcopy” visual simulation images that appear in the figures were produced from the digital image files using a color printer.

For each view, two figures are presented. The first of the figures for each viewpoint (Figures 2a, 3a, 4a, and 5a) presents a photo of the view as it now exists. The second of the figures (Figures 2b, 3b, 4b and 5b) presents the simulations of the views as they would appear with the project in place.

Interpretation of the Simulations

Although Viewpoint 1 is located in an area along Rodden Road where Figure 1 indicates that views toward the proposed communications tower will, for the most part, be screened by intervening topography, the viewpoint is located at a spot where there is a break in the screening that provides a small window of visibility. In Figure 2b, the simulation of the view from Viewpoint 1, a small portion of the top of the tower can be seen extending slightly above the top of the right side of the knoll located in the center of the view. Because the tower will be barely detectable, it will have little to no effect on the visual character and quality of this view.

In the view from Viewpoint 2 along Rodden Road east of 28 Mile Road (Figure 3b), the tower is visible in the background in the right portion of the view. Because of the tower’s distance, the screening of its lower portion by a row of trees and the backdropping of its middle section by the distant mountains, it is, to a large degree, visually absorbed into the view. Because the tower is not out of scale with the view’s foreground elements and because there is a high degree of visual absorption, its effect on the overall visual character and quality of this view is low.

In the view from Viewpoint 3 along 28 Mile Road at Mettler Road (Figure 4b), the top half of the tower is visible between the rows of trees, extending above the ridgeline in the distance. In this view, the tower is in scale with the trees seen in the foreground of the view, and its see-through lattice steel construction reduces its visual contrast with its sky backdrop. As this simulation suggests, views of the tower from this portion of 28 Mile Road will be fleeting for those driving on the road because the tower will only be visible at moments when viewers are at spots where there are views toward it straight up

the open rows between the orchard trees. Overall, the effect of the proposed tower on the visual character and quality of views from this portion of Mettler Road will be low.

In the view from Sierra View Drive (Figure 5b), the tower is visible along the horizon at the far-left side of the view. Here, the base of the tower is hidden behind orchard trees. Although the rest of the tower is seen against the sky, its see-through lattice steel construction reduces the degree of visual contrast. Although the tower will be readily visible in this view, its overall effect on the visual character and quality of the view will be low.

Assessment of the Potential Visual Impacts

Based on assessment of the project's visual effects as seen in the simulation and on evaluation of other information about the project setting, an initial evaluation is presented here to assist OID in the evaluation of potential visual impacts in terms of the CEQA Appendix G Checklist related to aesthetic impacts:

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

A scenic vista generally provides focal views of objects, settings, or features of visual interest; or panoramic views of large geographic areas of scenic quality, primarily from a given vantage point. A significant impact may occur if the proposed project introduces incompatible visual elements within a field of view containing a scenic vista or substantially alters a view of a scenic vista. There are no views in the project area that are designated as scenic vistas in adopted plans and there are no views toward the tower site from nearby parks or other public use areas that might be considered as scenic vistas.

Consequently, the project will have no impact on scenic vistas.

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

Because there are no adopted state scenic highways in the project area from which the proposed tower would have the potential to be visible, **the project will have no impacts on state scenic highways.**

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

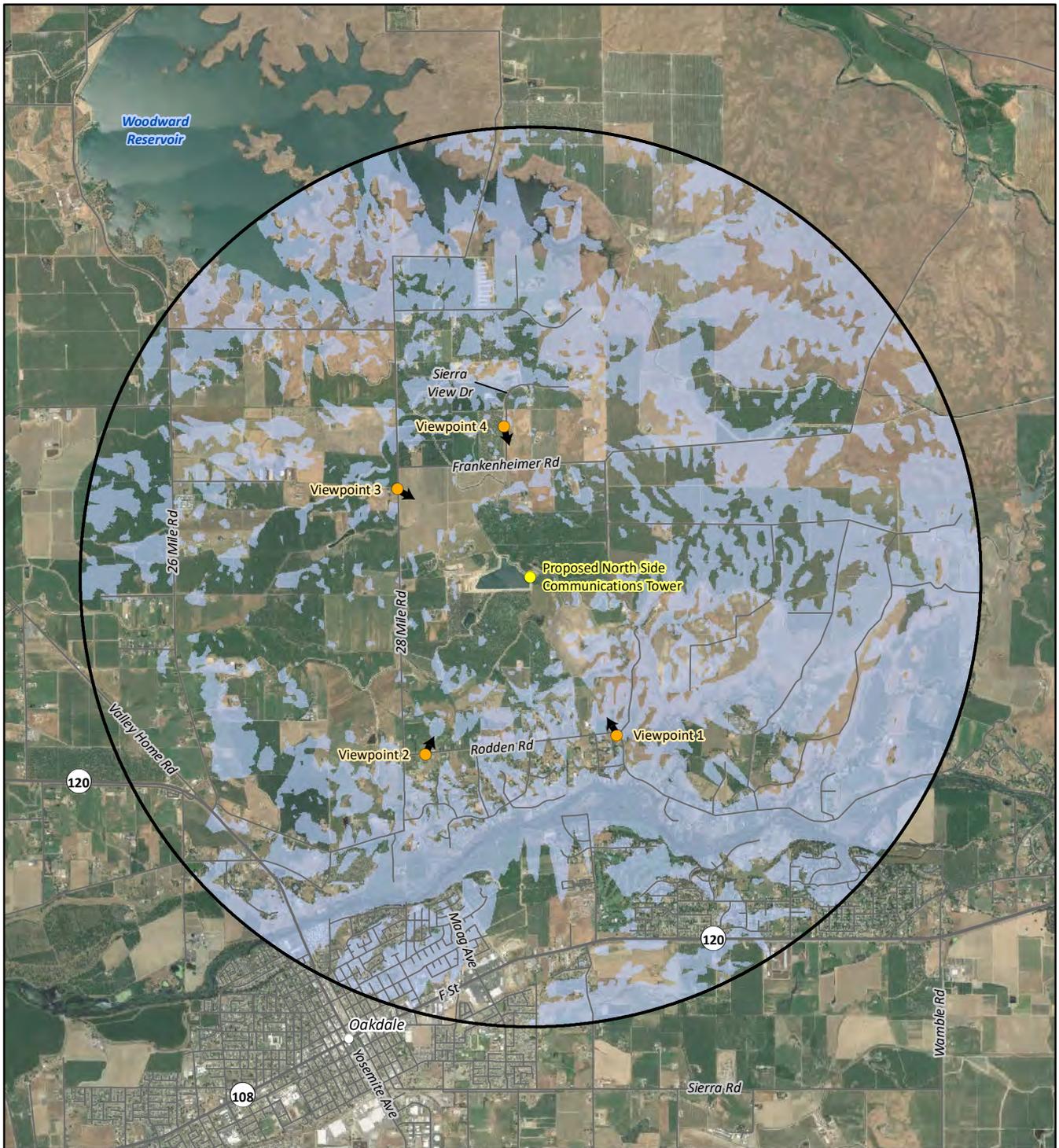
Review of the simulations indicates that although the proposed communications tower will be visible to varying degrees from publicly accessible areas in the project vicinity, the degree of visual change will range from barely detectable (Viewpoint 1) to nearly fully visible, but with at most a moderate degree of effect on the visual character and quality of the view (Viewpoint 4).

Consequently, **the tower's impact on the existing visual character or quality of the site and its surroundings will be less than significant.**

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

The project area is one in which there is existing nighttime lighting related to light sources at ranches and residences. The proposed project will introduce one or more points of flashing red aviation safety lights. **Although these lights will be visible, they will not be major sources of light or out of character for the area, and will be seen in the context of the area's existing nighttime lighting, thus resulting in a less than significant impact.**

Because the tower will be constructed of lattice steel whose surface will dull over time, it will not create reflections that will have an adverse effect on daytime views.



- Proposed North Side Communications Tower
- 3-mile Distance from Proposed North Side Communications Tower
- ➔ Simulation Viewpoint
- Areas within three miles of the communications tower where it will not be visible because of intervening topography.



Figure 1
Visibility Analysis
 Proposed North Side Communications Tower
 Oakdale Irrigation District
 Stanislaus County, California

Basemap Source: Google Earth Pro





a. Existing view from Rodden Road looking north-northwest in the direction of the proposed tower site.



b. Simulated view from Rodden Road that depicts the view with the proposed tower in place. Only the top of the proposed tower will be visible. It is detectable extending above the right side of the knoll located in the center of the view.

Figure 2
Viewpoint 1.
View Toward Project Site from Rodden Road
East of Redfox Drive
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California



a. Existing view from Rodden Road looking north-northeast in the direction of the proposed tower site.



b. Simulated view from Rodden Road that depicts the view with the proposed tower in place. The tower is visible in the distance on the right side of the photo, in the area to the left of the trees in the foreground of the view.

Figure 3
Viewpoint 2.
View Toward Project Site from Rodden Road
East of 28 Mile Road
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California



a. Existing view from 28 Mile Road looking southeast in the direction of the proposed tower site.



b. Simulated view from 28 Mile Road that depicts the view with the proposed tower in place. The top half of the tower is visible in the distance in the area visible between the rows of trees in the center of the view.

Figure 4
Viewpoint 3.
View Toward Project Site from 28 Mile Road at
Mettler Road
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California



a. Existing view from Sierra View Drive looking south-southeast in the direction of the proposed tower site.



b. Simulated view from Sierra View Drive that depicts the view with the proposed tower in place. The tower is visible in the distance on the left side of the view.

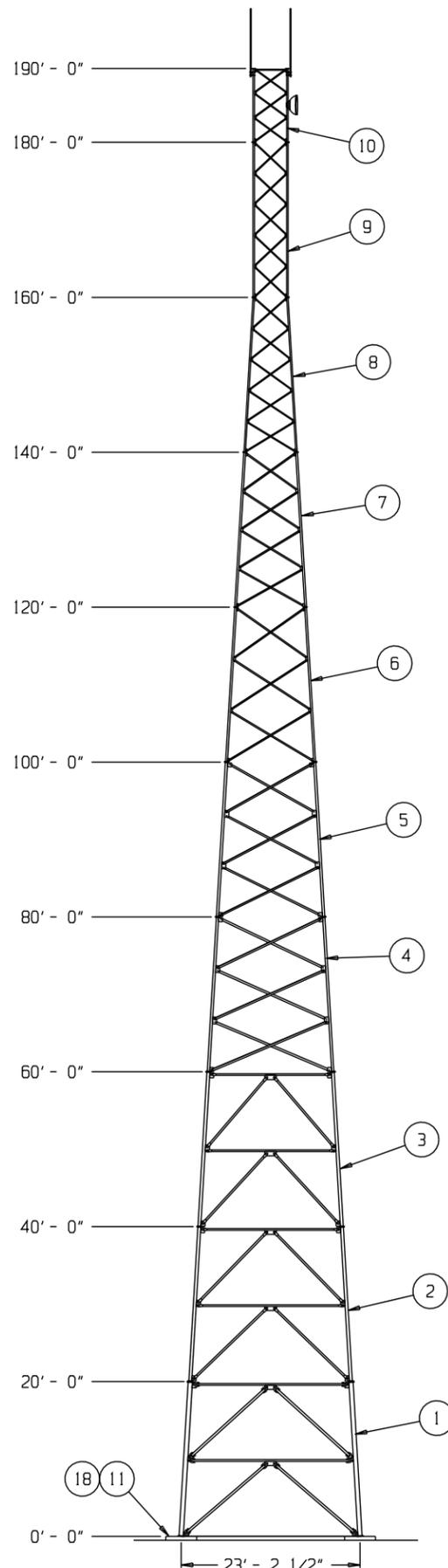
Figure 5
Viewpoint 4.
View Toward Project Site from Sierra View Drive
Proposed North Side Communications Tower
Oakdale Irrigation District
Stanislaus County, California

Appendix C

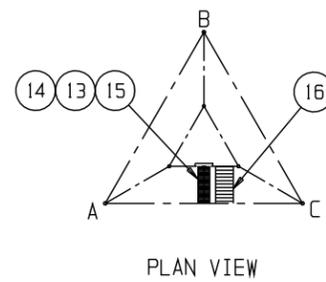
TKD-190'-309 Self Support Tower Project Elevation Detail
Prepared by Tashjian Tower Corporation

NOTES:
UNLESS OTHERWISE SPECIFIED

1. THE GENERAL CONTRACTOR MUST VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS BEFORE STARTING WORK. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER IN ACCORDANCE WITH ACCEPTED CONSTRUCTION PRACTICES.
2. NOTES AND DETAILS ON THESE DRAWINGS SHALL TAKE PRECEDENCE OVER THESE GENERAL NOTES.
3. THE DETAILS ON THESE DRAWINGS SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OTHERWISE. WHERE NO DETAIL IS SHOWN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
4. IT IS THE INTENTION OF THESE DRAWINGS TO SHOW THE COMPLETED INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING, SHORING, TIES, FORMWORK, ETC. IN ACCORDANCE WITH ALL NATIONAL, STATE, AND LOCAL ORDINANCES, TO SAFELY EXECUTE ALL WORK AND SHALL BE RESPONSIBLE FOR SAME. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES.
5. THE CONTRACTOR SHALL USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS, AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK.
6. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
7. THE TOWER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION AND/OR TRANSPORTATION SINCE ERECTION EQUIPMENT AND METHODS ARE UNKNOWN.
8. TOWER GROUNDING SHALL COMPLY WITH ALL LOCAL AND NATIONAL CODES. GROUNDING TO BE DONE BEFORE ERECTION.
9. THE TOWER IS DESIGNED TO SUPPORT ONLY THE ANTENNAS AS SHOWN ON THE DRAWINGS. THE ENGINEER WILL NOT BE RESPONSIBLE FOR OVERSTRESS CONDITIONS WHICH MAY OCCUR DUE TO DEVIATIONS IN ANTENNA SIZES AND/OR LOCATIONS FROM THOSE SHOWN ON THE DRAWINGS.
10. ALL WORK SHALL COMPLY WITH OSHA SAFETY REQUIREMENTS. PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
11. ALL FACE WIDTHS ARE FROM CENTER LINE OF PIPE.
12. STEEL PIPE CONFORMS TO ASTM A53. PLATES, BAR, AND ANGLE CONFORMS TO ASTM A36. STRUCTURAL TUBING CONFORMS TO ASTM A-513 C1020 DOM TYPE 5. ALL WELDING CONFORMS TO A.W.S. D1.1 LATEST REVISION. ALL GALVANIZING CONFORMS TO ASTM A-123 AND A-153 FOR HARDWARE.
13. THIS PROJECT CONSISTS OF:
INSTALLING 190' SELF SUPPORT TOWER COMPLETE WITH FOUNDATION, CLIMB LADDER, SAFETY CLIMB, WAVEGUIDE LADDER, AND GROUNDING.



ANTENNA INFORMATION						
ITEM #	ELEVATION	ANT. TYPE	ANT. MT.	AZIM	PROJ'D AREA	LINE SIZE
1 - 2	195'	10' OMNI WHIP ANTENNA	-	N/A	2.0 SQ FT EA	2 @ 7/8"
3	185'	2' MICROWAVE DISH	-	N/A	3.14 SQ FT EA	1 @ 7/8"
4	140'	FUTURE LOADING	-	N/A	50 SQ FT EA	-



BILL OF MATERIALS				
ITEM	QTY	UNIT	PART NO.	DESCRIPTION
1	1	EA.		TKD-309B-6L 20' SECTION ASSEMBLY
2	1	EA.		TKD-308-6L 20' SECTION ASSEMBLY
3	1	EA.		TKD-307-6L 20' SECTION ASSEMBLY
4	1	EA.		TKD-306-4XL 20' SECTION ASSEMBLY
5	1	EA.		TKD-305-3XL 20' SECTION ASSEMBLY
6	1	EA.		TKD-304-3XL 20' SECTION ASSEMBLY
7	1	EA.		TKD-303-2 1/2XL 20' SECTION ASSEMBLY
8	1	EA.		TKD-302-2XL 20' SECTION ASSEMBLY
9	1	EA.		TKD-302SN-2L 20' SECTION ASSEMBLY
10	1	EA.		TKD-302SN-2L 10' SECTION ASSEMBLY
11	1	EA.		PAD FOUNDATION
12	3	EA.		TOP CAP ASSEMBLY
13	1	EA.		CLIMB LADDER ASSY, 190'
14	1	EA.		SAFETY CLIMB, 190'
15	1	EA.		ANTI CLIMB ASSEMBLY
16	1	EA.		WAVEGUIDE LADDER ASSY, 190'
17	1	EA.		WAVEGUIDE BRIDGE ASSEMBLY
18	1	EA.		BGK-3 BASE GROUNDING KIT

LADDER INFORMATION			
ELEVATION	LOCATION	TYPE	MOUNTING
0 TO 190'	INSIDE	16"	-

TOWER DESIGN LOADING
WIND LOAD: 2016 CBC 1609A.1.1, ASCE7-16 BASIC WIND SPEED 100 MPH TIA/EIA-222 REV H EXPOSURE C, STRUCTURE CLASS III TOPOGRAPHY CATEGORY 1 WITH A CREST HEIGHT 0' MOMENT= 1955 kip ft, LOAD COMBINATION 1.2D + 1.0W SOIL DESIGN : KLEINFELDER GEOTECHNICAL INVESTIGATION REPORT #102886.G01

PART NO.		 ASHJIAN TOWER CORPORATION 2765 S. TEMPERANCE AVENUE, FOWLER, CALIF. 93625	
APPROVALS	DATE		
DRAWN	TAM 12/11/17	TITLE 190' SELF SUPPORT TOWER ELEVATION TKD-190'-309B DAKDALE IRRIGATION DISTRICT	
CHECKED		SIZE	REV.
ENG. APPD.		CAGE CODE	S-1
DO NOT SCALE DRAWING		DRAWING NO.	SHEET 1 OF
		SCALE NONE	

Appendix D

OID 5.8 GHz Radio Site Survey and UHF SCADA Radio Site Survey
Prepared by Applied Technology Group, Inc.

10-14-2017

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Oakdale Irrigation District 5.8GHz Radio Site Survey

On September 18th, 2017, ATG performed a radio site survey to test the path from the existing OID Office tower to the North Reservoir. The test was performed using the existing Ubiquiti unlicensed 5GHz radios mounted on the District tower. A 150-foot man-lift was used to elevate the antenna at the North Reservoir site.

Site Survey Parameters

The following report is based on field tests performed using the unlicensed 5GHz frequency band. The radio equipment used in the test was a Rocket M5 manufactured by Ubiquiti Networks. To begin the survey, ATG configured the three base stations at the OID tower to be Point to Multi-Point Access Points with each operating on a unique frequency and IP address. The radios are mounted at the back of the antennas, which eliminate any significant cable loss. The power and data are carried to the radio via Cat5 shielded twisted pair cable. The Ubiquiti, model AM-5G16-120, panel antennas provide 16dBi gain over 120° horizontal dispersion. The transmit power was set to the maximum level of 20dBm. The channel bandwidth was set to 10MHz. The frequency of the North AP was set to 5200MHz. The Rocket M5 operates using MIMO dual polarity technology. MIMO (Multi-In Multi-Out) allows for two radio paths over one antenna to improve throughput performance. This technology requires careful attention to the antenna alignment to insure maximum channel isolation. The antenna vertical and horizontal adjustments were not measured during this procedure. The antennas appear to be mounted vertically and were spaced evenly horizontally as shown in figure 1 below. This alignment will need to be addresses to optimize the system.

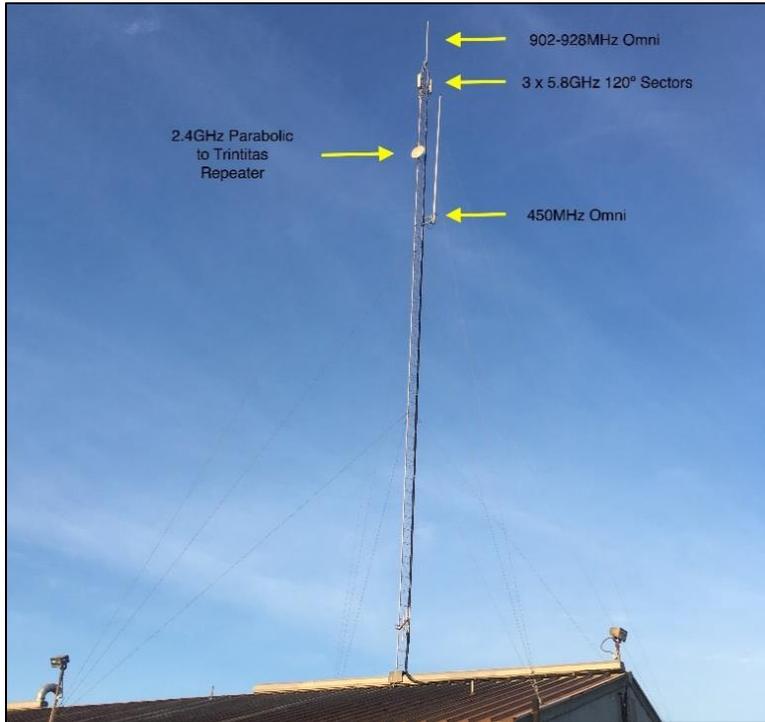


Figure 1 OID Office Tower Antennas

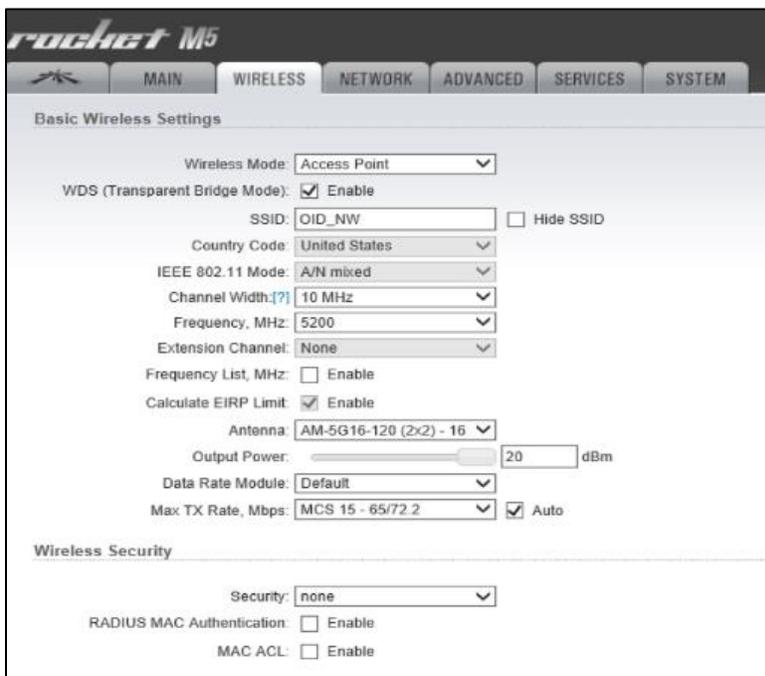


Figure 2 Ubiquiti Rocket M5 Configuration

Survey Procedure

The first test was run at the North Reservoir site using a 150-foot man-lift. The remote radio was configured to connect to the North radio at the OID Office tower. The remote radio was connected to a 2-foot parabolic antenna which provides 30dBi gain. The parabolic antenna was mounted to the man-lift and elevated to 150-feet. The signal level was recorded as the man-lift was lowered. The minimum elevation was determined to be 140-feet due to the trees in the Fresnel zone visible in figure 3 below. The lateral location of the man-lift was also determined to be optimum as the path to the office had an opening in the trees shown in figure 4 below.



Figure 3 View from North Reservoir at 150-ft



Figure 4 View from North Tower to OID at 124-ft



Figure 5 View from North Tower to OID at 104-ft Signal Lost

Survey Test Results

The results of the survey proved to be acceptable for the North Reservoir test at the 150-foot elevation, providing a 90% CCQ, a -68dBm signal level, and 52Mbps data rate. The radio suffered Fresnel infringement at the lower levels beginning at 140-feet. The required minimum elevation to achieve reliable communications is 150-feet. At 140-feet the signal level reached -69dBm allowing the maximum data rate to achieve 52Mbps, however at this level there is not sufficient clearance. At 135-feet the signal dropped to -74dBm, quickly reducing the capacity to 29Mbps. The radio will operate at the lower speeds, but the fact that it dropped in performance and the visual inspection showed trees, the reliability will be compromised. The path profile from the OID office tower at 60-feet to the North Reservoir test site is shown below in figure 6.

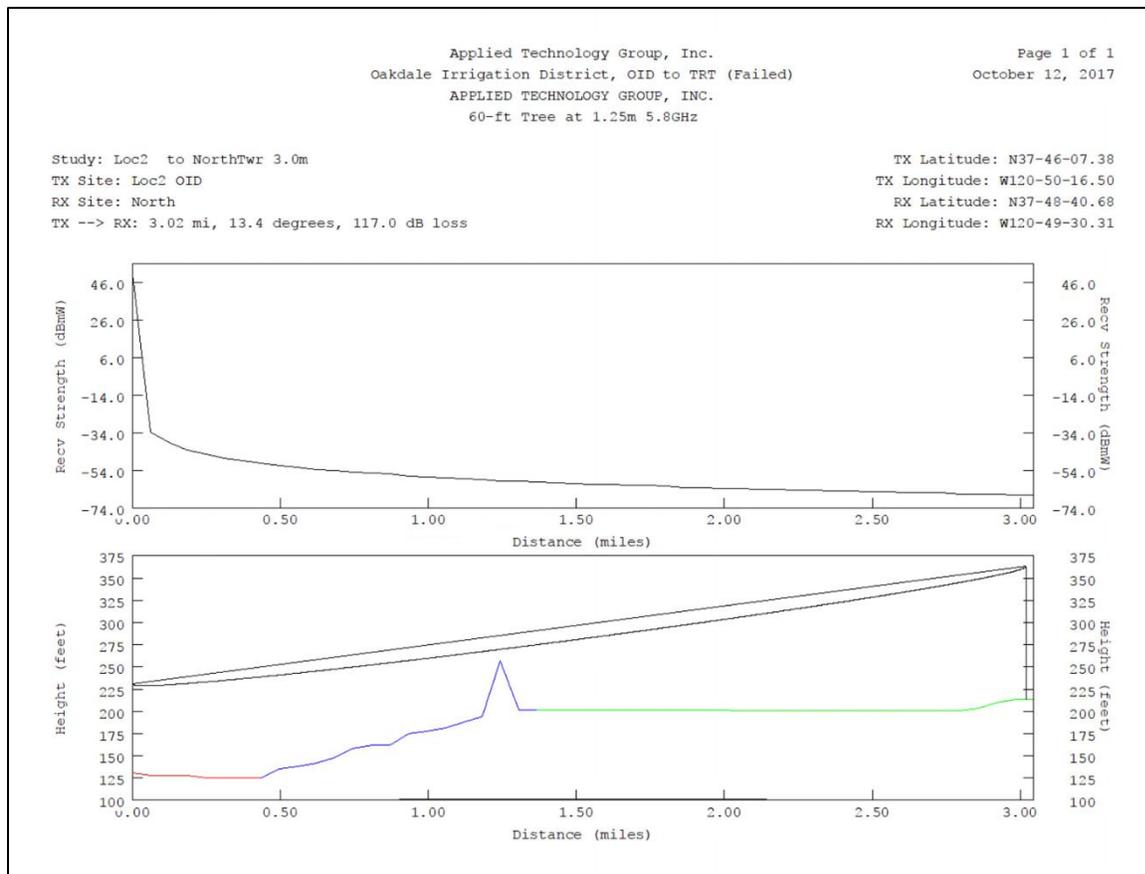


Figure 6 OID Office to North Reservoir Test Site

The second survey was performed at the existing site TRT (Trinitas Repeater Tower). The existing 2.4GHz radio link from the office was found operating at a very low performance level for the path distance. Using the 5.8GHz test radio elevated to 50-feet we found comparable results and could not establish an acceptable link. After inspecting the photographs of the path and the profiles in RFCAD, it was confirmed there is no usable path from the OID office or the proposed South tower to TRT using the existing towers. The terrain data appears to worse than the actual.

The photo from TRT looks better than the profile shown below in figures 7 and 8. The actual blockage is near the OID Office so additional elevation at TRT may not solve the problem. The additional height would be required at the OID Office. The software shows a usable path from both the North Tower and the LJC Repeater to TRT. The photo of the visible path from North Reservoir to TRT is shown below in figure 9.

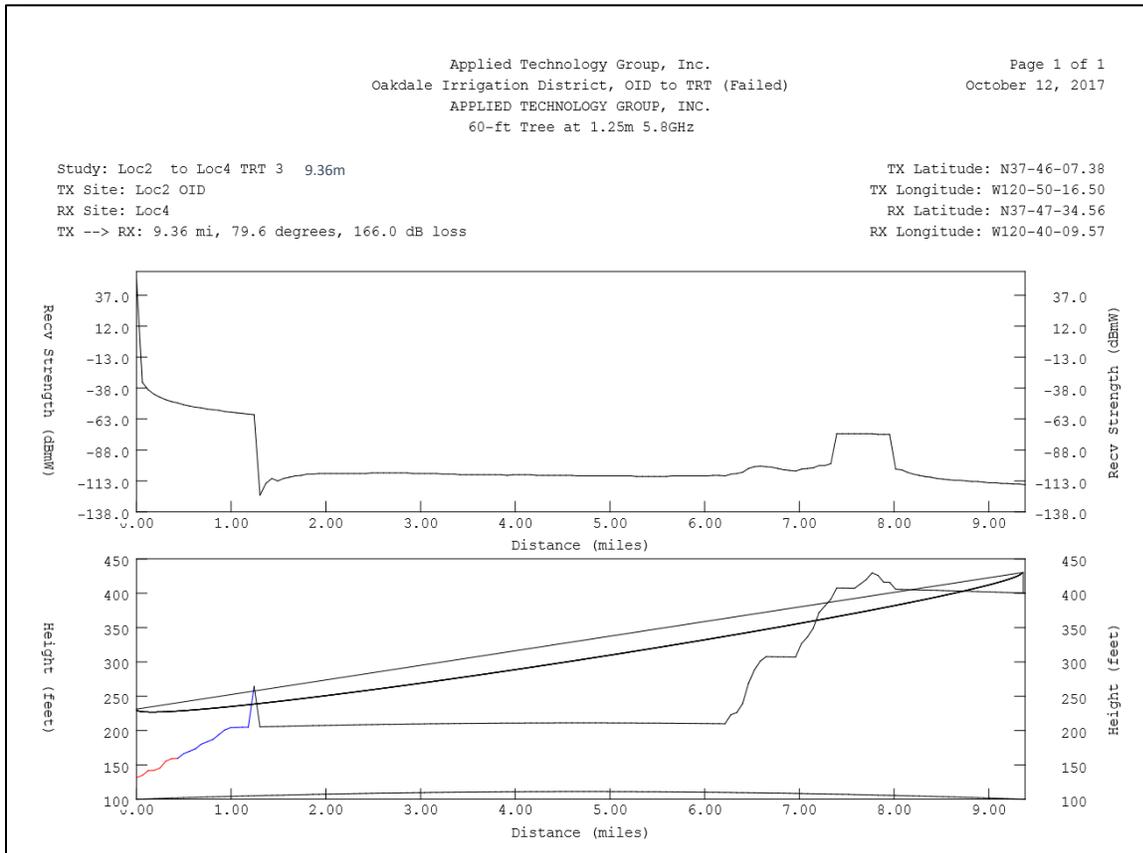


Figure 7 OID Tower to TRT Tower Profile



Figure 8 View from TRT to OID Office Tower (not visible through trees)



Figure 9 view from North Reservoir at 150-ft to TRT

Radio Frequency Propagation Maps

The radio frequency propagation maps in this report are performed using RFCAD, a PC based software by SiteSafe, Inc. The point to point parameters are based on specific antenna models and elevation for each end. The propagation model is based on Longley-Rice, using 3-second resolution and Northern California 1996 terrain data.

Antenna & Transmission Line Hardware Recommendation

The recommended antenna size for this path and radio hardware with no obstructions would be 3-foot High Performance parabolic antennas at each end. Since the APs panels are installed already, the recommendations will be based on the gain of the existing panel antennas. The three APs at the office provide a quick solution to attach additional sites anywhere 360 degrees around the OID Office tower. The overall performance may not be optimal, but it can be reliable with short clear line of sight paths and proper signal levels. The recommended antenna for the North Tower is a model HPD3-5.2, manufactured by RadioWaves, Inc. is the recommended antenna shown in figure 10. The HPD3-5.2 is a 3-foot diameter High Performance Parabolic Reflector Antenna, with a Dual-polarized feedhorn, operating between 5.25-5.85GHz.



Figure 10 RadioWaves 3-foot Dish

The Ubiquiti radio uses CAT-5 cable for the power and payload. The cable must be shielded and have a second PVC outer jacket. The standard Ubiquiti cable is not sufficient for long term use. The cable must be supported to the tower at 3-foot increments using stainless steel hanger hardware with barrel cushions.

Radio Equipment Recommendation

While it is possible to successfully deploy 5.8GHz links, our normal recommendation for the point to point links is to use licensed microwave equipment using 48V battery power and redundant rectifiers. It is important to note that the 5.8GHz spectrum is widely used by the Wireless Internet providers. For superior design practice, the backhaul links should have significant bandwidth, be very stable and reliable, and operate with minimal latency. This can only be achieved with strong signal levels and no interference. The backhaul should have two paths using redundant equipment or a ring topology. The ring concept requires routers at each node to provide a fault tolerant network. This is not always feasible as it can be expensive.

The Ubiquiti equipment is very popular and effective for the price; however, it is a consumer product that has found itself in a commercial environment and sometimes in this case a mission critical environment. The equipment will require much attention as firmware issues, upgrades, and failures are frequent. Because the product is cutting edge, it gets discontinued and obsolete very fast. We know this because we operate a WISP in Kern County using this product. The difference is we have customers paying for the service and expecting faster speeds with each upgrade and we have a team of technicians servicing the system. An industrial SCADA system should be designed primarily for reliability and stability as the most important aspect. The system should operate silently without a team of technicians to support it.

Despite all the negatives we must consider using this equipment. Because the OID Office does not have an adequate tower structure for microwave dish antennas and the Ubiquiti equipment is in place, this report will be focused on using this equipment for the initial design. It is recommended to budget for a proper tower at the OID Office to provide a transition to licensed microwave in the future.

The recommended tower height for the North Reservoir is 190-feet. This elevation will provide the coverage required for the SCADA system, provide space for additional antenna hardware, and be tall enough to clear the canopy for many years. The minimum required elevation is 150-feet. The cost of the tower may be a significant factor in this decision. The tower must be engineered to withstand the wind and seismic requirements for the area. It is also recommended to design the tower to support additional future antennas. The tower should include a climbing ladder with a built-in fall arrest system and a cable or waveguide ladder. A full taper lattice design is the strongest solution that provides many mounting options.

Summary

The path from the OID Office tower to the proposed North Reservoir tower will function using the existing Ubiquiti hardware. The path from the OID Office tower did not prove to be reliable to the TRT site due to inadequate line of sight. The recommended path is to connect to TRT through the North Reservoir tower. Our main concern is the availability and reliability of unlicensed spectrum in the area. As bad as it may sound, there are features in the Ubiquiti product which can be used to enhance the performance and reliability once the hardware is deployed as specified. There are also antenna options that can be implemented to improve the quality. This is a good starting point if everyone is aware of the concerns.

Additional photographs and coverage maps have been included with this report.

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10-10-2017

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Oakdale Irrigation District

UHF SCADA Radio Site Survey

On September 18th, 2017, ATG performed a radio site survey to test the coverage from the North Reservoir site in the UHF radio band. This OID site was selected due to its location, availability to adequate space, and power availability. A 150-foot man-lift was used to elevate the antenna.

Site Survey Parameters

The following report is based on field tests using licensed UHF frequencies from the North Reservoir location. The radio equipment used in the test was an Orbit LN manufactured by GE MDS. The master and remote radios were set to operate on a transmit power of 37dBm or 5W. The master radio was connected to the antenna using a 20-foot run of LMR-400 dual shield low loss cable. The cable has a measured insertion loss of 1.0dB. The master antenna used in the test was a 5dBd (7dBi) omni, model FG4505W, manufactured by Laird Technologies. The antenna used for the remote radio was a 3-element directional Yagi, model Y4503, manufactured by Laird Technologies. The Y4503 antenna provides 7.1dBd (9.2dBi) gain, in a 57° vertical by 72° horizontal beamwidth. The coax used for the remote was 80-feet of LMR-400, representing 2.7dB of insertion loss. The master antenna was elevated to 150-feet above the North Reservoir. The remote Yagi antenna was mounted to a telescopic pole on a van. The remote Yagi antenna was set at the lowest level of the 10 to 50-foot range, except for a few difficult sites that required additional elevation. The Yagi antenna was aligned towards the master radio to peak the signal level.



Figure 1 Burnett Drop 6 with Antenna at 10-feet



Figure 2 Roden Dam with Antenna at 50-feet

Site Survey Results

The following signal levels were recorded at various sites near the North Reservoir. The antenna elevation was approximately 10-feet using a 3-element Yagi directed to the North Reservoir test site. A continuous 32-byte ping was run throughout the entire test procedure including the drive between sites. The radio performed very well allowing the ping to remain well above 95% even while in motion. The majority of the sites reported 100% ping response throughout the test procedure. The modulation reduced from the highest rate at 64QAM down to the lowest rate using QPSK. The data rates shown in figure 3 below reflect the changes in the modulation and the data rate.

Location / GPS	RSSI	Modulation	EVM	Ping	DateRate	Antenna	Notes
Betschart T/O	-54.0dBm	QAM64	0-2	100%	57.6kbps	3-E Yagi	Full View Antenna not directed
Longstreth T/O -N Main	-52.0dBm	QAM64	0	100%	57.6kbps	3-E Yagi	Unit dropped out Battery at AP
Stueve #2	-78.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	NLOS
Eaton HG	-83.0dBm	QAM16	0-2	100%	38.4kbps	3-E Yagi	NLOS
Fields T/O #1	-86.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	NLOS
Rodden Dam	-85.0dBm	QAM16	2	100%	38.4kbps	3-E Yagi	NLOS 50-foot Elev. Site across lake.
Trinitis North Behind Site	-85.0dBm	QAM16	2	100%	38.4kbps	3-E Yagi	Road above site
Trinitis North Behind Site	-87.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	NLOS Tunnel exit
Stevenot Drop	-48.0dBm	QAM64	1	100%	57.6kbps	3-E Yagi	Good
Warmer Dam	-54.0dBm	QAM64	1	100%	57.6kbps	3-E Yagi	Good
Ypung Lateral HG	-72.0dBm	QAM64	0	100%	57.6kbps	3-E Yagi	
Liken Drop	-71.0dBm	QAM16	0	100%	38.4kbps	3-E Yagi	
Veal Drop	-83.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	
Kinds Drop	-81.0dBm	QAM16	1-2	100%	38.4kbps	3-E Yagi	
Double Weir Drop	-80.0dBm	QAM16	4	100%	38.4kbps	3-E Yagi	
Winter Spill	-80.0dBm	QAM16	0-1	100%	38.4kbps	3-E Yagi	
Pony Drop	-83.0dBm	QAM16	1-2	100%	38.4kbps	3-E Yagi	
Fairbanks	-75.0dBm	QAM16	0	100%	38.4kbps	3-E Yagi	
Hirschfield / Drop 15	-84.0dBm	QAM16	0-1	100%	38.4kbps	3-E Yagi	
Hirschfield / Drop 13	-81.0dBm	QAM16	0-1	100%	38.4kbps	3-E Yagi	
Hirschfield / Drop 12	-87.0dBm	QAM16	0-2	100%	38.4kbps	3-E Yagi	House in path.
Hirschfield / Drop 10	-86.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	
Hirschfield / Drop 9	-88.0dBm	QPSK	1	100%	19.2kbps	3-E Yagi	Behind Orchard
Hirschfield / Drop 8	-79.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	
Hirschfield / Drop 7	-81.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	Some drops to QPSK
Hirschfield / Drop 6	-87.0dBm	QPSK	1	100%	19.2kbps	3-E Yagi	Large Eucalyptus Trees
Hirschfield / Drop 5	-79.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	Some trees
Hirschfield / Drop 4	-81.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	Some trees, more open
Hirschfield / Drop 3	-77.0dBm	QAM 16	1-2	100%	38.4kbps	3-E Yagi	trees in distance
Hirschfield / Drop 2	-80.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	trees in distance & to the right
Hirschfield / Drop 1	-86.0dBm	QAM16	1	100%	38.4kbps	3-E Yagi	trees, no parking
Angel / Fairbanks	-92.0dBm	QPSK	2	99%	19.2kbps	3-E Yagi	Requires better antenna, periodic drops to QPSK
Naraghi FM	-79.0dBm	QAM16	0-2	99%	38.4kbps	3-E Yagi	Requires better antenna, periodic drops to QPSK
Krohne 4	-79.0dBm	QAM 16	1	100%	38.4kbps	3-E Yagi	
Steinegul Repeater	-84.0dBm	QPSK	1	100%	19.2kbps	3-E Yagi	Dropped to QPSK
Krone 3	-71.0dBm	QAM64	1	100%	57.6kbps	3-E Yagi	CLOS to Master
Krone 2	-71.0dBm	QAM64	1	100%	38.4kbps	3-E Yagi	Some drops to lower rate
Tolloch Drop 3	-72.0dBm	Qam16	0-1	100%	38.4kbps	3-E Yagi	3-Broadcast Twrs visible 37 48 11 , 120 53.44.4
Tolloch Drop 2	-68.0dBm	QAM64	0-2	100%	57.6kbps	3-E Yagi	
Burnett Drop 7	-72.0dBm	QAM64	0-2	100%	57.6kbps	3-E Yagi	
Burnett Drop 6	-78.0dBm	Qam16	0-1	100%	38.4kbps	3-E Yagi	Dirt berm blocking signal. Need elev.
Burnett Drop 5	-70.0dBm	QAM64	0-2	100%	57.6kbps	3-E Yagi	
Burnett Gate ?	-60.0dBm	QAM64	0-2	100%	57.6kbps	3-E Yagi	Gate Only 37 48 4.5, 120 51 46.4

Figure 3 Test Results Chart

Frequency Coordination

UTC (Utility Technology Council)

1129 20th Street, NW
 Suite 350
 Washington, DC 20036
 Phone: 202.872.0030
 Fax: 202.872.1331
 Joann.Howell@utc.org

UTC Spectrum Services is recommended for Utility frequency coordination. UTC will handle all the details from the start to the file process. UTC can provide frequency coordination in the VHF, UHF, 800 & 900 MHz two-way bands, as well as for MAS and microwave systems. For a fee UTC will perform a frequency search for each location and frequency band requested. This is step one in your system planning. We recommend using UTC to search for available frequencies in the 450-470MHz UHF band and the 217-220MHz band at the locations proposed for the base stations. The locations are listed below in figure 4.

The UTC coordinator suggested that the license include mobile voice operations to gain some protection. A mobile radio could be installed in a few service vehicles and used for troubleshooting.

The 217-220MHz band may have better spectrum availability as it is not widely deployed. The 217-220MHz band has 2.0 Watt power limitations; however, it allows for a wider 25KHz channel. This will allow for additional throughput. The lower frequency will travel further following the terrain and penetrate the foliage better than UHF.

Location	Latitude	Longitude	Height Ft	Height Meters	CallSign
Main Office	37°46'7.38"N	120°50'16.50"W	100'	30.4m	WPWQ672
North Tower	37°48'40.68"N	120°49'30.31"W	150'	45.7m	
South Tower	37°44'40.18"N	120°48'15.60"W	150'	45.7m	
Steinegul Repeater	37°48'4.73"N	120°53'55.98"W	150'	45.7m	
LJC Repeater	37°50'53.94"N	120°40'59.44"W	150'	45.7m	
Tenet Repeater	37°42'46.24"N	120°53'5.95"W	150'	45.7m	

Figure 4 Proposed Master Sites

FCC Part 90 Rules

It is important to note that the VHF and UHF band is dedicated for voice traffic as primary, data as secondary, and all channels are shared. There are specific guidelines to follow for each frequency and are found in the FCC Part 90 Rules and Regulations. Because of this the VHF and UHF band can be subject to interference without notice. The FCC license for VHF and UHF does not provide protection for an area of operation as the channels are meant to be shared. Working with the FCC coordinator will be required to obtain usable channels. All channels that are

proposed by the coordinator must be monitored 24/7 for several days to insure there is no interference. It is recommended that this procedure is completed before any product procurement or construction takes place.

The FCC Part 90 rules can be found online at www.ecfr.gov.

The frequency used in the survey was clean in this area; however, it is not one that the District would qualify for. The existing frequencies provided by Ten-Four Communications may be one of the options to explore.

Radio Frequency Propagation Maps

The radio frequency propagation maps in this report are performed using RFCAD, a PC based software by SiteSafe, Inc. The point to point parameters are based on specific antenna models and elevation for each end. The propagation model is based on Longley-Rice, using 3-second resolution and Northern California 1996 terrain data.

The proposed North Tower location propagation coverage map is shown in figure 5 below. Additional propagation study results and data will be provided separately on multiple PDF files.

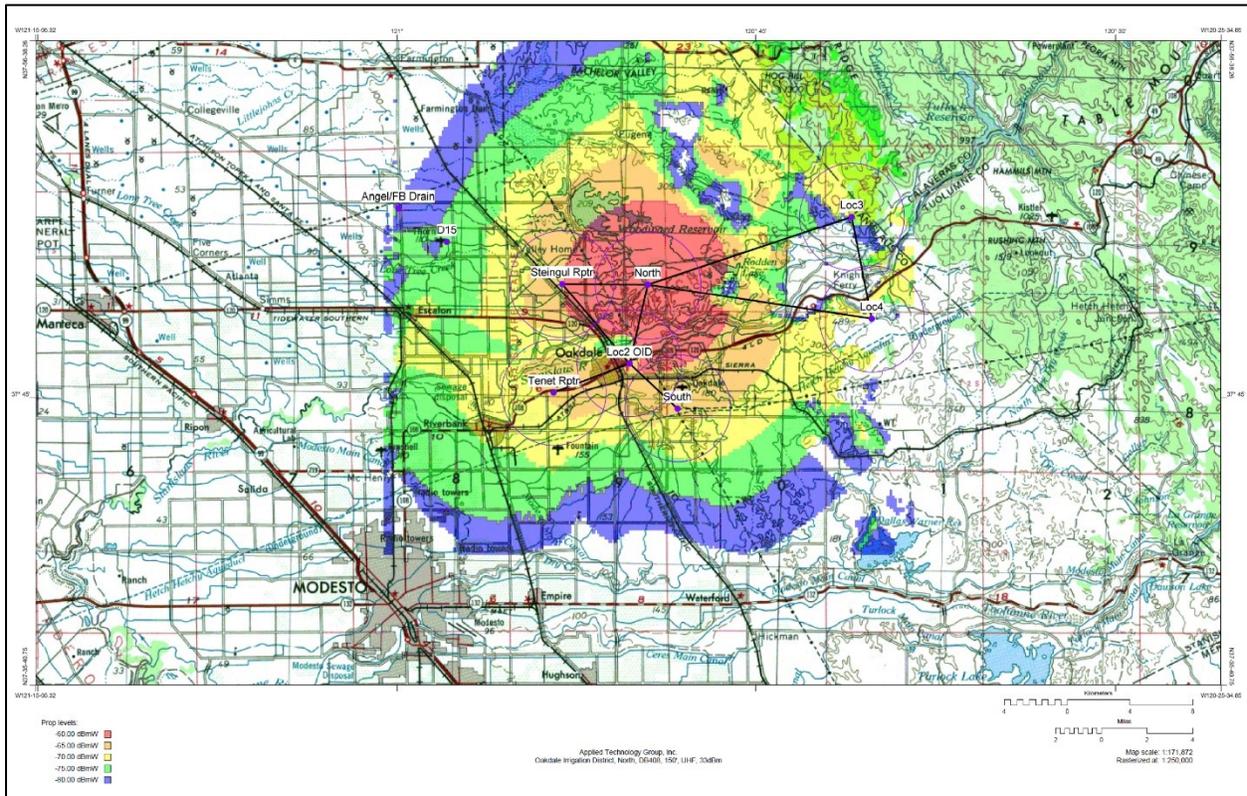


Figure 5 Propagation Map, North Tower 150', DB408, UHF, 2W

Antenna Structure Registration

TOWAIR is a website used to determine if a proposed tower will require any specific requirements. The web site can be found at the following URL.

<http://wireless.fcc.gov/antenna>

TOWAIR (or Landing Slope Facility Calculator) allows antenna structure owners to determine whether their structures are close enough to an airport or heliport to require an aeronautical study by the Federal Aviation Administration (FAA) and registration with the FCC. Under Part 17 of the FCC's Rules, the owner of an antenna structure that exceeds an imaginary line (i.e. "slope") that runs outward and upward from the nearest point of the nearest runway of an FAA-listed airport or heliport must obtain an FAA study and FCC registration for that structure. For example, TOWAIR may be queried based on a specific set of coordinates, elevation, and overall height criteria to calculate whether an antenna structure under 60.9 meters (200 feet) will penetrate the slope for nearby airports.

When considering a tower structure, one must first meet the requirements of TOWAIR. A 190-foot tower at the North Reservoir does not require special registration. The results of the query are show below is figure 6.

TOWAIR Determination Results

A routine check of the coordinates, heights, and structure type you provided indicates that this structure does not require registration.

***** NOTICE *****

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results							
PASS SLOPE(50:1): NO FAA REQ-RWY 10499 MTRS OR LESS & 6194.75 MTRS (6.19479) KM AWAY							
Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	37-45-28.00N	120-48-18.00W	OAKDALE	STANISLAUS OAKDALE, CA	68.4	918.3999999999998

Your Specifications	
NAD83 Coordinates	
Latitude	37-48-40.6 north
Longitude	120-49-30.3 west
Measurements (Meters)	
Overall Structure Height (AGL)	57.9
Support Structure Height (AGL)	57.9
Site Elevation (AMSL)	70.1
Structure Type	
LTOWER - Lattice Tower	

Tower Construction Notifications
 Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Figure 6 TOWAIR Query for the North Reservoir Site using a 190-foot Lattice Tower

Antenna & Transmission Line Hardware Recommendation

The antenna gain will be specified by the FCC license. The recommended antenna for the master radio must be determined after the frequencies are selected and the license details are determined. The test was based on a 5dBd gain omni; however, if allowed a 10dBd gain heavy duty fiberglass omni antenna would be recommended. A model ANT500F10 manufactured by Telewave, Inc. of San Jose is an example of a heavy duty 10dBd fiberglass omni antenna.

The recommended antenna for the remote sites is a model BMYD450K, manufactured by PCTEL of Bloomington, IL. The remote antenna must be a fully welded design, anodized, and meet a 150mph wind survival rating. A smaller antenna with less gain can be used in short paths but should meet the same requirements. It is recommended to construct each radio path with enough signal level to operate reliably in the highest 64QAM modulation. This will ensure maximum throughput and overall system speed and reliability.

The recommended transmission line for the master site is model AVA5, manufactured by Commscope. The AVA5 is 7/8" hardline foam cable that must be attached to the tower structure at 3-foot increments using stainless steel hangers, barrel cushions, or coax blocks. This cable requirement is based on a tower elevation of 150 to 200-feet.

Radio Equipment Recommendation

The recommended SCADA transceiver is the new GE MDS Orbit LN platform, manufactured by General Electric MDS, of Rochester, NY. The GE MDS Orbit is an industrial-strength wireless router platform. The Orbit platform is a modular design that can operate in the 900Mhz, 700Mhz, 400MHz, 200MHz and 100MHz licensed narrowband spectrum, as well as a diverse range of integrated secondary radio options including Cellular, Unlicensed 900MHz ISM and Wi-Fi. The Orbit radio is very spectrum efficient operating at a much higher data rate than previous models. The Orbit licensed narrowband radio can provide data rates up to 56Kbps on a 12.5KHz channel using 64QAM modulation. The radio will adapt to lower modulation levels to ensure data integrity and throughput. The Orbit provides both Ethernet & Serial connections.

There are two types of remote units and one rack mounted redundant base station available. It is recommended to construct a redundant master radio or repeater to provide the highest level of system reliability. If a repeater configuration is used, it is also recommended to install a redundant polling remote. It is important to note that the use of the Master Station requires a full duplex frequency pair channel.

GE's MDS™ Orbit MCR (Multiservice-Connect Router) and MDS Orbit ECR (Edge-Connect Router) are ultra-reliable rugged wireless routers based on the MDS Orbit platform. They enable operators to extend secure and reliable

2G/3G/4G LTE cellular connectivity to critical applications while minimizing network downtime and improving application availability.

The MDS Orbit MCR and ECR share the same networking and security functionality with the MCR model being a dual WAN radio router and the ECR model a single WAN radio router in a more compact form factor. Both models support a rich set of cellular modem options and cover a wide variety of bands in order to maximize the flexibility of deployment across carriers and countries.

The MDS Orbit platform features rich networking capabilities with integrated routing and switching, tunneling, VPNs as well as advanced Quality of Service. It further supports a rigid enterprise-class security framework to enable the secure transport of data and advanced protection of network and assets.



Figure 7 GE MDS Orbit Platform Remote Units



Figure 8 GE MDS Master Station for Full Duplex channels

Summary

The results based on this report demonstrate good RF coverage from the North Repeater site using the UHF band. It is recommended to work with the frequency coordinator to obtain six usable channels, one for each of the locations discussed. The 217-220MHz band is a better solution as the channels have not been deployed for voice. The lower frequency will propagate better through trees and rolling hills. The deployment does not have to be limited to all UHF or all 220MHz. The diversity in the frequency is good for channel isolation; however, it will increase the complexity of maintaining an inventory of hardware and spares.

It is recommended to construct a tower no less than 150-feet at the North Reservoir. The maximum elevation recommended is 190-feet. This elevation is the maximum allowed without lighting. The path to the OID office requires 150-feet and will be discussed in more detail the 5.8GHz Point to Point report. The tower must be engineered to withstand the wind and seismic requirements for the area. It is also recommended to design the tower to support additional future antennas. A tower of this size may be attractive to Cellular and Wireless Internet providers and can be a source of income. ATG can support you with this selection and design requirements as the project progresses.

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