## INITIAL STUDY

## FOR THE

# EAST ORANGE COUNTY WATER DISTRICT VANDERWERFF WELL PROJECT 

Prepared for:

## East Orange County Water District

185 N. McPherson Road
Orange, California 92869

Prepared by:

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## LIST OF ABBREVIATIONS AND ACROYNMS

| ac | alternate current |
| :---: | :---: |
| APE | Area of Potential Effect |
| AQMD | Air Quality Management District |
| AQMP | Air Quality Management Plan |
| bgs | below ground surface |
| BMPs | Best Management Practices |
| C\&D | construction and demolition |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| Caltrans | California Department of Transportation |
| CAP | Climate Action Plan |
| CEQA | California Environmental Quality Act |
| CNEL | Community Noise Equivalent Level |
| COCs | contaminants of concern |
| dB | decibel |
| dBA | A-weighted decibel |
| DDW | Division of Drinking Water |
| EIR | Environmental Impact Report |
| EMS | emergency medical services |
| EOCWD | East Orange County Water District (or District) |
| EPA | Environmental Protection Agency |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| FTA | Federal Transit Authority |
| GAC | granulated activated carbon |
| GC | General Commercial |
| GHG | Greenhouse Gas |
| GCC | Global Climate Change |
| GPD | gallons per day |
| GPM | gallons per minute |
| GWRS | Groundwater Replenishment System |
| HCP | Habitat Conservation Plan |
| IS/MND | Initial Study / Mitigated Negative Declaration |
| IX | ion exchange |
| KW | kilowatts |
| LSTs | Localized Significance Thresholds |
| LUST | Leaking Underground Storage Tank |
| MCLs | maximum contaminant levels |
| MGD | million gallons per day |
| mWh | megawatts/hour |
| NAAQS | National Ambient Air Quality Standards |
| NCCP | Natural Community Conservation Plan |
| NF | nanofiltration |


| NOI | Notice of Intent |
| :--- | :--- |
| OC Basin | Orange County Groundwater Basin |
| OCSD | Orange County Sanitation District |
| OCWD | Orange County Water District |
| PFAS | Per- and polyfluoroalkyl sulfonate |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctane sulfate |
| pH | a scale from 1 to 14 that measures the acidity or alkalinity of a liquid |
| PO4 $^{-3}$ | phosphate blend with orthophosphate |
| R-2-6 | Residential Duplex |
| R-3 | Residential Multiple Family |
| RWQCB | Regional Water Quality Control Board |
| SCAB | South Coast Air Basin |
| SCAQMD | South Coast Air Quality Management District |
| SCE | Southern California Edison |
| SWRCB | State Water Resources Control Board |
| USDA | U.S. Department of Agriculture |
| UWMP | Urban Water Management Plan |

## ENVIRONMENTAL CHECKLIST FORM

1. Project Title: East Orange County Water District VanderWerff Well Project
2. Lead Agency Name: East Orange County Water District

Address:
3. Contact Person:

Jeff Smyth, P.E Engineering Manager
Phone Number:
4. Project Location:

714-538-5815
The project proposes two well locations. Well Location \#1 is located across the street from the East Orange County Water District Offices at 210 N. McPherson Road, Orange, CA 92869, which is located in Orange County. Well Location \#2 is located within the East Orange County Water District Offices at 185 N McPherson Rd, Orange, CA 92869. The project proposes solar arrays, batteries, and inverters within both the Well \#2 and Well \#1 sites and a treatment system at the Well \#1 site. The project sites are located within Section 28, Township 4 South, Range 9 West of the USGS 7.5 Minute Orange, CA topographical quadrangle. The approximate GPS coordinates of Well \#1 are $33.789445^{\circ}$, $-117.822533^{\circ}$, while the approximate GPS coordinates of Well \#2 are $33.789536^{\circ}$, $-117.821876^{\circ}$. Refer to Figures 1 and 2 for aerial depictions of the regional and site locations.
5. Project Sponsor's East Orange County Water District Name and Address: 185 N. McPherson Road, Orange, CA 92869
6. General Plan

Well Location \#1: General Commercial (GC); Well Location \#2:
Designation:
Low Medium Residential
7. Zoning Classification:

Well Location \#1: Residential Multiple Family (R-3); Well Location \#2: Residential Duplex (R-2-6)

Existing Use: East Orange County Water District equipment storage
8. Project Description:

Introduction
East Orange County Water District (District or EOCWD) encompasses an area of approximately 10,000 acres and is a member of the Municipal Water District of Orange County which is a member of the Metropolitan Water District, and is therefore entitled to receive Colorado River and Northern California imported water through the distribution facilities of the Metropolitan system. ${ }^{1}$ The District will install a single production well, as a part of the Santa Ana River Conservation and Conjunctive Use Program (SARCCUP), at one of two sites owned by the District: either within or across the street from the EOCWD Offices on McPherson Road. Additionally, a water treatment system will be installed concurrent with the proposed well development. A standby emergency

[^0]generator may also be installed, as well three solar arrays, three batteries, and three inverters split between the EOCWD Office site and the District storage site.

## Project Description

The proposed well and water treatment plant sites are located within and across the street from the District offices in the City of Orange on lots owned by the District, as shown on Figure 2. Development of the Project conforms to the designation in the City's General Plan, in that water infrastructure projects are considered a use allowed within any land use designation. One of the sites within which the District plans to develop the new well is about 275 feet from the District's existing wells. This site is currently being used to store various equipment owned by the District. The second site is located at the District Office. Both of these sites are planned to install rooftop solar arrays over covered parking. The District seeks to develop a new well to connect to their existing potable water distribution system, which will require the construction of a connection at the selected well site to the existing water distribution system. Should the District select Well \#1, located across the street from the District Office, the connection pipeline is located within McPherson Road just outside of the project site. Should the District select Well \#2, located within the District Office site, the well will connect to existing pipelines located internally within the District Office site.

The District desires to treat groundwater extracted by their wells due to presence of Per- and polyfluoroalkyl substances (PFAS), including perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). As such, the District proposes a water treatment system that will utilize granulated activated carbon (GAC), the ion exchange process (IX), or a nanofiltration process (NF) to treat water extracted from the District's existing wells and the new well. The treatment system may also contain pretreatment. It will have chloramine disinfection (chlorine and ammonia) that could utilize the District's existing or a new chlorine generator, and as such no chlorine gas would be stored on site. A reserve supply of sodium hypochlorite with be stored onsite. Periodic cleaning of the degasifying and NF equipment also requires the storage and use of acid (citric or muriadic). The District may also develop a corrosion control system. The corrosion inhibitor could utilize any orthophosphate including either zinc orthophosphate, phosphoric acid, or any phosphate blend products with orthophosphate $\left(\mathrm{PO}_{4}^{-3}\right)$ in it. An orthophosphate chemical would be utilized at the point of entry to the distribution system. The treatment system footprint is up to 40 feet by 100 feet. The four to eight vessels that make up the IX and GAC treatment systems would be 16 ' high and the NF vessels are 12 feet high. NF would also require sulfuric acid and sodium hydroxide for pH adjustment and sodium bisulfate for long term storage.

The new treatment system will be located at the Well \#1 as shown on Figure 2. The proposed treatment system will be developed concurrent with the proposed well at either location. Operationally, the granulated activated carbon (GAC), resin (IX), and membranes (NF) within the treatment systems are replaced approximately every six months, two years, and eight years respectively. Construction of the treatment system involves pouring a foundation, installing the vessels and the piping, this is anticipated to require no more than 5 persons on site during construction and no more than 3 months to complete construction. Construction will be contained within the Well \#1 site.

The solar array at the Well \#1 site will be approximately $70^{\prime}$ by 40 ' and will be a 37 kilowatts (KW) alternate current (ac) system with 110 modules. Additionally, the District plans to install one 3 megawatt/hour (mWh) battery, 10' by 20' in size, and one 10' by $10^{\prime}$ inverter at this Well \#1 site. The carport solar array at the Well \#2 site will be 98 ' by 120 ' and will be a $93 \mathrm{KW} / \mathrm{ac}$ system with

247 modules, while the warehouse solar array at the Well \#2 site will be 41 ' by 12 ' and will be a 7 KW/ac system. Additionally, at the Well \#2 site, two 6 mWh batteries, each 10' by 40 ' will be installed along with two 10 ' by 10 ' inverters. These systems will be developed concurrent with the well and treatment system, and are anticipated to require no more than 5 persons on site during construction, and no more than 3 months to complete.

The following summary of information is provided regarding the drilling, construction, development and testing of the new well. The total area of disturbance will be less than one acre.

The proposed well will be drilled to about 800 feet below the ground surface. Drilling will be accomplished by using a reverse rotary drill unit. Once the well is completed to the desired depth, it will be pumped to test the production rate and quality of the water. The groundwater extracted from the well will be passed through settling tanks ("Baker tanks") to remove any sediment and then delivered to the local storm drain system for disposal, assuming the water quality meets Regional Board discharge requirement standards. Assuming the well produces a sufficient quantity of groundwater of adequate quality, the well will be equipped for production and converted to a production well. Based on a water quality report prepared for the existing EOCWD well, located at the District Office, it is anticipated that the water quality at this well will be below Division of Drinking Water (DDW) Maximum Contaminant Levels (MCLs) for any contaminants of concern (COCs). However, EOCWD has approved a Project that will enable the District to drill two bore holes. The District will determine which of the sites is best suited to develop a new well, and will move forward with well development at one of the two proposed locations.

It is anticipated that about five persons will be on the site at any one time to support drilling the well: three drillers, the hydrologist inspector, and a foreman. Daily trips to complete the well will average about 10 roundtrips per day, including: two roundtrips for drill rigs; between 6 and 12 roundtrips for cement trucks; a few trips to deliver pipe; and about 20 trips per day for employees. It is estimated that it will require about 2-3 weeks to drill the pilot hole with 24 -hour drilling activities, and another week to finish the well with 24 -hour drilling activities. The surrounding community will be notified in advance. The diameter of the new well is anticipated to be about 16 inches. The objective for the well is to generate a minimum of 1,800 gallons per minute (gpm). Assuming the groundwater quality is potable (see the discussion under Hydrology and Water Quality), the new well will be connected to the District's treatment and distribution systems. For Well Location \#1, the nearest connection point is located about 60 feet from the proposed well location to the nearest connection point within McPherson Rd; for Well Location \#2, the nearest connection point is located internally within the District Office site. The well pump will be located above ground and placed within an enclosed structure, if required, to minimize noise at nearby residences. The new treatment plant and solar array will be installed as described above. Should the Project require a connection from the Well \#1 site to the adjacent EOCWD potable water pipeline located within McPherson Road, the connecting pipeline is shown on Figure 3, which depicts the location of the District's existing distribution system pipeline and the location of the new well. Otherwise, construction of the project in its entirety is anticipated to require about 6 months to complete.

The following contains a more detailed sequence of events that are anticipated to occur in support of the proposed project to develop the well and new permanent water treatment plant.
$>$ Prepare the site.
> The bucket auger drill rig will come onsite and drill and install conductor casing and cement sanitary seal.
> The reverse rotary drill rig will mobilize to the site and set up, including sound walls.
> Drill the pilot borehole and collect associated data, such as lithology, geophysical logs, and isolated aquifer zone testing.
> Deliver the well construction materials.
$>$ Drill enlarged borehole to target depth.
$>$ Construct the well.
> Conduct initial well development by airlift/swab.
> Demobilize the drill rig and mobilize the test pump.
$>$ Conduct final development by pumping.
$>$ Conduct pumping tests.
$>$ Temporarily cap the well and demobilize remaining equipment.
> Install backup generator.
> Install treatment system.
> Install solar arrays, batteries, and inverters.
$>$ Re-mobilize to install pump and motor.
$>$ Connect well to the District's potable Distribution System.
> Complete site improvements including any required fencing, asphalt, and hardscape.
9. Surrounding land uses and setting:

The project sites are located adjacent to one another. The Well \#1 site is located directly adjacent to a self-storage facility and Well \#2 is located within the District Office site (existing well(s) site); however, residences are located just to the west of the storage facility and are located directly adjacent to each of the well sites (north and east of the Well \#2 site, and east of the Well \#1 site).

- To the west of the sites the following land uses exist: Low Density Residential.
- To the north of the sites the following land uses exist: Low Density Residential; Low Medium Residential; Open Space; and, Open Space Park.
- To the east of the sites the land use is Low Medium Residential.
- To the south of the sites the land uses are General Commercial; Low Density Residential; and, Low Medium Residential.

10. Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

Other than East Orange County Water District there are several other agencies with possible jurisdiction/responsibility over the proposed project. First among these is the California State Water Resources Control Board Division of Drinking Water (State Board). The State Board ultimately approves connection of the new well to the District's water distribution system after determining that the water quality is adequate to supply potable water to the District's customers. The existing District water supply permit will be modified to include the new well assuming it produces water of adequate quality. Well permitting is also required by the City of Orange and Orange County Water District. Encroachment permitting is required by the City of Orange.
11. Have California Native American tribes traditionally and cultural affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? No California Native American tribes have requested consultation with the East Orange County Water District that the District is aware of. In an effort to ensure that the District is communicative with the Tribes in the area, the District will send the Initial Study to the Juaneño Band of Mission Indians - Acjachemen Nation and to the Gabrieleño Band of Mission Indians - Kizh Nation, who may be culturally affiliated with the project area.

Out of an abundance of caution, the District will reach out-during the public review process-to the Native American Tribes listed above to solicit their input.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3 (c) contains provisions specific to confidentiality.

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

| $\boxtimes$ Aesthetics | $\square$ Agriculture and Forestry Resources | $\boxtimes$ Air Quality |
| :--- | :--- | :--- |
| $\boxtimes$ Biological Resources | $\boxed{\text { Cultural Resources }}$ | $\square$ Energy |
| $\boxtimes$ Geology / Soils | $\square$ Greenhouse Gas Emissions | $\boxtimes$ Hazards \& Hazardous Materials |
| $\boxtimes$ Hydrology \& Water Quality | $\square$ Land Use / Planning | $\square$ Mineral Resources |
| $\boxtimes$ Noise | $\square$ Population / Housing | $\square$ Public Services |
| $\square$ Recreation | $\boxtimes$ Transportation | $\boxtimes$ Tribal Cultural Resources |
| $\boxtimes$ Utilities / Service Systems | $\square$ Wildfire | $\boxed{\text { Mandatory Findings of }}$ |
|  |  | Significance |

DETERMINATION (To be completed by the Lead Agency)
On the basis of this initial evaluation, the following finding is made:

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

Tom Dodson \& Associates
Prepared by


Lead Agency (signature)

June 2020 Date

June 29, 2020
Date

## EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be crossreferenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
a) Earlier Analysis Used. Identify and state where they are available for review.
b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9) The explanation of each issue should identify:
a) the significance criteria or threshold, if any, used to evaluate each question; and
b) the mitigation measure identified, if any, to reduce the impact to less than significance.

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

## SUBSTANTIATION

a．Less Than Significant Impact－Adverse impacts to scenic vistas can occur in one of two ways．First， an area itself may contain existing scenic vistas that would be altered by new development．The proposed project would develop a well at one of two sites：the first is a site that currently serves as an equipment storage area for the District，while the other is part of the District Office parking lot．A review of the project area determined that there are no scenic vistas located internally within the areas proposed for the development of the new EOCWD Well．Therefore，the development of the new EOCWD well is not expected to impact any important onsite scenic vistas．A scenic vista impact can also occur when a scenic vista can be viewed from the project area or immediate vicinity and a proposed development may interfere with the view to a scenic vista．The City of Orange General Plan Environmental Impact Report Map depicting Visual Corridors（provided as Figure I－1）does not identify the project sites，or nearby area as containing a scenic vista．The Project is located in an area in which views are extremely limited due to the single－family and multi－family residential developments，as well as the self－storage facility located adjacent to the project sites．Additionally， the proposed well，water treatment system，and solar arrays with batteries and inverters will be located either within the existing EOCWD storage lot，which currently contains a small mobile office and stores various equipment that supports the District＇s operations，including provision of parking for District maintenance vehicles；or within the existing District Office site，which contains existing wells and infrastructure supporting the District＇s water service．The proposed well，once developed and tested，if required will be enclosed within a small structure which will be designed to conform to the surrounding setting，and will not impede any views that may occur within the vicinity of the Project． Furthermore，the well，water treatment system－which may be up to 16 －feet in height，and solar arrays with batteries and inverters－which may be up to 15 －feet in height，will be nestled against the self－storage facility，which has high walls and impedes vistas that might be viewed from the roadway because the well site is set back from the roadway，or the well and solar arrays with battery and inverter may be located against the boundary wall that separates the District Office site from the adjacent residences，which is also set back from the roadway．Therefore，due to the lack of any views within the vicinity of the Project，implementation of the proposed development is not expected to cause any substantial effects on any important scenic vistas．This potential impact is considered a less than significant adverse aesthetic impact．No mitigation is required．
b. Less Than Significant Impact - The project sites do not contain any scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway corridor. The project sites are located within an existing EOCWD storage lot, which currently contains a small mobile office and stores various equipment that supports the District's operations, including provision of parking for District maintenance vehicles, or within the District Office site, which contains existing wells and infrastructure supporting the District's water service. No trees are located within either the District Office or the EOCWD storage lot that would require removal to install the proposed well or solar arrays with battery and inverter. The development of a well, solar arrays with a battery and an inverter, and a treatment system at Well Location \#1, the Project will have a less than significant potential to substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
c. Less Than Significant Impact - The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. The construction of the well will alter the visual setting of either of the two proposed well sites minimally, with the construction of a small building to house the proposed well. However, the well will either be nestled against the self-storage facility, which has high walls or against the boundary wall that separates the District Office site from the adjacent residences; as such, development of a small well enclosure, treatment system, and covered solar array with batteries and inverters at this location would blend in with the setting at and around the project sites. The project sites do not have a distinct visual character that would be degraded by placing well housing and treatment facilities at these locations. Additionally, the well housing, treatment system, and solar arrays with battery and inverter will be constructed to conform to the surrounding visual setting and with the City of Orange Municipal Code to the extent feasible. Furthermore, well development projects such as that which is proposed project are considered land use independent. Therefore, given that the proposed project is in an urbanized area and would not conflict with applicable zoning or other regulations governing scenic quality, impacts under this issue are considered less than significant.
d. Less Than Significant With Mitigation Incorporated - The surrounding land uses within the project footprint consist mainly of Low- to Low-Medium Density Residential uses, with residents of a residential complex adjacent to both well locations, and residents of single-family homes just west of the self-storage facility. Thus, the proposed project has a potential to create a new source of substantial lighting or glare during construction that could adversely affect nighttime views at the adjacent residences, and residences can be considered a light sensitive land use. The site lighting will remain in place, and as such, there will not be a new permanent light source to support operations of the well for security purposes, as this is not required to operate the well. Lighting will be required during the 24 -hour drilling phase of the well construction. In order to ensure that impacts to this issue area remain less than significant, the following mitigation measure will be implemented.

## AES-1 Night lighting will be located and shielded so as to avoid creating a nuisance to nearby residents. Light generated during activities taking place at night shall not spill off the well site onto adjacent occupied structures.

With the implementation of mitigation measure AES-1, lighting and glare impacts will be less than significant. No mitigation is required.

|  | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact or Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| II．AGRICULTURE AND FORESTRY RESOURCES： <br> In determining whether impacts to agricultural resources are significant environmental effects，lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model（1997） prepared by the California Dept．of Conservation as an optional model to use in assessing impacts on agriculture and farmland．In determining whether impacts to forest resources，including timberland，are significant environmental effects，lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state＇s inventory of forest land，including the Forest and Range Assessment Project and the Forest Legacy Assessment project；and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board．Would the project： |  |  |  |  |
| a）Convert Prime Farmland，Unique Farmland or Farmland of Statewide Importance（Farmland），as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency，to non－agricultural use？ | $\square$ | $\square$ | $\square$ | 区 |
| b）Conflict with existing zoning for agricultural use or a Williamson Act contract？ | $\square$ | $\square$ | $\square$ | 区 |
| c）Conflict with existing zoning for，or cause rezoning of，forest land（as defined in Public Resources Code section 12220（g）），timberland（as defined by Public Resources Code section 4526），or timberland zoned Timberland Production（as defined by Government Code section 51104（g））？ | $\square$ | $\square$ | $\square$ | 区 |
| d）Result in the loss of forest land or conversion of forest land to non－forest use？ | $\square$ | $\square$ | $\square$ | 区 |
| e）Involve other changes in the existing environment which，due to their location or nature，could result in conversion of Farmland，to non－agricultural use or conversion of forest land to non－forest use？ | $\square$ | $\square$ | $\square$ | 区 |

## SUBSTANTIATION

a．No Impact－The proposed EOCWD well locations are in an area that is urbanized．Neither the project sites nor the adjacent and surrounding properties are designated for agricultural use；no agricultural activities exist in the project area；and there is no potential for impact to any agricultural uses or values as a result of project implementation．According to the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency，no prime farmland， unique farmland，or farmland of statewide importance exists within the vicinity of the proposed project （Figure II－1）．No adverse impact to any agricultural resources would occur from implementing the proposed project．No mitigation is required．
b．No Impact－There are no agricultural uses currently on the Project sites or on adjacent properties． The project sites are zoned for Residential Multiple Family（R－3）and Residential Duplex（R－2－6）and the General Plan land use designations are General Commercial（GC）and Low Medium Residential．

No potential exists for a conflict between the proposed project and agricultural zoning or Williamson Act contracts within the project area. No mitigation is required.
c. No Impact - Please refer to issues II(a) and II(b) above. The project site is in an urbanized area and neither the land use designation (GC) nor zoning classification (R-3) supports forest land or timberland uses or designations. No potential exists for a conflict between the proposed project and forest/timberland zoning. No mitigation is required.
d. No Impact - There are no forest lands within the project area, which is because the project area is urbanized. No potential for loss of forest land would occur if the Project is implemented. No mitigation is required.
e. No Impact - Because the project sites and surrounding area do not support either agricultural or forestry uses and, furthermore, because the project sites and environs are not designated for such uses, implementation of the proposed project would not cause or result in the conversion of Farmland or forest land to alternative use. No adverse impact would occur. No mitigation is required.
$\left.\begin{array}{|l|c|c|c|c|}\hline & \begin{array}{c}\text { Potentially } \\ \text { Significant Impact }\end{array} & \begin{array}{c}\text { Less Than } \\ \text { Signiticant with } \\ \text { Mitigation } \\ \text { Incorporated }\end{array}\end{array} \begin{array}{c}\begin{array}{c}\text { Less Than } \\ \text { Significant Impact }\end{array} \\ \hline \begin{array}{l}\text { III. AIR QUALITY: Where available, the significance } \\ \text { criteria established by the applicable air quality } \\ \text { management or air pollution control district may be } \\ \text { relied upon to make the following determinations. } \\ \text { Would the project: }\end{array} \\ \text { Noes Impact or } \\ \text { Dot Apply }\end{array}\right]$

SUBSTANTIATION: The following information utilized in this section of the Initial Study was obtained from the Air Quality and GHG Impact Analysis, East Orange County Water District Well Project, City of Orange, California prepared by Giroux and Associates dated August 1, 2019. This document is provided as Appendix 1 to this document.

## Background

## Climate

The climate of Orange, technically called a Mediterranean-type climate, is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. Temperatures near the project area average a very comfortable $63^{\circ} \mathrm{F}$ year-round. Summer afternoons are typically in the middle 80 s and winter mornings drop to the low- to mid-40s. About 45 summer days reach $90^{\circ} \mathrm{F}$, and five days per year may drop to 32 degrees, but significant extremes of temperature are rare in the project area. Rainfall in the Los Angeles Basin varies considerably in both time and space. Orange averages 14.6 inches of rain during a normal year.

The net effect of local airflow in terms of air pollution is that daytime ventilation is good and any locally generated air pollutants will be rapidly dispersed by the strong daytime turbulence. At night, however, pooling of cool air in low elevations combined with light winds does allow for air stagnation in protected areas, especially near area freeways with elevated pollution levels. Because such effects are highly localized, however, the project area is sufficiently far from any major roadways such that it will be little affected by such air stagnation effects. Inversions occur throughout the year to some extent, but the marine inversions are very dominant during the day in summer, and radiation inversions are much stronger on winter nights when nights are long, and air is cool. The governing role of these inversions in atmospheric dispersion leads to a substantially different air quality environment in summer near the project area than in winter.

## Air Quality Standards

Existing air quality is measured at established Southern California Air Quality Management District (SCAQMD) air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table III-1.

Because the State of California had established Ambient Air Quality Standards (AAQS) several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table III-1. Sources and health effects of various pollutants are shown in Table III-2.

Table III-1

## AMBIENT AIR QUALITY STANDARDS



## Footnotes

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter - PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 -hour standard is attained when the expected number of days per calendar year, with a 24 -hour average concentration above $150 \mu \mathrm{~g} / \mathrm{m}^{3}$, is equal to or less than one. For PM2.5, the 24 -hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm .
9 On December 14, 2012, the national PM2.5 primary standard was lowered from $15 \mu \mathrm{~g} / \mathrm{m}^{3}$ to $12.0 \mu \mathrm{~g} / \mathrm{m}^{3}$. The existing national 24-hour PM2.5 standards (primarily and secondary) were retained at $35 \mu \mathrm{~g} / \mathrm{m}^{3}$, as was the annual secondary standard of 15 $\mu \mathrm{g} / \mathrm{m}^{3}$. The existing 24-hour PM10 standards (primarily and secondary) of $150 \mu \mathrm{~g} / \mathrm{m}^{3}$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10 To attain the 1 -hour national standard, the 3 -year average of the annual 98 th percentile of the 1 -hour daily maximum concentrations at each site must not exceed 100 ppb . Note that the national 1 -hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm .

11 On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24 -hour and annual primary standards were revoked. To attain the 1 -hour national standard, the 3 -year average of the annual 99 th percentile of the 1 -hour daily maximum concentrations at each site must not exceed 75 ppb . The 1971 SO2 national standards ( 24 -hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1 -hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm .

12 The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ( $1.5 \mathrm{j} . \mathrm{tg} / \mathrm{m}^{3}$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table III-2
HEALTH EFFECTS OF MAJOR CRITERIA POLLUTANTS

| Pollutants | Sources | Primary Effects |
| :---: | :---: | :---: |
| Carbon Monoxide (CO) | - Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. <br> - Natural events, such as decomposition of organic matter. | - Reduced tolerance for exercise. <br> - Impairment of mental function. <br> - Impairment of fetal development. <br> - Death at high levels of exposure. <br> - Aggravation of some heart diseases (angina). |
| Nitrogen Dioxide $\left(\mathrm{NO}_{2}\right)$ | - Motor vehicle exhaust. <br> - High temperature stationary combustion. <br> - Atmospheric reactions. | - Aggravation of respiratory illness. <br> - Reduced visibility. <br> - Reduced plant growth. <br> - Formation of acid rain. |
| $\begin{aligned} & \hline \text { Ozone } \\ & \left(\mathrm{O}_{3}\right) \end{aligned}$ | - Atmospheric reaction of organic gases with nitrogen oxides in sunlight. | - Aggravation of respiratory and cardiovascular diseases. <br> - Irritation of eyes. <br> - Impairment of cardiopulmonary function. <br> - Plant leaf injury. |
| Lead (Pb) | - Contaminated soil. | - Impairment of blood function and nerve construction. <br> - Behavioral and hearing problems in children. |
| Fine Particulate Matter (PM-10) | - Stationary combustion of solid fuels. <br> - Construction activities. <br> - Industrial processes. <br> - Atmospheric chemical reactions. | - Reduced lung function. <br> - Aggravation of the effects of gaseous pollutants. <br> - Aggravation of respiratory and cardio respiratory diseases. <br> - Increased cough and chest discomfort. <br> - Soiling. <br> - Reduced visibility. |
| Fine Particulate Matter <br> (PM-2.5) | - Fuel combustion in motor vehicles, equipment, and industrial sources. <br> - Residential and agricultural burning. <br> - Industrial processes. <br> - Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics. | - Increases respiratory disease. <br> - Lung damage. <br> - Cancer and premature death. <br> - Reduces visibility and results in surface soiling. |
| $\begin{aligned} & \text { Sulfur Dioxide } \\ & \left(\mathrm{SO}_{2}\right) \end{aligned}$ | - Combustion of sulfur-containing fossil fuels. <br> - Smelting of sulfur-bearing metal ores. <br> - Industrial processes. | - Aggravation of respiratory diseases (asthma, emphysema). <br> - Reduced lung function. <br> - Irritation of eyes. <br> - Reduced visibility. <br> - Plant injury. <br> - Deterioration of metals, textiles, leather, finishes, coatings, etc. |

Source: California Air Resources Board, 2002.

## Baseline Air Quality

Existing and probable future levels of air quality around the project area can best be inferred from ambient air quality measurements conducted by the SCAQMD at the Anaheim monitoring station. This station measures both regional pollution levels such as smog, as well as primary vehicular pollution levels near
busy roadways such as carbon monoxide and nitrogen oxides. Pollutants such as particulates (PM-10 and PM-2.5) are also monitored at Anaheim. Table 3 is a 4 -year summary of monitoring data for the major air pollutants compiled from this air monitoring station. From this data the following conclusions regarding air quality trends can be drawn:

Photochemical smog (ozone) levels occasionally exceed standards. All state and federal ozone standards have been exceeded on less than 1 percent of all days in the past four years. While ozone levels are still occasionally elevated, they are much lower than 10 to 20 years ago.

Respirable dust (PM-10) levels exceed the state standard on approximately 3 percent of measured days. The less stringent federal PM-10 standard has not been exceeded in the last four years.

The federal ultra-fine particulate (PM-2.5) standard of $35 \mu \mathrm{~g} / \mathrm{m}^{3}$ has been exceeded on less than one percent of measurement days in the last four years.

More localized pollutants such as carbon monoxide, nitrogen oxides, etc. are very low near the project site. There is substantial excess dispersive capacity to accommodate localized vehicular air pollutants such as NOx or CO without any threat of violating applicable AAQS. Data from a "near roadway" monitoring study directly along the l-5 shoulder (<50 feet) in Anaheim showed noticeably elevated levels of NOx and CO, but even at this close distance federal clean air standards were not exceeded.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table III-3
AIR QUALITY MONITORING SUMMARY (2015-2018)
(Number Of Days Standards Were Exceeded, And Maximum Levels During Such Violations) (Entries Shown As Ratios = Samples Exceeding Standard/Samples Taken)

| Pollutant/Standard | $\mathbf{2 0 1 5}$ | $\mathbf{2 0 1 6}$ | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 8}$ |
| :--- | :---: | :---: | :---: | :---: |
| Ozone |  |  |  |  |
| 1-Hour > 0.09 ppm (S) | 1 | 2 | 0 | 1 |
| 8-Hour > 0.07 ppm (S) | 1 | 4 | 4 | 1 |
| 8- Hour > 0.075 ppm (F) | 1 | 0 | 2 | 0 |
| Max. 1-Hour Conc. (ppm) | 0.100 | 0.103 | 0.090 | 0.112 |
| Max. 8-Hour Conc. (ppm) | 0.080 | 0.074 | 0.076 | 0.071 |
| Carbon Monoxide |  |  |  |  |
| 8- Hour > 9. ppm (S,F) | 0 | 0 | 0 | 0 |
| Max 8-hour Conc. (ppm) | 2.2 | 2.1 | 2.1 | 1.9 |
| Nitrogen Dioxide | 0 | 0 | 0 | 0 |
| 1-Hour > 0.18 ppm (S) | 0.059 | 0.064 | 0.081 | 0.066 |
| Max. 1-Hour Conc. (ppm) | $11 / 363$ | $3 / 353$ | $17 / 332$ | $13 / 320$ |
| Inhalable Particulates (PM-10) | $0 / 363$ | $0 / 353$ | $0 / 332$ | $0 / 320$ |
| 24-hour > 50 $\mu \mathrm{g} / \mathrm{m}^{3}(\mathrm{~S})$ | 66. | 74. | 128. | 129. |
| 24-hour > $150 \mu \mathrm{~g} / \mathrm{m}^{3}(\mathrm{~F})$ |  |  |  |  |
| Max. 24-Hr. Conc. ( $\mu \mathrm{g} / \mathrm{m}^{3}$ ) | $3 / 295$ | $1 / 349$ | $6 / 305$ | $3 / 353$ |
| Ultra-Fine Particulates (PM-2.5) | 45.8 | 44.4 | 53.9 | 54.1 |
| 24-Hour > 35 $\mu \mathrm{g} / \mathrm{m}^{3}(\mathrm{~F})$ |  |  |  |  |
| Max. 24-Hr. Conc. ( $\mu \mathrm{g} / \mathrm{m}^{3}$ ) |  |  |  |  |
| Souce: Sout Coast AQMD Air |  |  |  |  |

Source: South Coast AQMD Air Monitoring Station Data Summary, Anaheim Station (3176)

## Air Quality Planning

The U.S. EPA is responsible for setting and enforcing the NAAQS for O3, CO, NOx, SO2, PM10, PM2.5, and lead (7). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (14). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air "blueprint" in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8 -hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8 -hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8 -hour standard. The attainment date was to "slip" from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard. Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary "bump-up" from a "severe non-attainment" area to an "extreme non-attainment" designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on "black-box" measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from "severe-17" to "extreme." This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

Table III-4
SOUTH COAST AIR BASIN EMISSIONS FORECASTS (EMISSIONS IN TONS/DAY)

| Pollutant | $\mathbf{2 0 1 5}^{\mathbf{a}}$ | $\mathbf{2 0 2 0}^{\mathbf{b}}$ | $\mathbf{2 0 2 5}^{\mathbf{b}}$ | $\mathbf{2 0 3 0}^{\mathbf{b}}$ |
| :--- | :---: | :---: | :---: | :---: |
| NOx | 357 | 289 | 266 | 257 |
| VOC | 400 | 393 | 393 | 391 |
| PM-10 | 161 | 165 | 170 | 172 |
| PM-2.5 | 67 | 68 | 70 | 71 |

${ }^{\text {a } 2015 ~ B a s e ~ Y e a r . ~}$
${ }^{\text {b }}$ With current emissions reduction programs and adopted growth forecasts.
Source: California Air Resources Board, 2013 Almanac of Air Quality

AQMPs are required to be updated every three years. The 2012 AQMP was adopted in early 2013. An updated AQMP was required for completion in 2016. The 2016 AQMP was adopted by the SCAQMD Board in March, 2017, and has been submitted the California Air Resources Board for forwarding to the EPA. The

2016 AQMP acknowledges that motor vehicle emissions have been effectively controlled and that reductions in NOx, the continuing ozone problem pollutant, may need to come from major stationary sources (power plants, refineries, landfill flares, etc.). The current attainment deadlines for all federal nonattainment pollutants are now as follows:

| 8-hour ozone $(70 \mathrm{ppb})$ | 2032 |
| :--- | :--- |
| Annual PM-2.5 $\left(12 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | 2025 |
| 8-hour ozone $(75 \mathrm{ppb})$ | 2024 (old standard) |
| 1-hour ozone $(120 \mathrm{ppb})$ | 2023 (rescinded standard) |
| 24-hour PM-2.5 $\left(35 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | 2019 |

The key challenge is that NOx emission levels, as a critical ozone precursor pollutant, are forecast to continue to exceed the levels that would allow the above deadlines to be met. Unless additional stringent NOx control measures are adopted and implemented, ozone attainment goals may not be met.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing water improvement projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-thansignificant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

Air quality impacts are considered "significant" if they cause clean air standards to be violated where they are currently met, or if they "substantially" contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix $G$ of the California CEQA Guidelines offers the following four tests of air quality impact significance. A project would have a potentially significant impact if it:
a) Conflict with or obstruct implementation of the applicable air quality plan?
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
c) Expose sensitive receptors to substantial pollutant concentrations?
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

## Primary Pollutants

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

## Secondary Pollutants

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer
models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table III-5
DAILY EMISSIONS THRESHOLDS

| Pollutant | Construction | Operations |
| :---: | :---: | :---: |
| ROG | 75 | 55 |
| NOx | 100 | 55 |
| CO | 550 | 550 |
| PM-10 | 150 | 150 |
| PM-2.5 | 55 | 55 |
| SOx | 150 | 150 |
| Lead | 3 | 3 |

## Additional Indicators

In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.


## Impact Analysis

a. Less Than Significant Impact - Projects such as the proposed VenderWerff Well Development Project do not directly relate to the AQMP in that there are no specific air quality programs or regulations governing general development. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis. The City requires compliance with the Municipal Code for project such as this, and EOCWD intends to meet these standards. The VenderWerff Well Development Project will be fully consistent with both the General Plan designation and Zone classification for the project sites, mainly because the project involves development of a potable water well/vital infrastructure, and such projects are considered land use independent. Thus, the proposed project is consistent with regional planning forecasts maintained by the Southern California Association of Governments (SCAG) regional plans. The SCAQMD, however, while acknowledging that the AQMP is a growthaccommodating document, does not favor designating regional impacts as less than significant only
because of consistency with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis. As the analysis of projectrelated emissions provided below indicates, the proposed project will not cause or be exposed to significant air pollution, and is, therefore, consistent with the applicable air quality plan.
b. Less Than Significant With Mitigation Incorporated - Air pollution emissions associated with the proposed project would occur over both a short and long-term time period. Short-term emissions include fugitive dust from construction activities (i.e., site prep, demolition, grading, and exhaust emission) at the proposed Project site. Long-term emissions generated by future operation of the proposed project primarily include energy consumption required to operate the proposed well.

## Construction Emissions

The project entails drilling, production development, testing of the new well and construction of the water treatment plant. The total area of disturbance will be less than one acre. The proposed well will be drilled to about 800 feet below the ground surface. Drilling will be accomplished by using a reverse rotary drill unit. After testing the well will be equipped for production and converted to a production well. The new well will be connected to the District's distribution system located, which as a worst case, may be about 60 feet from the proposed well location. The project in its entirety is anticipated to require about 6 months to complete.

Estimated construction emissions were modeled using CalEEMod2016.3.2 to identify maximum daily emissions for each pollutant during project construction. Modeling reflected the construction schedule and equipment list as shown in Table III-6.

Table III-6
CONSTRUCTION ACTIVITY EQUIPMENT FLEET

| Phase Name and Duration | Equipment |
| :---: | :---: |
| Casing and Well Drilling 2 weeks | 1 Drill Rig |
|  | 1 Pump |
|  | 1 Loader/Backhoe |
| Equipping the well/Water Treatment Plant 20 weeks | 1 Crane |
|  | 1 Welder |
|  | 1 Loader/Backhoe |
|  | 1 Generator Set |
|  | 1 Forklift |
| Pipeline Installation 2 weeks | 1 Concrete Saw |
|  | 1 Trencher |
|  | 1 Forklift |
|  | 1 Loader/Backhoe |

For drilling, some equipment would operate 24 hours a day and were modeled accordingly. Utilizing the indicated equipment fleet and durations shown in Table III-6 the following worst-case daily construction emissions are calculated by CaIEEMod and are listed in Table III-7.

Table III-7
WELL CONSTRUCTION ACTIVITY EMISSIONS MAXIMUM DAILY EMISSIONS (POUNDS/DAY)

| Maximal Construction Emissions | ROG | NOx | CO | SO $_{\mathbf{2}}$ | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 2 0}$ | 2.4 | 23.3 | 20.5 | 0.1 | 2.0 | 1.5 |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 |

Peak daily construction activity emissions are estimated be below SCAQMD CEQA thresholds without the need for added mitigation.

There will be several solar installation sites, primarily on the top of carports and the warehouse rooftop. The installations will include solar arrays, batteries and inverters. Although most of the install will be on rooftops, to be conservative and allow for minor future changes, 0.25 acres were assumed to be disturbed for grading and concrete pads if ground mounting was to be required. The solar array installation could occur concurrent with the well and treatment system and is expected to require 3 months with a 5 -person work crew. Installation of the solar arrays with batteries and inverters will require forklifts, loader/backhoes and a welder. The construction emissions are shown in Table III-8.

Table III-8
SOLAR ARRAY INSTALLATION EMISSIONS MAXIMUM DAILY EMISSIONS (POUNDS/DAY)

| Maximal Construction Emissions | ROG | NOx | CO | $\mathbf{S O}_{\mathbf{2}}$ | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 2 0}$ | 0.8 | 5.8 | 6.2 | 0.0 | 0.6 | 0.4 |
| SCAQMD Thresholds |  | 75 | 100 | 550 | 150 | 150 |

Emissions from solar array installation are minimal, but were nevertheless added to construction emissions of the well to determine total project impact.

Table III-9
WELL AND SOLAR ARRAY INSTALLATION EMISSIONS MAXIMUM DAILY EMISSIONS (POUNDS/DAY)

| Maximal Construction Emissions | ROG | NOx | CO | SO $_{\mathbf{2}}$ | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Well | 2.4 | 23.3 | 20.5 | 0.1 | 2.0 | 1.5 |
| Solar Arrays | 0.8 | 5.8 | 6.2 | 0.0 | 0.6 | 0.4 |
| Total | $\mathbf{3 . 2}$ | $\mathbf{2 9 . 1}$ | $\mathbf{2 6 . 7}$ | $\mathbf{0 . 1}$ | $\mathbf{2 . 6}$ | $\mathbf{1 . 9}$ |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 |

As shown in Table III-9, installation of the solar arrays will not result in emissions that would exceed the SCAQMD daily thresholds even if the worst day of solar array install were added to the worst day construction emissions for the well.

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24 -hour per day, 365 days per year, 70 -year lifetime exposure. The SCAQMD does not generally require the analysis of construction-related diesel emissions relative to health risk due to the short period for which the majority of diesel exhaust would occur. Health risk analyses are typically assessed over a $9-30-$, or 70 -year timeframe and not over a relatively brief construction period due to the lack of health risk associated with such a brief exposure.

Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, emissions minimization through enhanced dust control measures is recommended for use because of the non-attainment status of the air and proximity of residential uses. Recommended measures include:

## AIR-1 Fugitive Dust Control. The following measures shall be incorporated into Project plans and specifications for implementation:

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone.
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard.
- Sweep streets daily if visible soil material is carried out from the construction site.

Similarly, ozone precursor emissions (ROG and NOx) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control options include:

## AIR-2 Exhaust Emissions Control. The following measures shall be incorporated into Project plans and specifications for implementation:

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

With the above mitigation measures, any impacts related to construction emissions are considered less than significant. No further mitigation is required.

## Operational Emissions

Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping. Electrical consumption has no single uniquely related air pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

An emergency backup generator will be provided to power the pump when necessary. Permits from the SCAQMD and/or CARB are necessary for the operation of backup generators. Acquisition and compliance with relevant permits would ensure that generator operations would not result in exceedance of criteria pollutants. As such, operational emissions would be less than significant.

The proposed solar arrays will provide for a total of approximately 137 kw . This would most likely offset a majority of the energy required for the emergency generator or pump.

## Conclusion

With the incorporation of mitigation measures AIR-1 and AIR-2, the development of the Project would have a less than significant potential to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
c. Less Than Significant Impact - The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4
and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

LST screening tables are available for $25,50,100,200$ and 500 meter source-receptor distances. For this project, there are several adjacent residential uses such that the most conservative 25 meter distance was modeled.

LST pollutant screening level concentration data is currently published for 1,2 and 5 acre sites for varying distances. For this project, the most stringent thresholds for a 1 acre site were applied.

The following thresholds and emissions in Table III-10 are therefore determined (pounds per day):
Table III-10
LST AND PROJECT EMISSIONS (POUNDS/DAY)

| LST 1 acre/25 meters <br> Central Orange County | CO | NOx | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: |
| LST Threshold | 485 | 81 | 4 | 3 |
| Max On-Site Emissions: Well | 20 | 23 | 2 | 1 |
| Max On-Site Emissions: Solar <br> Arrays | 6 | 6 | 1 | 1 |

LSTs were compared to the maximum daily construction activities. Emissions are below the LST construction thresholds without the need for any added mitigation. As such, the proposed project would have a less than significant potential to expose sensitive receptors to substantial pollutant concentrations.
d. Less Than Significant Impact - Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational source odor impacts. A new water well, treatment system, solar arrays with batteries and inverters, and connecting pipeline project are generally not associated with odor impacts such as those often found in wastewater treatment. There are few biological organisms in the water supply and any such sources of odor are further removed in the pre-treatment process. The District currently uses a chlorine generator, though the District proposes a water treatment system that will utilize a GAC, IX or NF treatment process, and may utilize a GAC pretreatment with additional chloramine disinfection (chlorine and ammonia) that will utilize a new or the District's existing chlorine generator, and as such no chlorine gas would be stored on site. A reserve supply of sodium hypochlorite will be stored on site. Periodic cleaning of the degasifying and NF equipment also requires the storage and use of acid (citric or muriadic). NF would also require sulfuric acid and sodium hydroxide for pH adjustment sodium bisulfate for long term storage. The District may also develop a corrosion control system that would utilize any orthophosphate including either zinc orthophosphate, phosphoric acid, or any phosphate blend products with orthophosphate $\left(\mathrm{PO}_{4}{ }^{-3}\right)$ in it. Some treatment chemicals have strong pungent odors. However, they are injected into the water stream and have no airborne pathways; furthermore, sensitive receptors are not located within 100 feet of any location in which chemicals are used. Thus, odor impacts are considered less than significant. No mitigation is required.

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

SUBSTANTIATION: The following information utilized in this section of the Initial Study was obtained from the U.S. Fish and Wildlife Service IPaC Trust Resources and the California Natural Diversity Database reports generated on July 2, 2019 pertaining to the EOCWD VanderWerff Well Development project area only, which is provided as Appendix 2 to this document.
a. No Impact - The EOCWD VenderWerff Well Development project sites are urbanized, and the sites themselves contain no natural habitat and no potential to support any candidate or special status species. The entirety of each of the well development sites are either paved with asphalt/concrete or is covered in gravel, as it is located within a District storage lot. Thus, with no habitat or species of concern located within the project area, the implementation of the EOCWD Well VenderWerff Development Project has no potential to impact any native biological resources. No mitigation is required.
b. No Impact - The project sites and surrounding area do not contain any riparian habitat or other sensitive natural community resources. Therefore, no adverse impact to riparian habitat or any native biological resources would occur from implementing the proposed project. No mitigation is required.
c. No Impact - The project sites and surrounding area are completely developed and are located in an urbanized setting within a developed property. No wetlands exist at the project site, and as such none would be impacted by the proposed project. Therefore, the Project would have no potential to have
a substantial adverse effect on state or federally protected wetlands. Therefore, no impacts under this issue can occur, and no mitigation is required.
d. Less Than Significant With Mitigation Incorporated - As indicated previously, the sites and environs are completely urbanized; no large areas of open space exist in the immediate project area that would facilitate wildlife movement. Due to the developed nature of the project sites as they presently exist, and the constraints to wildlife movement due to the existing arterial roadway system and the fence surrounding each of the project sites, any wildlife movement within the vicinity of the project is not likely. Additionally, the proposed project will be located within an existing developed site, and will not change the overall character of the site as a result of implementation of a new enclosed well. There are potential features within each site that have a potential to support nesting birds. The State protects all migratory and nesting native birds. Several bird species were identified as potentially occurring in the project area. Thus, the project area may include locations that function as nesting locations for native birds. To prevent interfering with native bird nesting, the following mitigation measure shall be implemented.

BIO-1 The State of California prohibits the "take" of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal should be conducted outside of the the State identified nesting season (Raptor nesting season is February 15 through July 31; and migratory bird nesting season is March 15 through September 1). Alternatively, the site shall be evaluated by a qualified biologist prior to the initiation of ground disturbace to determine the presence or absence of nesting birds. Active bird nests MUST be avoided during the nesting season. If an active nest is located in the project construction area it will be flagged and a 300 -foot avoidance buffer placed around it. No activity shall occur within the 300 -foot buffer until the young have fledged the nest.

Thus, with implementation of the above measure, any effects on wildlife movement or the use of wildlife nursery sites can be reduced to a less than significant impact.
e. No Impact - The project area does not contain any native plants or trees. Given that the project sites do not contain a significant potential to support any biological resources, no local policies or ordinances protecting such resources would apply to the modifications proposed at these sites. Therefore, the Project will have a less than significant potential to conflict with any policies or ordinances that protect native biological resources.
f. No Impact - The EOCWD VanderWerff Well Development project sites and surrounding area are not covered by an adopted Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP), and there are no other adopted plans to protect native habitats or natural communities that affect the project site. The City of Orange's General Plan indicates that a portion of the City's open space is located within the 37,380 acres for open space preserve established by the Orange County Central/Coastal NCCP and HCP. The proposed project is not located in an area covered under the Central/Coastal NCCP and HCP. Therefore, no impacts are anticipated and no mitigation is required.

|  | Potentially <br> Significant Impact | Less Than <br> Significan with <br> Mitigation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Does Not Apply |
| :--- | :---: | :---: | :---: | :---: |
| V. CULTURAL RESOURCES: Would the project: |  |  |  |  |
| a) Cause a substantial adverse change in the <br> significance of a historical resource pursuant to <br> §15064.5? | $\square$ | $\boxed{y y y y}$ |  |  |

SUBSTANTIATION: CRM TECH conducted Native American Consultation for the Project, the results of which are documented in a letter prepared by CRM TECH provided as Appendix 3 to this Initial Study.
a\&b. Less Than Significant With Mitigation Incorporated - CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC $\S 5020.1(\mathrm{q})$, "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

The project sites have been previously engineered to serve as District Storage site and the District Office site; no portion of either site contains undeveloped land. The project, therefore, has no significant potential of containing any surface cultural resources. No historical or archaeological sites or isolates are known to be located within the Project boundaries; thus, none of them requires further consideration during this study. Furthermore, the area of disturbance at depth for this project is minimal, given that the Project consists of installation of a well with a 16 " opening, and about 75 feet of pipeline to connect to the District's existing potable water distribution system.

In light of this information and pursuant to PRC §21084.1, the following conclusions have been reached for the Project:

- No historical resources within or adjacent to the Project area have any potential to be disturbed as they are not within the proposed area in which the facilities will be constructed and developed, and thus, the Project as it is currently proposed will not cause a substantial adverse change to any known historical resources.
- No further cultural resources investigation is necessary for the proposed project unless construction plans undergo such changes as to include areas not covered by this study.

However, if buried cultural materials are discovered during any earth-moving operations associated with the Project, the following mitigation measure shall be implemented:

CUL-1 Should any cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist. Responsibility for making this determination shall be with the District onsite inspector. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

With the above contingency mitigation incorporation, potential for impact to cultural resources will be reduced to a less than significant level. No additional mitigation is required.
c. Less Than Significant Impact - As noted in the discussion above, no available information suggests that human remains may occur within the APE and the potential for such an occurrence is considered very low. State law (Section 7050.5 of the Health and Safety Code) as well as local laws requires that the Police Department, County Sheriff and Coroner's Office receive notification if human remains are encountered. Compliance with these laws is considered adequate mitigation for potential impacts and no further mitigation is required.

|  | Potentially <br> Significant Impact | Less Than <br> Significant with <br> mitigation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Does Not Apply |
| :--- | :---: | :---: | :---: | :---: |
| VI. ENERGY: Would the project: |  |  |  |  |
| a) Result in a potentially significant environmental <br> impact due to wasteful, inefficient, or unnecessary <br> consumption of energy resources, during project <br> construction or operations? | $\square$ | $\square$ | $\boxed{y y y y}$ |  |
| b) Conflict with or obstruct a state or local plan for <br> renewable energy or energy efficiency? | $\square$ | $\square$ | $\square$ |  |

## SUBSTANTIATION

a. Less Than Significant Impact - This project proposes the development of a well, treatment system, and solar arrays with batteries and inverters. This development includes the construction of equipment, including pumps, that would be about 650 horsepower (hp) or 1000 amps, and a backup generator. Energy consumption encompasses many different activities. For example, construction can include the following activities: delivery of equipment and material to a site from some location (note it also requires energy to manufacture the equipment and material, such as harvesting, cutting and delivering wood from its source); employee trips to work, possibly offsite for lunch (or a visit by a catering truck), travel home, and occasionally leaving a site for an appointment or checking another job; use of equipment onsite (electric or fuel); and sometimes demolition and disposal of construction waste. For the proposed project the number of employees will be limited due to the small size of the Project and site. Demolition, beyond the removal of a small section of concrete and/or asphalt to install the connecting pipeline, is not anticipated to be required for this project. To minimize energy costs of construction debris management, laws are in place that require diversion of all material subject to recycling. Energy consumption by equipment will be reduced by requiring shutdowns when equipment is not in use after five minutes and ensuring equipment is being operated within proper operating parameters (tune-ups) to minimize emissions and fuel consumption. These requirements are consistent with State and regional rules and regulations. Under the construction scenario outlined above, the proposed project will not result in wasteful, inefficient, or unnecessary energy consumption during construction.

The proposed project will ultimately develop a well that will pump water continuously to contribute to EOCWD's existing potable water distribution system. No new employees are anticipated to be required in support of the Project once the well is in operation. The project will be supplied power from Southern California Edison (SCE) from an existing connection at the proposed well site. Additionally, the District plans to install emergency backup generators at the site, anticipated to be an approximately 300 kW Diesel Generator. Furthermore, the District intends to develop solar arrays with batteries and inverters to supplement the District's energy demands with this renewable energy source. These solar systems will not accommodate the District's entire energy demand, but will contribute to reducing overall conventional energy consumption by the District. As such, the Project is not anticipated to require a significant amount of new electricity. The well and supporting
infrastructure must be constructed in conformance with a variety of existing energy efficiency regulatory requirements or guidelines including, but not limited to the following:

- Compliance California Green Building Standards Code, AKA the CALGreen Code (Title 24, Part 11), which became effective on January 1, 2017. The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of building through the use of building concepts encouraging sustainable construction practices.
- Compliance The Building Energy Efficiency Standards (CBSC) would ensure that the building energy use associated with the proposed project would not be wasteful or unnecessary.
- Compliance with diversion of construction and demolition materials from landfills.
- Compliance with AQMD Mandatory use of low-pollutant emitting finish materials.
- Compliance with AQMD Rules 431.1 and 431.2 to reduce the release of undesirable emissions.
- Compliance with diesel exhaust emissions from diesel vehicles and off-road diesel vehicle/equipment operations.
- Compliance with these regulatory requirements for operational energy use and construction energy use would not be wasteful or unnecessary use of energy.

Further, Southern California Edison (SCE) is presently in compliance with State renewable energy supply requirements and SCE will supply electricity to the Project. Under the operational scenario for the proposed project, the proposed project will not result in wasteful, inefficient, or unnecessary energy consumption that could result in a significant adverse impact to energy issues based on compliance with the referenced laws, regulations and guidelines. No mitigation is required.
b. Less Than Significant Impact - Based on the analysis in the preceding discussion, the proposed project will not conflict with current State energy efficiency or electricity supply requirements or any local plans or programs for renewable energy or energy efficiency requirements. No mitigation is required.

|  | Potentially Significant Impact | Less Than <br> $\begin{array}{c}\text { Sigitifant with } \\ \text { Mitigation } \\ \text { Incorporated }\end{array}$ |  | No Impact or <br> Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| VII．GEOLOGY AND SOILS：Would the project： |  |  |  |  |
| a）Directly or indirectly cause potential substantial adverse effects，including the risk of loss，injury，or death involving： |  |  |  |  |
| （i）Rupture of a known earthquake fault，as delineated on the most recent Alquist－Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault？Refer to Division of Mines and Geology Special Publication 42. | $\square$ | $\square$ | 区 | $\square$ |
| （ii）Strong seismic ground shaking？ | $\square$ | $\square$ | 区 | $\square$ |
| （iii）Seismic－related ground failure，including liquefaction？ | $\square$ | $\square$ | 区 | $\square$ |
| （iv）Landslides？ | $\square$ | $\square$ | $\square$ | 区 |
| b）Result in substantial soil erosion or the loss of topsoil？ | $\square$ | 区 | $\square$ | $\square$ |
| c）Be located on a geologic unit or soil that is unstable， or that would become unstable as a result of the project，and potentially result in onsite or offsite land－ slide，lateral spreading，subsidence，liquefaction or collapse？ | $\square$ | $\square$ | 区 | $\square$ |
| d）Be located on expansive soil，as defined in Table 18－1－B of the Uniform Building Code（1994），creating substantial direct or indirect risks to life or property？ | $\square$ | $\square$ | 区 | $\square$ |
| e）Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater？ | $\square$ | $\square$ | $\square$ | 区 |
| f）Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature？ | $\square$ | 区 | $\square$ | $\square$ |

## SUBSTANTIATION

a．Ground Rupture
Less Than Significant Impact－The Project is located in the City of Orange．According to the City of Orange General Plan Environmental Impact Report（EIR），portions of two possibly active faults，the Peralta Hills fault and the El Modena fault，cross the City of Orange（Figure VII－1）．According to the City of Orange General Plan EIR，the City of Orange does not contain any Alquist－Priolo Special Studies Zones．Based on this information，the risk for ground rupture at the Project location is low； furthermore，the Project will not include any human occupancy structures，but will install a new well to connect to the District＇s potable water distribution system．The design and construction of wells and water treatment facilities is controlled by both state and local design construction standards． Compliance with these standards and requirements of the City is mandatory and considered adequate mitigation for potential impacts associated with this Project．Therefore，the potential for
this Project to expose people or property to the hazard of earthquake fault rupture is considered less than significant. No mitigation is required.

## Strong Seismic Ground Shaking

Less Than Significant Impact - The proposed project sites, as with most of southern California, are in a seismically active area and will most likely be subject to substantial ground shaking during the life of the Project. Due to the proximity of the nearby faults, located about 5 miles northwest of the project sites, the project area can be exposed to significant ground shaking during major earthquakes on either of these regional faults. Wells are not typically susceptible to severe damage from ground shaking. However, because there is a potential for the proposed well development and water treatment system to be subject to relatively strong ground motion, any structures associated with the development of the well, water treatment system, and solar arrays with batteries and inverters will be designed to meet seismic specifications for the project area based on the current Uniform Building Code. No significant impacts are forecast to occur.

## Seismic-Related Ground Failure Including Liquefaction

Less Than Significant Impact - According to the California Geological Survey Earthquake Zones of Required Investigation Orange Quadrangle Map (Figure VI-2), the Project sites are located in a liquefaction zone. However, due to the developed nature of the proposed project sites, which currently consists of a portion of a paved parking lot, with gravel and concrete, and the type of project (well, water treatment system development, and solar arrays with batteries and inverters), liquefaction at the sites is not anticipated to expose people or structures to potential substantial adverse seismic effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction.

## Landslides

No Impact - According to the California Geological Survey Earthquake Zones of Required Investigation Orange Quadrangle Map (Figure VI-2), the Project sites are not located in an area that is considered susceptible to landslides. Therefore, the Project will not expose people or structures to potential substantial adverse landslide effects, including the risk of loss, injury, or death involving landslides. No impacts under this issue are anticipated and no mitigation is required.
b. Less Than Significant With Mitigation Incorporated - The proposed project would not result in substantial soil erosion or the loss of topsoil. The project may result in exposing some soil to erosion during site development activities before the well is drilled. Due to the disturbed nature of the existing sites and the flat topography, it is concluded that the potential for this project to cause substantial soil erosion is low. Implementation of BMPs in conjunction with Mitigation Measure HYD-1 in the Hydrology and Water Quality section to control erosion is considered adequate to mitigate potential impacts associated with the water-related erosion of soil. Please refer to the detailed discussion and mitigation measures addressing wind-related soils erosion (fugitive dust) in the Air Quality section.

GEO-1 The District shall identify best management practices (BMPs, such as hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from construction sites does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.

With implementation of mitigation measure GEO-1, the Project would have a less than significant potential to result in substantial soil erosion or the loss of topsoil.
c. Less Than Significant Impact - The project sites are generally flat. The Project sites are mostly paved or contain gravel and concrete that be repaved where applicable upon completion of the well development and construction of the well enclosure and connection pipeline, as well as the water treatment system and solar arrays with batteries and inverters. As discussed under issue $\mathrm{VII}(\mathrm{a})$ above, liquefaction is not a concern at either of the well development sites and compliance with Uniform Building Code design requirements is considered significant seismic protection for this uninhabited well facility. Additionally, according to the United States Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Service, the soils in the site vicinity are mostly San Emigdo fine sandy loam. This soil class is well drained, and is in a low runoff class (see Appendix 4). Therefore, due to the nature of the proposed project, and the type of soil unit underlying the project site, the proposed project has a less than significant potential to be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse. No further mitigation is required.
d. Less Than Significant Impact - The project sites are generally flat. The Project sites are mostly paved or contain gravel and concrete that will be repaved where applicable upon completion of the well development and construction of the well enclosure and connection pipeline. According to the United States Department of Agriculture Web Soil Survey, the majority of the project area of potential effect (APE) is underlain by Tujunga loamy sand, 0 to 5 percent slopes, San Emigdo fine sandy loam, 0 to 2 percent slopes. Neither of these soil types are classified as being expansive under Table 18-1-B of the Uniform Building Code (1994), particularly as expansive soils are typically in the clay soil family. These classes of soil are well drained and are not considered expansive. Therefore, the proposed well and water treatment system development project will not create a substantial risk to life or property by being placed on expansive soils because none exist on the site. Any impacts are considered less than significant. No mitigation is required.
e. No Impact - The project does not propose any septic tanks or alternative wastewater disposal systems. Therefore, determining if the Project site soils are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater does not apply. No impacts are anticipated. No mitigation is required.
f. Less Than Significant With Mitigation Incorporated - The potential for discovering paleontological resources during development of the Project is considered highly unlikely based on the fact that the site has been previously disturbed from its current use as a parking lot and maintenance storage area. No unique geologic features are known or suspected to occur on or beneath the sites. However, because the Project has not been surveyed in recent history, and the fact that these resources are located beneath the surface and can only be discovered as a result of ground disturbance activities; therefore, the following measure shall be implemented:

GEO-2 Should any paleontological resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection should be performed immediately by a qualified paleontologist. Responsibility for making this determination shall be with the District onsite inspector. The paleontological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

With incorporation of this contingency mitigation, the potential for impact to paleontological resources will be reduces to a less than significant level. No additional mitigation is required.

|  | Potentially <br> Significant Impact | Less Than <br> Significant with <br> mitigation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Does Not Apply |
| :--- | :---: | :---: | :---: | :---: |
| VIII. GREENHOUSE GAS EMISSIONS: Would the <br> project: |  |  |  |  |
| a) Generate greenhouse gas emissions, either directly <br> or indirectly, that may have a significant impact on the <br> environment? | $\square$ | $\square$ | $\boxed{y y y y y}$ |  |

SUBSTANTIATION: The following information utilized in this section of the Initial Study was obtained from the Air Quality and GHG Impact Analysis, East Orange County Water District Well Project, City of Orange, California prepared by Giroux and Associates dated August 1, 2019. This document is provided as Appendix 1 to this document.

## a\&b. Less Than Significant Impact -

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. Many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the Project evaluated in this GHG Impact Analysis cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC.

## Significance Thresholds

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, deciding significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the lead agency to "select the model or methodology it considers most appropriate." The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) $\mathrm{CO}_{2}$ equivalent/year. In September 2010, the SCAQMD CEQA Significance Thresholds GHG Working Group released revisions which recommended a threshold of $3,000 \mathrm{MT} \mathrm{CO} 2 e$ for all land use projects. This $3,000 \mathrm{MT} /$ year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

## Construction Activity GHG Emissions

The project is assumed to require less than one year for construction. During project construction, the CaIEEMod2016.3.2 computer model predicts that the construction activities will generate the annual $\mathrm{CO}_{2} \mathrm{e}$ emissions identified in Table VIII-1.

Table VIII-1
CONSTRUCTION EMISSIONS (METRIC TONS CO2(e))

| Source | $\mathbf{C O}_{\mathbf{2}} \mathbf{}$ |
| :--- | :---: |
| Wells | 144.5 |
| Solar Arrays | 23.3 |
| Total | $\mathbf{1 6 7 . 8}$ |
| Amortized | $\mathbf{5 . 6}$ |
| Significance Threshold | 3,000 |

*CalEEMod Output provided in appendix

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30 -year lifetime. The amortized level is also provided. GHG impacts from construction are considered less than significant.

## Operational GHG Emissions

Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping of the new well. Electrical consumption has no single uniquely related GHG pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis. However, the operational energy requirements will be minimized through the energy generated by the proposed solar arrays.

## Consistency with GHG Plans, Programs and Policies

The City of Orange in its 2015 General Plan Update, stated that there will be planning efforts for the development and adoption of a Climate Action Plan (CAP), as outlined in the General Plan Implementation Program Appendix. The City was to develop and adopt the CAP by December 31, 2012.

The City has not yet completed a finalized Greenhouse Gas Reduction Plan. Regardless, construction of a water well would likely not be relevant to a CAP. The applicable GHG planning document is AB-32. The project is not expected to result in a significant increase in GHG emissions. The project results in GHG
emissions below the recommended SCAQMD 3，000 ton threshold．Therefore，the project would not conflict with any applicable plan，policy，or regulation to reduce GHG emissions．Impacts under this issue are considered less than significant．

|  | $\begin{gathered} \text { Potentially } \\ \text { Significant Impact } \end{gathered}$ | Less Than Sigiticant with mitigation nneon Incorporate | $\begin{aligned} & \text { Less Than } \\ & \text { Significant Impact } \end{aligned}$ | No Impact or Doos Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| IX．HAZARDS AND HAZARDOUS MATERIALS： Would the project： |  |  |  |  |
| a）Create a significant hazard to the public or the environment through the routine transport，use，or disposal of hazardous materials？ | $\square$ | $\square$ | 区 | $\square$ |
| b）Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment？ | $\square$ | 区 | $\square$ | $\square$ |
| c）Emit hazardous emissions or handle hazardous or acutely hazardous materials，substances，or waste within one－quarter mile of an existing or proposed school？ | $\square$ | $\square$ | 区 | $\square$ |
| d）Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and，as a result， would it create a significant hazard to the public or the environment？ | $\square$ | $\square$ | 区 | $\square$ |
| e）For a project located within an airport land use plan or，where such a plan has not been adopted，within two miles of a public airport or public use airport，would the project result in a safety hazard or excessive noise for people residing or working in the project area？ | $\square$ | $\square$ | $\square$ | 区 |
| f）Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan？ | $\square$ | 区 | $\square$ | $\square$ |
| g）Expose people or structures，either directly or indirectly，to a significant risk of loss，injury or death involving wildland fires？ | $\square$ | $\square$ | 区 | $\square$ |

## SUBSTANTIATION

a．Less Than Significant Impact－The proposed project would not create a significant hazard to the public or the environment through the routine transport，use，or disposal of hazardous materials． However，operation and testing of the proposed EOCWD VanderWerff Well would store chemicals required for the treating of water extracted from the well．It is unknown at this time what treatment will be required for the well to meet the standards of the State Water Resources Control Board （SWRCB）Division of Drinking Water（DDW）．However，it is anticipated that a GAC，IX or NF water treatment system will be installed as part of the proposed project．The District currently uses a chlorine generator，though they may also use sodium hypochlorite and ammonia for chlorination to treat the water extracted from the proposed well．Periodic cleaning of the degasifying and NF equipment also requires acid（citric or muriadic）．NF would also require sulfuric acid and sodium hydroxide for pH adjustment and sodium bisulfate for long term storage．Additionally，a corrosion inhibitor is anticipated to be installed that could utilize any orthophosphate including either zinc
orthophosphate, phosphoric acid, or any phosphate blend products with orthophosphate. The substances typically utilized to treat well water, such as sodium hypochlorite, ammonia, and acid, are potentially hazardous substances. Given that GAC, IX or NF will be utilized, which are contaminant removal process that utilize granulated activated carbon, exchange of one set of ions for another or membranes, respectively, EOCWD will develop further safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous. These procedures will comply with all federal, state and local regulations will ensure that the Project operates in a manner that poses no substantial hazards to the public or the environment. Furthermore, the District has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous as part of its current operation, and these procedures comply with all federal, state and local regulations and will ensure that the Project operates in a manner that poses no substantial hazards to the public or the environment. No additional mitigation is necessary to ensure the impact of managing these chemicals result in a less than significant impact on the environment. Therefore, potential impacts to the public or the environment through accidental release due to the routine transport, use, or disposal of hazardous materials would be less than significant.
b. Less Than Significant With Mitigation Incorporated - During construction or maintenance activities in support of the proposed project, treatment system, fuels, oils, solvents, and other petroleum materials classified as "hazardous" will be used to support these operations. Mitigation designed to reduce, control or remediate potential accidental releases must be implemented to prevent the creation of new contaminated areas that may require remediation in the future and to minimize exposure of humans to public health risks from accidental releases. The following mitigation measure reduce such accidental spill hazards to a less than significant level:

## HAZ-1 All spills or leakage of petroleum products during construction activities will be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste will be collected and disposed of at an appropriately licensed disposal or treatment facility.

By implementing this measure, potentially substantial adverse environmental impacts from accidental releases associated with installation of the proposed well can be reduced to a less than significant level.
c. Less Than Significant Impact - The project sites are located within one quarter mile of a school; the nearest schools are McPherson Magnet School, located southeast of the Project at 333 S Prospect St, Orange, CA 92869, and Prospect Elementary School located east of the Project at 379 N Virage St, Orange, CA 92869. However, it is not anticipated to emit hazardous emissions or handle large quantities of hazardous materials or substances that would cause a significant impact to a local school. Furthermore, the District will develop further safety standards and operational procedures and continue to enforce existing safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous. As such, the proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste during construction or operation in a quantity that would pose any danger to people adjacent to, or in the general vicinity of, the project site. Therefore, the impacts of the proposed project to this issue area would be considered less than significant.
d. Less Than Significant Impact - The proposed project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. None of the proposed actions related to the development of the EOCWD well, proposed water treatment system, and solar arrays with batteries and inverters would be near to or impact a site known to have hazardous materials or a site under remediation for hazardous materials or associated issues. A review of the California State Water Resources Control Board GeoTracker database indicates that no open hazardous materials cleanup sites are located within a 2,500 -foot radius of the proposed
well development site (Figure IX-1). There are no nearby open Leaking Underground Storage Tank (LUST) Cleanup sites, though there are several remediated sites as shown on Figure IX-1, the details of which are shown on Figures IX-2 through IX-8. Therefore, the proposed project is not forecast to result in a significant hazard to the public or the environment associated with this issue area. No mitigation is required.
e. No Impact - According to the City of Orange General Plan Environmental Impact Report, the City does not lie within 2 miles of an airport land use plan or within 2 miles of a public airport or a public use airport. Additionally, no private airstrips exist within the planning area, and the planning area is not located within any airport crash zones. Therefore, the project area has no potential to cause or experience any routine or substantial adverse impact related to public airport operations. No impacts will occur as a result of project implementation and no mitigation is required.
f. Less Than Significant With Mitigation Incorporated - The proposed well, treatment system development, and solar arrays with batteries and inverters will be confined to the project site and is not anticipated to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The pipeline that will connect the new well-should it be located at Well Location \#1-to the potable water system will involve a small amount of work within McPherson Road during construction, but this will occur during a limited period of time. In addition, McPherson Road is a dead end street not used for through traffic. A limited potential to interfere with an emergency response or evacuation plan will occur during construction. The City of Orange General Plan Environmental Impact Report indicates that the City has several evacuation routes (shown on Figure IX-9); however, the project sites are not located within an identified emergency access route. Therefore, no such plans will be affected by the Project. Refer to the Transportation/Traffic Section of this document. Mitigation to address potential traffic disruption and emergency access issues are included in this section. Impacts are reduced to a less than significant level with mitigation incorporated. No additional mitigation is required.
h. Less Than Significant Impact - The proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildland are adjacent to urbanized areas or where residences are intermixed with wildland. According to the City of Orange General Plan Environmental Impact Report Environmental and Natural Hazards Policy map (Figure IX-10), the proposed project is not located in a high or very high fire hazard safety area. The proposed well will involve the extraction of ground water, and therefore should not contribute to a wildland fire risk.

|  | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact or Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| X．HYDROLOGY AND WATER QUALITY：Would the project： |  |  |  |  |
| a）Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality？ | $\square$ | 区 | $\square$ | $\square$ |
| b）Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin？ | $\square$ | $\square$ | 区 | $\square$ |
| c）Substantially alter the existing drainage pattern of the site or area，including through the alteration of the course of a stream or river or through the addition of impervious surfaces，in a manner which would： |  |  |  |  |
| （i）result in substantial erosion or siltation onsite or offsite？ | $\square$ | 区 | $\square$ | $\square$ |
| （ii）substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite？ | $\square$ | 区 | $\square$ | $\square$ |
| （iii）create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff？；or， | $\square$ | 区 | $\square$ | $\square$ |
| （iv）impede or redirect flood flows？ | $\square$ | $\square$ | $\square$ | 区 |
| d）In flood hazard，tsunami，or seiche zones，risk release of pollutants due to project inundation？ | $\square$ | 区 | $\square$ | $\square$ |
| e）Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan？ | $\square$ | $\square$ | 区 | $\square$ |

## SUBSTANTIATION

a．Less Than Significant With Mitigation Incorporated－Installation of the proposed well proposed well and water treatment system and connecting pipeline includes activities that have a potential to violate water quality standards or waste discharge requirements due to direct discharge of water brought to the surface during well testing．Prior to pumping large quantities of water from the proposed municipal－supply water well，EOCWD will need to test the quality of the water to verify that it does not contain contaminants that would exceed the standard water quality objectives for this portion of the Santa Ana River Watershed．The Santa Ana Regional Water Quality Control Board（RWQCB） would have jurisdiction over the groundwater quality and surface water discharges for the new well． A General Permit within the Regional Board＇s jurisdiction covers the discharge of groundwater generated from well drilling and development activities．This General Permit establishes specific performance requirements for discharges from well activities and the proposed project must comply with these requirements．Before discharge from the well test program can proceed，sampling must be completed to ensure that maximum contaminant levels（MCLs）of all pollutants are not exceeded in the groundwater brought to the surface and discharged．If water quality is degraded it must be blended to a level below MCLs or any specific pollutant exceeding MCLs must be treated and brought
into compliance with General Permit discharge requirements prior to discharge to meet the MCL requirements for that pollutant. The following mitigation measure ensures that no significantly degraded groundwater (above MCLs) will be discharged during well testing:

HYD-1 The District shall test the groundwater produced from the well prior to discharge. Prior to or during discharge any contaminants shall be blended below the pertinent MCL or treated prior to discharge, including sediment or other material.

The proposed project may result in some soil erosion during drilling and construction activities. Due to the disturbed nature of the project sites, which are located within the District Offices or within an adjacent District storage area and parking lot, and the flat topography of each site, it is concluded that the potential for this project to cause substantial soil erosion, and subsequent water quality impacts, is low. Due to the small size of the proposed project (less than one acre), a Storm Water Pollution Prevention Plan (SWPPP) is not required. However, the District shall implement Best Management Practices (BMPs) during construction, which will be enforced by the following mitigation measure:

HYD-2 The District shall require that the construction contractor to implement specific Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving offsite into receiving waters. These practices shall include a Plan that identifies the methods of containing, cleanup, transport and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations. BMPs to be implemented by the District include the following:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

Implementation of the above mitigation measure, as well as mitigation measures HAZ-1, and HYD-3 below, is considered adequate to reduce potential impacts to stormwater runoff to a less than significant level. The Project would have a less than significant impact under this issue. No further mitigation is required.
b. Less Than Significant Impact - The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a substantial lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). The proposed well will extract groundwater from the Orange County Groundwater Basin (OC Basin). The District pumped about 646 acre feet per year (AFY) in 2015. Based on the data contained in the EOCWD Urban Water Management Plan (UWMP) 2015, the District intends to extract 669 AFY in 2020, and about 723 AFY by 2040 from the OC Basin. Excepting any amounts pumped under the SARCCUP program, this amount is not planned to change. The District's 2015 UWMP states that the OC Basin is managed by Orange County Water

District (OCWD), which functions as a statutorily-imposed physical solution. The OC Basin is managed to maintain water storage levels of not more than $500,000 \mathrm{AF}$ below full condition to avoid permanent and significant negative or adverse impacts. Analysis of the groundwater basin's projected accumulated overdraft, the available supplies to the OC Basin (assuming average hydrology) and the projected pumping demands indicate that this level of pumping can be sustained for 2015-16 without harming the OC Basin. ${ }^{2}$ Based on this information, the development of a new well, treatment system, and solar arrays with battery and inverters in support of the District's water supply would be well within the District's planned and allowable pumping capacity for the OC Basin. Therefore, the proposed project would have a less than significant potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin. No mitigation is required.
c. i-iii

The proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite, or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

The proposed project will be implemented within existing developed sites, and, once the proposed well, treatment system, and solar arrays with batteries and inverters are installed, the drainage pattern of the area of disturbance would not change. As such, it is not anticipated that substantial erosion or siltation would occur on either of the well development sites, given that the drainage will be managed as it is at present. Because the proposed well sites are already disturbed, neither site would have no potential to interfere with the discharge of stormwater over the long-term as the sites will remain essentially the same, with only the small area that will be disturbed as a result of the well development. Furthermore, because the development of the well, treatment system, and solar arrays with batteries and inverters would alter the sites only minimally, the Project would not increase the amount of surface runoff, such that flooding on- or off-site would occur.

Cities require implementation of a set of BMPs to control discharges that surface runoff with pollutants could cause that may cause a significant adverse impact to surface water quality. Storm water pollution prevention BMPs will be incorporated to control potential pollution from construction activities in the vicinity of the selected project site. These measures, such as silt fencing, detention basins, etc., are mandatory, as are the measures for ongoing non-point source pollution controls implemented by the local jurisdictions once the Project is completed. The mandatory BMPs applied in conjunction with Mitigation Measures HAZ-1, and HYD-2 in conjunction with measure HYD-3 below, are deemed sufficient to reduce potential surface water quality impacts to a less than significant level. This is because the stormwater discharge will be treated to the point that the discharge will meet requirements for stormwater runoff from construction sites.

## HYD-3 The District and construction contractor shall select best management practices applicable to the project site and activities on the site to achieve a reduction in pollutants to the maximum extent practicable, both during and following development of the proposed municipal-supply water well and associated pipeline, and to control urban runoff after the Project is constructed and the well (if approved for operation post well testing) is in operation.

Adequate drainage facilities exist or will be developed by this proposed Project to accommodate future drainage flows, and will therefore result in a less than significant impact. Based on the data outlined above, this Project will not substantially alter the existing drainage pattern of the site or area;

[^1]result in substantial erosion or siltation onsite or offsite; substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite; or, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, with the mitigation measure identified above, impacts under these issues are considered less than significant. No further mitigation is required.
c. iv

No Impact - According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) provided as Figure X-1, the well development sites are not located within any special flood hazard area inundated by a 100 -year flood; they are located within Zone X, which is defined an area with a $0.2 \%$ Annual Change Flood Hazard, Areas of $1 \%$ annual change flood with average depth of less than one foot or with drainage areas of less than one square mile. Development of the well at either of these sites, which, as previously stated, are currently developed and that will be minimally disturbed by the development of the proposed well and treatment system, would not impede or redirect flows. The location is outside of roadways, and drainage will be managed within the sites. Therefore, the proposed project would not substantially alter the existing drainage pattern of the sites or area, including through the alteration of the course of a stream or river, in a manner that would impede or redirect flows. No impacts are anticipated under this issue. No mitigation is required.
d. Less Than Significant Impact - Please refer to the discussion under c(iv) above. The project is not located within a flood hazard zone, and based on the BMPs required to ensure that any hazardous materials are handled according to State and District standards, it is not anticipated that a release of pollutants would occur at the project site. The project is located approximately 14 miles from the ocean, and as such is not anticipated to be impacted by tsunami. Furthermore, the Project is located about a mile from the Santiago Creek Recharge Basin, which, according to the City of Orange General Plan Environmental Impact Report, seiche has not historically occurred within the planning area, though it is possible that a seiche could occur within the Santiago Creek Recharge Basin itself. As previously stated, BMPs in place would ensure that the minimal potential for pollutants that may occur on site would not be released in the event of project inundation. Therefore, impacts under this issue are considered less than significant.
e. Less Than Significant Impact - Please refer to the discussion under issue $\mathrm{X}(\mathrm{b})$ above. The Orange County Basin in which the Project will extract water to provide additional potable water service to EOCWD is managed by OCWD which regulates groundwater levels in the Basin by regulating the annual amount of pumping. The OC Basin is not adjudicated and as such, pumping from the Basin is managed through a process that uses financial incentives to encourage groundwater producers to pump a sustainable amount of water. As such, the Basin does not have a sustainable groundwater management plan or and the Project will not interfere with the overall water quality of the Basin as discussed above. However, the development of a new well, treatment system, and solar arrays with batteries and inverters in support of the District's water supply would be well within the District's planned and allowable pumping capacity for the Basin. Therefore, it is not anticipated that the proposed well development project would have a significant potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. No mitigation is required.

|  | Potentially <br> Significant Impact <br> Less Than <br> Significant with <br> Mititation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Doos Not Apply |  |
| :--- | :---: | :---: | :---: | :---: |
| XI. LAND USE AND PLANNING: Would the project: |  |  |  |  |
| a) Physically divide an established community? | $\square$ | $\square$ | $\square$ | $\boxed{\square}$ |
| b) Cause a significant environmental impact due to a <br> conflict with any land use plan, policy, or regulation <br> adopted for the purpose of avoiding or mitigating an <br> environmental effect? | $\square$ | $\square$ | $\square$ | $\boxed{\square}$ |

## SUBSTANTIATION

a. No Impact - According to the City of Orange General Plan Land Use Map (Figure XI-1), the project sites are zoned for Residential Multiple Family (R-3) and Residential Duplex (R-2-6) and the General Plan land use designations are General Commercial (GC) and Low Medium Residential, upon which water facilities, such as wells, treatment system, and solar arrays with batteries and inverters are allowed to be developed. The proposed project will be located within an existing EOCWD maintenance and storage lot or within the District Office site. The project does not involve construction of new structures that would cause any physical division of communities. Since the proposed project occurs within and supports existing land use designations, no potential exists for the proposed project to physically divide an existing community. No impact will result and no mitigation is required.
b. No Impact - Please refer to the discussion under issue $\mathrm{XI}(\mathrm{a})$ above. In general, water production facilities are zone independent because they are needed to support all types of land uses. Thus, implementation will not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated and no mitigation is required.

|  | Potentially <br> Significant Impact | Less Than <br> Significant with <br> Mitigation <br> Incorporated |  |  |
| :--- | :---: | :---: | :---: | :---: |
| XII. MINERAL RESOURCES: Would the project: |  |  | Less Than <br> Significant impact | No Impact or <br> Dooes Not Apply |
| a) Result in the loss of availability of a known mineral <br> resource that would be of value to the region and the <br> residents of the state? | $\square$ | $\square$ | $\square$ | $\square$ |
| b) Result in the loss of availability of a locally important <br> mineral resource recovery site delineated on a local <br> general plan, specific plan or other land use plan? | $\square$ | $\square$ | $\square$ | $\boxed{\square}$ |

## SUBSTANTIATION:

a\&b. No Impact - Implementation of the project will not result in the loss of availability of any known mineral resources that would be of value to the region and the residents of the state. According to the City of Orange General Plan Environmental Impact Report:
"The impact category found not to be significant was mineral resources. Each environmental issue under the mineral resources section of the Initial Study was evaluated and determined not to be a significant effect of the proposed General Plan. As described in the Initial Study, the planning area contains areas identified by the State Mining and Geology Board as regionally significant aggregate resources. These areas are designated as Resource Areas or Open Space in the existing General Plan. The proposed General Plan would continue to implement these land use designations and would not result in the loss of these resources."

As such, given that the proposed project is located outside of the Resource Areas or Open Space land use designations, it is not anticipated that development of a well at the EOCWD's maintenance and storage lot site or the District's Main Office site would impact mineral resources. No known mineral resources operations exist at or in the vicinity of the project. Therefore, the development of the project will not cause any loss of mineral resource values to the region or residents of the state, nor would it result in the loss of any locally important mineral resources identified in the City of Orange General Plan. No impacts would occur under this issue. No mitigation is required.

|  | Potentially <br> Significant Impact <br> Less Than <br> Significant with <br> Mititation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Doos Not Apply |  |
| :--- | :---: | :---: | :---: | :---: |
| XIII. NOISE: Would the project result in: |  |  |  |  |
| a) Generation of a substantial temporary or permanent <br> increase in ambient noise levels in the vicinity of a <br> project in excess of standards established in the local <br> general plan or noise ordinance, or applicable <br> standards of other agencies? | $\square$ |  |  | $\square$ |
| b) Generation of excessive groundborne vibration or <br> groundborne noise levels? | $\square$ | $\square$ | $\square$ | $\square$ |
| c) For a project located within the vicinity of a private <br> airstrip or an airport land use plan or, where such a <br> plan has not been adopted, within two miles of a public <br> airport or public use airport, would the project expose <br> people residing or working in the project area to <br> excessive noise levels? | $\square$ | $\square$ | $\square$ | $\square$ |

## SUBSTANTIATION

## Background

Noise is generally described as unwanted sound. Once the well is developed and tested as a production well, the proposed well will be outfitted with a vertical turbine pump. Mitigation is provided below to ensure that, if the pump exceeds the City's standards for noise levels at the nearest sensitive receptor, it will be housed in a noise attenuation structure. The location for this proposed well is either within the District's existing maintenance and storage lot or within the District's Office site, as are the proposed water treatment systems and solar arrays with batteries and inverters. Residents of a residential complex are located to the east within about 125 feet of the Well Location \#1, while residents are directly adjacent to the District Office site, just over 50 feet to the north of Well Location \#2. Also, residents of single-family homes are located about 100 feet west of the self-storage facility that abuts the Well Location \#1 site.

The unit of sound pressure ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB). Sound or noise can vary in intensity by over one million times within the range of human hearing. A logarithmic loudness scale, similar to the Richter scale for earthquake magnitude, is therefore used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all sound frequencies within the entire spectrum. Noise levels at maximum human sensitivity from around 500 to 2,000 cycles per second are factored more heavily into sound descriptions in a process called "A-weighting," written as "dBA."

Leq is a time-averaged sound level; a single-number value that expresses the time-varying sound level for the specified period as though it were a constant sound level with the same total sound energy as the timevarying level. Its unit is the decibel (dB). The most common averaging period for Leq is hourly.

Because community receptors are more sensitive to unwanted noise intrusion during more sensitive evening and nighttime hours, state law requires that an artificial dBA increment be added to quiet time noise levels. The State of California has established guidelines for acceptable community noise levels that are based on the Community Noise Equivalent Level (CNEL) rating scale (a 24 -hour integrated noise measurement scale). The guidelines rank noise land use compatibility in terms of "normally acceptable," "conditionally acceptable," and "clearly unacceptable" noise levels for various land use types. The State Guidelines, Land Use Compatibility for Community Noise Exposure, single-family homes are "normally acceptable" in exterior noise environments up to 60 dB CNEL and "conditionally acceptable" up to 70 dB CNEL based on this scale. Multiple family residential uses are "normally acceptable" up to 65 dB CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries and churches are "normally acceptable"
up to 70 dB CNEL, as are office buildings and business, commercial and professional uses with some structural noise attenuation.

Table XIII-1
CITY OF ORANGE NOISE ELEMENT POINT SOURCE NOISE STANDARDS


## Notes: dB = A-weighted decibels

Source: City of Orange General Plan Noise Element 2005

Table XIII-2
ORANGE GENERAL PLAN MAXIMUM ALLOWABLE NOISE EXPOSURE—STATIONARY NOISE SOURCES

| Noise Level Descriptor | Daytime (7am-10pm) | Nighttime (10pm-7am) |
| :---: | :---: | :---: |
| Hourly Leq dBA | 55 | 45 |
| Maximum Level Lmax dBA | 70 | 65 |

Notes: (1) These standards apply to new or existing residential areas affected by new or existing non-transportation noise sources, as determined at the outdoor activity area of the receiving land use. However, these noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
(2) Each of the noise levels specified above should be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).
(3) No standards have been included for interior noise levels. Standard construction practices that comply with the exterior noise levels identified in this table generally result in acceptable interior noise levels.
(4) The City may impose noise level standards which are more or less restrictive than those specified above based upon determination of existing low or high ambient noise level.

## Impact Analysis

a. Less Than Significant With Mitigation Incorporated - Implementation of the proposed project will generate noise. Generally, well drilling equipment can generate noise levels of about 70 to 90 dBA at a distance of 50 feet from the equipment. Drilling will be accomplished by using a reverse rotary drill unit to about 800 ft below ground surface (bgs). Drilling will occur over a 24 -hour period until the well is completed to the design depth of about 800 ft bgs for about $3-4$ weeks. Stationary source noise diminishes at a rate of about 6 dB for each doubling of the distance from the source. This means that periodic construction noise levels at the nearest receptor would be only slightly less on the exterior of the nearest receptor located approximately 50 feet or greater from the project site. The well drilling will likely exceed the City's noise standard of 55 dBA or 50 dBA at the exterior of the nearest receptors depending on the time of day. This increase in noise level will be short term. The increased noise levels will not be severe enough to pose a health or hearing hazard, but could be considered a short-term nuisance. However, mitigation is provided below to ensure that a noise wall is utilized during the drilling period to minimize noise levels at nearby sensitive receptors; furthermore, should any residents find that the well drilling noise levels are a nuisance, a program will be in place for such persons to be temporarily relocated. The pipeline, treatment system, and solar arrays with
batteries and inverters will be constructed at a similar distance or more from the nearest residences within the alignment. Pipeline, treatment system, and solar arrays with battery and inverters construction will be limited to daylight hours to prevent significant impacts during the short (no more than one or two week) construction period. Once the new EOCWD well becomes operational, the well will be outfitted with a vertical turbine pump, which will generate noise. However, this noise can be mitigated, as outlined in the mitigation measure below by constructing an enclosure to reduce operational noise levels to a less than significant impact, should the unmitigated noise levels from the well pump exceed City of Orange standards. The pipeline and solar arrays will not generate any noise once constructed, and the treatment system is not anticipated to generate substantial noise. Additionally, to reduce potential short-term effects of noise and long-term noise effects from the well pump to the greatest extent feasible, the mitigation measures presented below will be implementedwhich include constructing temporary noise barrier walls and equipment to meet specified noise level limits during construction activities.

NOI-1 Noise measures shall be implemented to reduce noise levels to the greatest extent feasible (at or below 65 dBA). Measures shall include portable noise barriers and scheduling specific construction activities to avoid conflict with adjacent sensitive receptors.

NOI-2 All construction equipment to be operated with mandated noise control equipment (mufflers or silencers). Enforcement will be accomplished by random field inspections by District personnel during construction activities.

NOI-3 The District will establish a noise complaint/response program and will respond to any noise complaints received for this project by measuring noise levels at the affected receptor. If the noise level exceeds a Ldn of 50 dBA exterior or a Ldn of 45dBA interior between the hours of 8:00 PM and 7 AM on any day except Sunday or a Federal holiday, or between the hours of 8 PM and 9 AM on Sunday or a Federal holiday at the receptor, the applicant will implement adequate measures to reduce noise levels to the greatest extent feasible, including portable noise barriers at the project site or at affected residences, offer temporary relocation to affected residences, or scheduling specific construction activities to avoid conflict with adjacent sensitive receptors.

NOI-4 Well pump noise levels to be limited to $50 \mathrm{~dB}(A)$ or below at the exterior of the nearest sensitive noise receptor. A manner in which this may be accomplished is by installing surface well housing, housed in an enclosure that attenuates noise to meet this performance standard. Another manner in which this may be accomplished is through installing the pump below ground. The aforementioned or other noise reducing measures shall be implemented should the District be unable to demonstrate that noise levels are limited to 50 $d B A$ at the nearest sensitive receptor.

With implementation of the above mitigation measures, the project would have a less than significant potential to generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
b. Less Than Significant With Mitigation Incorporated - Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by vibration of room surfaces is called structure borne noises. Sources of groundborne vibrations include natural phenomena (e.g. earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g. explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous or transient. Vibration is often described in units of velocity (inches per second), and discussed in decibel ( dB ) units in order to compress the range of numbers required to describe vibration. Vibration impacts related to human
development are generally associated with activities such as train operations, construction, and heavy truck movements.

The background vibration-velocity level in residential areas is generally 50 VdB ; Groundborne vibration is normally perceptible to humans at approximately 65 VdB , while 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible. Construction activity can result in varying degrees of groundborne vibration, and can occur as a result of well drilling activities. The City of Orange General Plan Environmental Impact Report indicates that the City of Orange utilizes FTA and Caltrans guidance outlined below is used to establish CEQA significance criteria. Caltrans guidelines recommend that a standard of $0.2 \mathrm{in} / \mathrm{sec}$ PPV not be exceeded for the protection of normal residential buildings, and that $0.08 \mathrm{in} / \mathrm{sec}$ PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2004: 17). FTA recommends a maximum acceptable vibration standard of 80 VdB to minimize impacts to sensitive receptors.

In the short term, construction of the new well will have some potential to create vibration at the nearest sensitive receptor within vicinity of the Project. Well drilling activities are anticipated to attenuate at the nearest sensitive receptor, however mitigation is provided below to prevent any significant impacts. Removal of pavement may require some jackhammer and loader activities, but these activities do not typically generate enough vibration energy to adversely impact adjacent structures. Based on the type of equipment and construction activities required to install the well, water treatment system and short pipeline connection to the District's potable water supply system outlined in the Project Description, the vibration impacts are forecast to be less than significant with implementation of the following contingency mitigation measure shall be implemented:

NOI-5 The construction contractor shall provide signs (2) along the roadway identifying a phone number for adjacent property owners to contact regarding excessive vibration. During future construction activities with well drilling or other heavy equipment capable of significant vibration within 300 feet of occupied residences, vibration field tests shall be conducted at the nearest occupied residences. To the extent feasible, if vibrations exceed 72 VdB , the construction activities shall be revised to reduce vibration below this threshold. These measures may include, but are not limited to the following: use different construction methods, slow down construction activity, or other mitigating measures to reduce vibration at the property from where the complaint was received.

Implementation of the above measure will ensure that any short-term impacts to the nearest sensitive receptor would be considered less than significant. As stated above, no long-term impacts to nearby sensitive receptors would occur as a result of implementation of the new well because vibration as a result of well operation would be minimal. Therefore, with implementation of the above mitigation measure, impacts will be considered less than significant.
c. No Impact - According to the City of Orange General Plan Environmental Impact Report, the City does not lie within 2 miles of an airport land use plan or within 2 miles of a public airport or a public use airport. Additionally, no private airstrips exist within the planning area, and the planning area is not located within any airport crash zones. As such the well development sites are not located within the vicinity of a private airstrip or an airport land use plan, and as such, would not expose people residing or working in the project area to excessive noise levels.

|  | Potentially <br> Significant Impact | Less Than <br> Significan with <br> Mitigation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Doos Not Apply |
| :--- | :---: | :---: | :---: | :---: |
| XIV. POPULATION AND HOUSING: Would the <br> project: |  |  |  |  |
| a) Induce substantial population growth in an area, <br> either directly (for example, by proposing new homes <br> and businesses) or indirectly (for example, through <br> extension of roads or other infrastructure)? | $\square$ | $\square$ | $\square$ | $\square$ |
| b) Displace substantial numbers of existing people or <br> housing, necessitating the construction of replacement <br> housing elsewhere? | $\square$ | $\square$ | $\square$ | $\square$ |

## SUBSTANTIATION

a. Less Than Significant Impact - Implementation of the Project will not induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). This project proposes to develop a new well and connecting pipeline, as well as a treatment system and solar arrays with batteries and inverters in the City of Orange. The well and connecting pipeline will connect to EOCWD's existing water distribution system. Though construction of the new District well, treatment system, and solar arrays with batteries and inverters will require a temporary work force, this is short-term and with a maximum of about 10 employees will not induce substantial population growth. Additionally, the number of employees needed to operate the new well, treatment system, and solar arrays with batteries and inverters is minimal, as it is projected that one to two employees will visit the site on an as needed or scheduled maintenance basis. It is anticipated that these employees will be drawn from the District's existing work force. The development of a new well, treatment system, and solar arrays with batteries and inverters will be important to provide water to the existing population within EOCWD's service area and to any projected growth within their service area. The Project itself will not directly induce population growth as it does not propose any housing and any indirect impacts of increasing the amount of water available within the EOCWD service area is considered less than significant. No mitigation is required.
b. No Impact - The proposed project will occur within an existing District owned site and within the adjacent roadway, neither of which contain housing or persons. No occupied residential homes are located within the project footprint; therefore, implementation of the proposed project will not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere. No impacts will occur; therefore, no mitigation is required.

|  | Less Than <br> Significantially Impact <br> Significan with <br> Mitigation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Doos Not Apply |  |
| :--- | :---: | :---: | :---: | :---: |
| XV. PUBLIC SERVICES: Would the project result in <br> substantial adverse physical impacts associated with <br> the provision of new or physically altered governmental <br> facilities, need for new or physically altered govern- <br> mental facilities, the construction of which could cause <br> significant environmental impacts, in order to maintain <br> acceptable service ratios, response times or other <br> performance objectives for any of the public services: |  |  |  |  |
| a) Fire protection? |  |  |  |  |
| b) Police protection? | $\square$ | $\square$ | $\square$ | $\square$ |
| c) Schools? | $\square$ | $\square$ | $\square$ | $\square$ |
| d) Parks? | $\square$ | $\square$ | $\square$ | $\boxed{\square}$ |
| e) Other public facilities? | $\square$ | $\square$ | $\square$ | $\boxed{\square}$ |

## SUBSTANTIATION

a. Less Than Significant Impact -The City of Orange Fire Department provides the City with full fire protection services and emergency medical service (EMS). According to the City of Orange General Plan EIR, the Orange Fire Department operates eight fire stations and has a staff of 137, including 124 sworn firefighting personnel. Between its eight stations, the Fire Department provides fire paramedic and ambulance service with an integrated paramedic/transportation system. The fire station that serves the Project is less than one mile southeast of the project site; City of Orange Fire Department Station 4, is located on 210 S Esplanade St, Orange, CA 92869, just south of Chapman Avenue. The proposed project may require the use of chemicals such as sodium hypochlorite, ammonia, and acid. Proper storage and handling are required to prevent any potential fire hazards; however, compliance with Federal, State, and local standards pertaining to hazardous materials would prevent a significant impact from occurring. The proposed project will develop a well and water treatment system for EOCWD that will connect to the existing District water distribution system. The only possible structures proposed-a building enclosing the well and above ground pump motor, as well as water treatment system and solar arrays with batteries and inverters-would not present a substantial fire hazard because the materials used to construct these structures are considered fireresistant or would otherwise conform to the Orange Fire Department standards. Thus, with compliance to Federal, State, and local standards, no new or altered fire protection facilities will be required to serve this project. Any impact to the existing fire protection system is considered random and less than significant. No mitigation is required.
b. Less Than Significant Impact - The Orange Police Department provides full police protection services to the planning area. The Police Department headquarters and main police station are located at 1107 North Batavia. The Department also maintains substations in Santiago Canyon and at the Block at Orange. According to the City of Orange General Plan EIR, the department has 167 sworn police officers. The response area of the Police Department is approximately 27 square miles. The proposed project will not include the kind of uses that would likely attract criminal activity, except for random trespass and theft; however, any random trespass is unlikely because the project site will remain fenced off from public access. The proposed well, treatment system, and solar arrays with batteries and inverters would not be readily accessible to the public as the project site is located within an existing fenced District owned site, which only allows access to District employees. This will prevent any trespass from occurring during both operations and construction of the project. The potential for greater demand of police protection services or expansion of police infrastructure as a result of implementation of the proposed project is considered less than significant. No mitigation is required.
c. No Impact - The proposed project is located within the area served by the Orange Unified School District. The nearest schools are McPherson Magnet School, located southeast of the project at 333 S Prospect St, Orange, CA 92869, and Prospect Elementary School located east of the project at 379 N Virage St, Orange, CA 92869. The project would not induce population growth within the City, as operation of the proposed well is not anticipated to require the District to hire additional personnel. Thus, the proposed project will not generate an increase in elementary, middle, or high school population. Therefore, no impacts are anticipated under this issue and no mitigation is required.
d. No Impact - As stated in the preceding sections, the proposed project is not anticipated to create an increase in population because the operation of the proposed well, treatment system, and solar arrays with batteries and inverters will not require any additional District personnel once these features have been installed. There are no parks in the vicinity of the project that would be impacted by the proposed well development project, and with no forecast increase in population, implementation of the proposed project would not cause a substantial adverse physical impact to any parks within the City. No impacts are anticipated and no mitigation is required.
e. No Impact - Other public facilities include library and general municipal services. Since the project will not directly induce population growth, it is not forecast that the use of such facilities will increase as a result of the proposed project. No impacts under this issue are anticipated, and no mitigation is required.

|  | Potentially <br> Significant Impact | Less Than <br> Significan with <br> Mitigation <br> Incorporated | Less Than <br> Significant Impact | No Impact or <br> Does Not Apply |
| :--- | :---: | :---: | :---: | :---: |
| XVI. RECREATION: |  |  |  |  |
| a) Would the project increase the use of existing <br> neighborhood and regional parks or other recreational <br> facilities such that substantial physical deterioration of <br> the facility would occur or be accelerated? | $\square$ | $\square$ | $\square$ | $\square$ |
| b) Does the project include recreational facilities or <br> require the construction or expansion of recreational <br> facilities which might have an adverse physical effect <br> on the environment? | $\square$ | $\square$ | $\square$ | $\square$ |

## SUBSTANTIATION

a. No Impact - As previously discussed in Section XIII, Population and Housing and Section XIV, Public Services, this project will not contribute to an increase in the population beyond that already allowed or planned for by local and regional planning documents. The proposed project will not increase the use of recreational facilities, nor will it result in the physical deterioration of other surrounding facilities. No impact is forecast and no mitigation is required.
b. No Impact - The proposed project will develop a well, treatment system, and solar arrays with batteries and inverters to serve the District service area and will connect to the District's existing water distribution system through a new connection pipeline. The well will be installed and operated by EOCWD. The project does not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. As previously stated, the well, treatment system, and solar arrays with battery and inverters will be located within a site owned by the District, within either/both the District storage lot site or/and the District Offices. Furthermore, the proposed project is not forecast to induce substantial population growth as the well, treatment system, and solar arrays with batteries and inverters will operate without daily in-person supervision; visits will occur by District employees on an as needed or scheduled maintenance basis. Therefore, no impacts are anticipated under this issue, and no mitigation is required.

|  | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact or Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| XVII．TRANSPORTATION：Would the project： |  |  |  |  |
| a）Conflict with a program，plan，ordinance or policy addressing the circulation system，including transit， roadway，bicycle and pedestrian facilities？ | $\square$ | 区 | $\square$ | $\square$ |
| b）Conflict or be inconsistent with CEQA Guidelines section 15064.3 ，subdivision（b）？ | $\square$ | $\square$ | 区 | $\square$ |
| c）Substantially increase hazards due to a geometric design feature（e．g．，sharp curves or dangerous inter－ sections）or incompatible uses（e．g．，farm equipment）？ | $\square$ | $\square$ | 区 | $\square$ |
| d）Result in inadequate emergency access？ | $\square$ | $\square$ | 区 | $\square$ |

## SUBSTANTIATION

a．Less Than Significant With Mitigation Incorporated－The proposed well development project is located within the City of Orange，within the District maintenance and storage lot across the street from the EOCWD offices and within the District Offices；each site is located along McPherson Road． Construction of the well and treatment system will be limited to within the boundaries of either project site，though the development of the well at Well Location \＃1 will require a connection to the District＇s existing potable water distribution system，which will require a short period of construction within McPherson Road．In the short term，construction of the proposed well，treatment system，solar arrays with batteries and inverters and pipeline will result in the generation of around 15－20 additional roundtrips per day on the adjacent roadways by construction personnel and the removal of any graded material and delivery of well construction materials．No new roads are required to construct or operate this project．However，construction within existing roadways is necessary to complete construction of the connecting pipeline，for an estimated period of approximately one to two weeks． No temporary roadway closure will be required though one lane may require closure at any given time throughout construction；given the temporary nature of the construction proposed within McPherson Road，and the limited amount of traffic that utilizes this roadway，the proposed project is not anticipated to conflict with a program，plan，ordinance or policy addressing the circulation system， including transit，roadway，bicycle and pedestrian facilities．However，the proposed project shall implement the following mitigation measure to ensure that disturbances within public roadways will be repaired to at existing or better conditions．

## TRAN－1 The District shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction（green book）or other applicable County of Orange and City of Orange standard design requirements．

The operation phase of the proposed project would require minimal new trips to the project site on a maintenance basis only，and given that the project site is located within or across the street from the District＇s offices，the traffic on adjacent roadways as a result of well operations would be minimal．As such，operation of the proposed project would not conflict with a program，plan，ordinance or policy addressing the circulation system，including transit，roadway，bicycle and pedestrian facilities． Therefore，with implementation of the above mitigation measure，implementation of the project would have a less than significant impact under this issue．
b．Less Than Significant Impact－The proposed project would install a new well，treatment system， solar arrays with batteries and inverters，and connecting pipeline within McPherson Road or within the District Office site．The City of Orange has not developed a threshold for vehicle miles travelled；
however, the proposed project will not require a substantial amount of operational traffic beyond any maintenance trips to the well site, which, as previously stated, is located within or across the street from the District Office, which will enable ease of access for maintenance visits. Construction of the proposed project will require a maximum of about 40 trips to and from the site each day as a result of employee and construction related trips. Given that these trips are temporary, and are not anticipated to exceed 60 miles round trip per day during the 6 month period required to complete construction, construction related vehicle miles traveled impacts are considered less than significant. As such, development of the EOCWD VanderWerff Well Project is not anticipated to result in significant impact related to vehicle miles travelled, and thus would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). Impacts under this issue are considered less than significant.
c. Less Than Significant Impact - The proposed project would not substantially increase hazards due to a design feature or incompatible uses. The construction of the well, treatment system, and solar arrays with batteries and inverters would occur at the District Office or within the District's maintenance and/or storage lot across the street from their offices. With the exception of the aforementioned trip generation during the construction phase and the potential installation of the connection pipeline from the well to the District's distribution system located perpendicular to the Well Location \#1 site within McPherson Road, the proposed project will not alter any adjacent roadways. The construction within the adjacent roadway will be limited to approximately one to two weeks. Furthermore, the roadway within which the pipeline will be installed does not experience heavy traffic. In the long term, no impacts to any hazards or incompatible uses in existing roadways are anticipated because once the pipeline is installed, the roadway will be returned to its original condition, or better. Thus, any potential increase in hazards due to design features or incompatible use will be considered less than significant. No mitigation is required.
d. Less Than Significant Impact - Please refer to the discussion under issue XVII(a) above. The proposed project may require closure of one lane within the roadway in which the well connection pipeline may be installed should the District select Well Location \#1 to develop the well. This effort will occur within McPherson Road. No routine temporary roadway closures will be required; given the temporary nature of the construction proposed within McPherson Road, and the limited amount of traffic that utilizes this roadway, there is a limited potential for short-term hazards and constraints on both normal and emergency access within the affected area. However, there are no emergency access roadways located within the project footprint (shown on Figure IX-9). Adequate emergency access will be provided along these routes throughout construction. In the long term, no impacts to any hazards or incompatible uses in existing roadways are anticipated because once the pipeline alignment is installed, the roadway will be returned to their original condition, or better, and the well operation will be confined to the project site. Therefore, the Project would have a less than significant potential to result in inadequate emergency access. No mitigation is required.

|  | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact or Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| XVIII. TRIBAL CULTURAL RESOURCES: Would <br> the project cause a substantial change in the significance of tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to the California Native American tribe, and that is: |  |  |  |  |
| a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or | $\square$ | 区 | $\square$ | $\square$ |
| b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | $\square$ | $\boxtimes$ | $\square$ | $\square$ |

## SUBSTANTIATION

A Tribal Resource is defined in the Public Resources Code section 21074 and includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following: included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources as defined in subdivision (k) of Section 5020.1;
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purpose of this paragraph, the lead agency shall consider the significance of the resources to a California American tribe;
- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape;
- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision ( g ) of Section 21083.2, or a "non-unique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal resource if it conforms with the criteria of subdivision (a).
a\&b. Less Than Significant With Mitigation Incorporated - The District has not been contacted by any California American Tribes as of November 14, 2019. However, in an effort to ensure that the District is communicative with the Tribes in the area, the District will send the Initial Study to the Juaneño Band of Mission Indians - Acjachemen Nation and to the Gabrieleño Band of Mission Indians - Kizh Nation, who may be culturally affiliated with the project area. Additionally, CRM TECH conducted Native American Consultation for the Project, the results of which are documented in a letter prepared by CRM TECH provided as Appendix 3 to this Initial Study. Furthermore, out of an abundance of caution, the District will reach out-during the public review process-to the Native American Tribes
listed above to solicit their input. Based on the consultation efforts, the following mitigation measure that addresses the actions that shall be taken should discovery of cultural resources be encountered:

TCR-1 The District shall notify the Gabrieleño/Tongva San Gabriel Band of Mission Indians (Tribe) should any cultural materials be discovered during construction activities. Should any cultural materials be discovered, the District shall provide the Tribe with an opportunity to monitor the remainder of earthmoving activities, though the District shall not be obligated to fund the Tribe's monitoring activities. The District shall work with the Tribe to determine a mutually agreeable path forward for monitoring during the remainder of any earthmoving activities associated with the Project.

Given the minimal area of disturbance required in order to develop the proposed well, treatment system, and associated pipeline, mitigation measure CUL-1 will ensure proper handling of buried cultural materials should any be discovered during any earth-moving operations associated with the project. As such, with the implementation of mitigation measure CUL-1, and mitigation measure TCR-1 above, which will enables communication between the Gabrieleño/Tongva San Gabriel Band of Mission Indians and the District, the project has a less than significant potential to cause a substantial change in the significance of tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to the California Native American tribe and that is either a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

|  | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact or Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| XIX．UTILITIES AND SERVICE SYSTEMS：Would the project： |  |  |  |  |
| a）Require or result in the relocation or construction of new or expanded water，wastewater treatment，or stormwater drainage，electric power，natural gas，or telecommunications facilities，the construction or relocation of which could cause significant environmental effects？ | $\square$ | 区 | $\square$ | $\square$ |
| b）Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal，dry and multiple dry years？ | $\square$ | $\square$ | 区 | $\square$ |
| c）Result in a determination by the wastewater treat－ ment provider which serves or may serve the project that it has adequate capacity to serve the project＇s projected demand in addition to the provider＇s existing commitments？ | $\square$ | 区 | $\square$ | $\square$ |
| d）Generate solid waste in excess of State or local standards，or in excess of the capacity of local infrastructure，or otherwise impair the attainment of solid waste reduction goals？ | $\square$ | $\square$ | 区 | $\square$ |
| e）Comply with federal，state，and local management and reduction statutes and regulations related to solid waste？ | $\square$ | $\square$ | 区 | $\square$ |

## SUBSTANTIATION

a．Water
Less Than Significant Impact－The proposed project is a well development project within the EOCWD service area．As discussed in the preceding sections，the development of the proposed well and associated facilities would not have a significant impact on the environment．As discussed under Hydrology and Water Quality issue $X(b)$ ，the proposed well will extract groundwater from the Orange County Groundwater Basin（OC Basin）．The amount of water the District plans to extract from the Basin is not planned to change．As such，though the project would install a well that will connect to the District＇s existing service area，the project would not result in a significant impact．Therefore， impacts under this issue are considered less than significant．

## Wastewater

Less Than Significant With Mitigation Incorporated－The proposed project would install a well， treatment system，solar arrays with batteries and inverters，and connecting pipeline to connect to EOCWD＇s existing potable water distribution system．The pipeline alignment，well，and solar arrays with batteries and inverters and would not require a connection to the Orange County Sanitation District（OCSD）wastewater collection system．However，this project would require a connection to wastewater treatment collection services once in operation for disposal of the concentrate if NF is used．It is not anticipated that expansion of the existing wastewater treatment collection system will be required．However，should the District require an extension or expansion of the existing sewer line to accommodate the disposal of the concentrate if NF is used，the District will complete a subsequent CEQA documentation analyzing the impacts of the installation of this extended infrastructure or will select one of other two proposed treatment systems（［GAC］or［IX］）to treat water extracted from the District＇s existing wells and the new well，as enforced through the following measure：


#### Abstract

UTIL-1 Should the District select NF as the preferred treatment mechanism, and should the installation of NF require an extension or expansion of the existing sewer line to accommodate the disposal of the concentrate generated by the NF treatment system, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of wastewater collection infrastructure. Otherwise, the District shall select another alternative mechanism (either GAC or IX) to treat water extracted from the District's existing wells and the new well.


With the implementation of MM UTIL-1, above, this project would have a less than significant potential to require or result in the relocation or construction of new or expanded wastewater treatment facilities, the construction or relocation of which may cause significant environmental effects.

## Stormwater

Less Than Significant Impact - The proposed project will manage stormwater onsite. Given that the project site within which the well, treatment system, and solar arrays with batteries and inverters will be installed already manages stormwater onsite, it is not anticipated that, once the well treatment system, and solar arrays with batteries and inverters are developed, further drainage facilities will be required to manage runoff. The well will occupy a minimal portion of either of the two proposed well location sites, and as such, the project is not anticipated to result in the relocation or construction of new or expanded stormwater drainage facilities, the construction or relocation of which could cause significant environmental effects. Impacts under this issue are considered less than significant.

## Electric Power

Less Than Significant Impact - The proposed project would install a well, associated pipeline, solar arrays with batteries and inverters and treatment system. The new well, treatment system, solar arrays with batteries and inverters, and connection pipeline will require electricity to operate the well's pump. The project site is served by Southern California Edison (SCE). The site is currently connected to the electrical system, however, a new connection with additional supply will have to be connected to an available source near the site. The effort required to extend additional electricity to the project site is minimal, and will have a less than significant potential to result in the relocation or construction of new or expanded electrical power facilities, the construction or relocation of which could cause significant environmental effects.

## Natural Gas

No Impact - Development of the EOCWD VenderWerff Well Project would not demand natural gas. Therefore, the Project would not result in a significant environmental effect related to the relocation or construction of new or expanded natural gas facilities. No impacts are anticipated.

Telecommunications
Less Than Significant Impact - Development of the EOCWD VenderWerff Well Project will require installation of wireless internet service and phone service. Because telecommunications are available in close proximity to the project site, the effort required to extend additional electricity to the project site is minimal, and will have a less than significant potential to result in the relocation or construction of new or expanded telecommunication facilities, the construction or relocation of which could cause significant environmental effects.
b. Less Than Significant Impact - Please refer to issue X(b), Hydrology and Water Quality, above. The proposed project will develop a well and treatment system to supply water to EOCWD's customers. The proposed well will extract groundwater from the Orange County Groundwater Basin (OC Basin). The District pumped about 646 acre feet per year (AFY) in 2015. Based on the data contained in the EOCWD Urban Water Management Plan (UWMP) 2015, the District intends to extract 669 AFY in 2020, and about 723 AFY by 2040 from the OC Basin. This amount is not planned to change. As stated under Hydrology and Water Quality issue X(b), the available supplies to the OC Basin (assuming average hydrology) and the projected pumping demands indicate that this level of pumping can be sustained for without harming the OC Basin. Based on this information, it is
anticipated that there will be available water supply within the OC Basin to support the District's new well pumping operation. Therefore, the proposed project is anticipated to have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. Impacts under this issue are less than significant. No mitigation is required.
c. Less Than Significant With Mitigation Incorporated - Please refer to the discussion under XIX(a) above. The well and groundwater treatment system operation will not require installation of restroom facilities; construction will require portable toilets that will be handled by the provider of such facilities. However, this project would require a connection to wastewater treatment collection services once in operation for disposal of the concentrate if NF is used. The wastewater treatment provider for the project is Orange County Sanitation District (OCSD). OCSD treats approximately 185 million gallons of wastewater from residential, commercial, and industrial sources at our two plants: Reclamation Plant No. 1 in Fountain Valley and Treatment Plant No. 2 in Huntington Beach. ${ }^{3}$ According to the OCSD 2017 Wastewater Collection and Treatment Facilities Master Plan: Executive Summary ${ }^{4}$, in November 2016, Orange County Water District (OCWD) and OCSD committed to the Groundwater Replenishment System (GWRS) Final Expansion, a project that will further increase the GWRS treatment capacity to 130 million gallons per day (mgd), which requires OCSD to provide approximately 40 million more gallons of secondary-treated wastewater to OCWD per day. This increase will be accommodated through changes and additions to infrastructure that will allow treated effluent from Plant No. 2 in Huntington Beach to be delivered to the GWRS treatment system in Fountain Valley. Should the District select NF as the preferred treatment method, the NF treatment system would require disposal of concentrate to the sewer system at a rate of approximately 150 to 180 gallons per minute (gpm) or a maximum of 259,200 gallons per day (gpd). This would account for approximately $0.14 \%$ of the amount of wastewater OCSD treats daily. As such, it is anticipated that the District's contribution to OCSD's wastewater collection system would be minimal, and OCSD is anticipated to have adequate capacity to serve the project's demand should the District select NF as the preferred water treatment system. Furthermore, as discussed under XIX(a), above, MM UTIL-1 would be required should the installation of the NF treatment system require extension or expansion of wastewater collection infrastructure to meet the demand for disposal of concentrate generated by this treatment system. Therefore, impacts under this issue are considered less than significant with mitigation incorporated.
d\&e. Less Than Significant Impact - This project will result in some construction waste from the removal of asphalt, concrete, and similar materials. The inert wastes can be disposed of at existing municipal solid waste facilities, which have adequate capacity to accept inert wastes generated by this project or can be recycled onsite. The project will not require trash services from the City of Orange's trash, green waste, and recycling provider, CR\&R, as it will not require on-site employee oversight except on an as needed or scheduled maintenance basis. Once in operation, the only above-ground features of the project will be the developed well. Construction and demolition (C \& D) waste will be recycled to the maximum extent feasible in accordance with the California Green Building Code, and any residual materials will be delivered to one of several $C$ \& D disposal sites in the area surrounding the project site. The project will not conflict with any state, federal, or local regulations regarding solid waste. Most waste collected by Waste Management is taken to any of the three landfills in Orange County: Olinda Alpha Landfill in Brea, Frank R. Bowerman Landfill in Irvine, and Prima Deshecha Landfill in San Juan Capistrano. According to CalRecycle (see Table XIX-1 below), each of these facilities has sufficient capacity to serve the Project.

[^2]Table XIX-1
SOLID WASTE DISPOSAL FACILITIES USED BY ORANGE - CAPACITIES

| Facility Name | Permitted Max <br> Disposal (tons/day) | Permitted Capacity <br> (cubic yards) | Remaining Capacity <br> (cubic yards) | Closure Date |
| :--- | :---: | :---: | :---: | :---: |
| Frank R. Bowerman Landfill | 11,500 | $266,000,000$ | $205,000,000$ | $12 / 31 / 2053$ |
| Olinda Alpha Landfill | 8,000 | $148,800,000$ | $34,200,000$ | $12 / 31 / 2021$ |
| Prima Deshecha Landfill | 4,000 | $172,100,000$ | $134,300,000$ | $12 / 31 / 2102$ |

Solid waste will be disposed of in accordance with existing regulations at an existing licensed landfill with adequate capacity to handle the waste. Therefore, the project is expected to comply with all regulations related to solid waste under federal, state, and local statutes and be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs. No mitigation is necessary.

|  | Potentially <br> Significant Impact | Less Than <br> Significant with <br> Mitigation <br> Incorporated |  |  |
| :--- | :---: | :---: | :---: | :---: |
| XX. WILDFIRE: If located in or near state responsi- <br> bility areas or lands classified as very high fire hazard <br> severity zones, would the project: |  |  | Less Than <br> Significant Impact | No Impact or <br> Does Not Apply |
| a) Substantially impair an adopted emergency <br> response plan or emergency evacuation plan? | $\square$ |  |  |  |
| b) Due to slope, prevailing winds, and other factors, <br> exacerbate wildfire risks, and thereby expose project <br> occupants to pollutant concentrations from a wildfire or <br> the uncontrolled spread of wildfire? | $\square$ | $\square$ | $\square$ | $\square$ |
| c) Require the installation or maintenance of <br> associated infrastructure (such as roads, fuel breaks, <br> emergency water sources, power lines or other utilities) <br> that may exacerbate fire risk or that may result in <br> temporary or ongoing impacts to the environment? | $\square$ | $\square$ | $\square$ | $\square$ |
| d) Expose people or structures to significant risks, <br> including downslope or downstream flooding or <br> landslides, as a result of runoff, post-fire slope <br> instability, or drainage changes? | $\square$ | $\square$ | $\square$ | $\square$ |

## SUBSTANTIATION

a-d. No Impact - The proposed project is not located in or near state responsibility areas or lands classified as very high fire hazard severity zone, therefore the proposed project can have no impacts to any wildfire issues. As stated in previous sections, according to the City of Orange Environmental and Natural Hazard Map for the project area, the proposed project is not located within the fire safety severity zone (Figure IX-10). The proposed project area is located in an urban area removed from the high fire hazard areas that are located in the hills to the north and east. As such, no impacts under these issues are anticipated.

|  | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact or Does Not Apply |
| :---: | :---: | :---: | :---: | :---: |
| XXI．MANDATORY FINDINGS OF SIGNIFICANCE： |  |  |  |  |
| a）Does the project have the potential to substantially degrade the quality of the environment，substantially reduce the habitat of a fish or wildlife species，cause a fish or wildlife population to drop below self－sustaining levels，threaten to eliminate a plant or animal community，substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory？ | $\square$ | 区 | $\square$ | $\square$ |
| b）Does the project have impacts that are individually limited，but cumulatively considerable？（＂Cumulatively considerable＂means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects，the effects of other current projects，and the effects of probable future projects）？ | $\square$ | 区 | $\square$ | $\square$ |
| c）Does the project have environmental effects which will cause substantial adverse effects on human beings，either directly or indirectly？ | $\square$ | 区 | $\square$ | $\square$ |

## SUBSTANTIATION

The analysis in this Initial Study and the findings reached indicate that the proposed project can be implemented without causing any new project specific or cumulatively considerable unavoidable significant adverse environmental impacts．Mitigation is required to control potential environmental impacts of the proposed project to a less than significant impact level．The following findings are based on the detailed analysis of the Initial Study of all environmental topics and the implementation of the mitigation measures identified in the previous text and summarized following this section．
a．Less Than Significant With Mitigation Incorporated－The project has no potential to cause a significant impact to any known any biological or cultural resources．The project has been identified as having no potential to degrade the quality of the natural environment，substantially reduce habitat of a fish or wildlife species，cause a fish or wildlife population to drop below self－sustaining levels， threaten to eliminate a plant or animal community，or reduce the number or restrict the range of a rare or endangered plant or animal．The project sites are in an urban area with developed structures and infrastructure surrounding the property and no natural biological habitat exists within the area of potential effects（APE）．Based on the historic disturbance of the site，and its current disturbed condition，the potential for impacting cultural or biological resources is low．No cultural resources could be affected because the site itself has been graded and previously disturbed so it is not anticipated that any resources could be affected by the Project because no cultural resources exist． However，because it is not known what could be unearthed upon any drilling and trenching activities， contingency mitigation measures are provided to ensure that，in the unlikely event that any resources are found，they are protected from any potential impacts．Please see biological and cultural sections of this Initial Study．
b．Less Than Significant With Mitigation Incorporated－The project has nine（9）potential impacts that are individually limited，but may be cumulatively considerable．The issues of Aesthetics，Air Quality， Biological Resources，Cultural Resources，Geology and Soils，Hazards and Hazardous Materials， Hydrology and Water Quality，Noise，Transportation，and Tribal Cultural Resources require the implementation of mitigation measures to reduce impacts to a less than significant level and ensure that cumulative effects are not cumulatively considerable．The project is not considered growth－
inducing, as defined by State CEQA Guidelines. These issues require the implementation of mitigation measures to reduce impacts to a less than significant level and ensure that cumulative effects are not cumulatively considerable. All other environmental issues were found to have no significant impacts without implementation of mitigation. The potential cumulative environmental effects of implementing the proposed project have been determined to be less than considerable and thus, would have a less than significant cumulative impact.
c. Less Than Significant With Mitigation Incorporated - The project will achieve long-term community goals by providing reliable potable water from the new well. The short-term impacts associated with the Project, which are mainly construction-related impacts, are less than significant with mitigation, and the proposed Project is compatible with long-term environmental protection. The issues of Air Quality, Geology and Soils, Hazards and Hazardous Materials, and Noise require the implementation of mitigation measures to reduce human impacts to a less than significant level. All other environmental issues were found to have no significant impacts on humans without implementation of mitigation. The potential for direct human effects from implementing the proposed project have been determined to be less than significant.

## Conclusion

This document evaluated all CEQA issues contained in the latest Initial Study Checklist form. The evaluation determined that either no impact or less than significant impacts would be associated with the issues of Agricultural and Forestry Resources, Energy, Greenhouse Gas Emissions, Land Use and Planning, Mineral Resources, Population/Housing, Public Services, Recreation, and Wildfire. The issues of Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, and Tribal Cultural Resources require the implementation of mitigation measures to reduce impacts to a less than significant level. The required mitigation has been proposed in this Initial Study to reduce impacts for these issues to a less than significant impact.

Based on the findings in this Initial Study, East Orange County Water District proposes to adopt a Mitigated Negative Declaration (MND) for the East Orange County Water District VanderWerff Well Project. A Notice of Intent to Adopt a Mitigated Negative Declaration (NOI) will be issued for this project by the District. The Initial Study and NOI will be circulated for 30 days of public comment because this project does involve state agencies as either a responsible or trustee agency. At the end of the 30 -day review period, a final MND package will be prepared and it will be reviewed by the District. East Orange County Water District will hold a future hearing for project adoption at their offices, the date for which has not yet been determined. If you or your agency comments on the MND/NOI for this project, you will be notified about the meeting date in accordance with the requirements in Section 21092.5 of CEQA (statute).

[^3]Revised 2019
Authority: Public Resources Code sections 21083 and 21083.09
Reference: Public Resources Code sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3/ 21084.2 and 21084.3

## SUMMARY OF MITIGATION MEASURES

## Aesthetics

AES-1 Night lighting will be located and shielded so as to avoid creating a nuisance to nearby residents. Light generated during activities taking place at night shall not spill off the well site onto adjacent occupied structures.

## Air Quality

AIR-1 Fugitive Dust Control. The following measures shall be incorporated into Project plans and specifications for implementation:

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone.
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard.
- Sweep streets daily if visible soil material is carried out from the construction site.

AIR-2 Exhaust Emissions Control. The following measures shall be incorporated into Project plans and specifications for implementation:

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.


## Biological Resources

BIO-1 The State of California prohibits the "take" of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal should be conducted outside of the the State identified nesting season (Raptor nesting season is February 15 through July 31; and migratory bird nesting season is March 15 through September 1). Alternatively, the site shall be evaluated by a qualified biologist prior to the initiation of ground disturbace to determine the presence or absence of nesting birds. Active bird nests MUST be avoided during the nesting season. If an active nest is located in the project construction area it will be flagged and a 300 -foot avoidance buffer placed around it. No activity shall occur within the 300 -foot buffer until the young have fledged the nest.

## Cultural Resources

CUL-1 Should any cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist. Responsibility for making this determination shall be with the District onsite inspector. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

## Geology and Soils

GEO-1 The District shall identify best management practices (BMPs, such as hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from
construction sites does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.

GEO-2 Should any paleontological resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection should be performed immediately by a qualified paleontologist. Responsibility for making this determination shall be with the District onsite inspector. The paleontological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

## Hazards and Hazardous Materials

HAZ-1 All spills or leakage of petroleum products during construction activities will be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste will be collected and disposed of at an appropriately licensed disposal or treatment facility.

## Hydrology and Water Quality

HYD-1 The District shall test the groundwater produced from the well prior to discharge. Prior to or during discharge any contaminants shall be blended below the pertinent MCL or treated prior to discharge, including sediment or other material.

HYD-2 The District shall require that the construction contractor to implement specific Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving offsite into receiving waters. These practices shall include a Plan that identifies the methods of containing, cleanup, transport and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations. BMPs to be implemented by the District include the following:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-3 The District and construction contractor shall select best management practices applicable to the project site and activities on the site to achieve a reduction in pollutants to the maximum extent practicable, both during and following development of the proposed municipal-supply water well and associated pipeline, and to control urban runoff after the Project is constructed and the well (if approved for operation post well testing) is in operation.

## Noise

NOI-1 Noise measures shall be implemented to reduce noise levels to the greatest extent feasible (at or below 65 dBA ). Measures shall include portable noise barriers and scheduling specific construction activities to avoid conflict with adjacent sensitive receptors.

NOI-2 All construction equipment be operated with mandated noise control equipment (mufflers or silencers). Enforcement will be accomplished by random field inspections by District personnel during construction activities.

NOI-3 The District will establish a noise complaint/response program and will respond to any noise complaints received for this project by measuring noise levels at the affected receptor. If the noise level exceeds a Ldn of 50 dBA exterior or a Ldn of 45 dBA interior between the hours of 8:00 PM and 7 AM on any day except Sunday or a Federal holiday, or between the hours of 8 PM and 9 AM on Sunday or a Federal holiday at the receptor, the applicant will implement adequate measures to reduce noise levels to the greatest extent feasible, including portable noise barriers at the project site or at affected residences, offer temporary relocation to affected residences, or scheduling specific construction activities to avoid conflict with adjacent sensitive receptors.

NOI-4 Well pump noise levels to be limited to $50 \mathrm{~dB}(\mathrm{~A})$ or below at the exterior of the nearest sensitive noise receptor. A manner in which this may be accomplished is by installing surface well housing, housed in concrete block structure that attenuates noise to meet this performance standard. Another manner in which this may be accomplished is through installing the pump belowground. The aforementioned or other noise reducing measures shall be implemented should the District be unable to demonstrate that noise levels are limited to 50 dBA at the nearest sensitive receptor.

NOI-5 The construction contractor shall provide signs (2) along the roadway identifying a phone number for adjacent property owners to contact regarding excessive vibration. During future construction activities with well drilling or other heavy equipment capable of significant vibration within 300 feet of occupied residences, vibration field tests shall be conducted at the nearest occupied residences. To the extent feasible, if vibrations exceed 72 VdB , the construction activities shall be revised to reduce vibration below this threshold. These measures may include, but are not limited to the following: use different construction methods, slow down construction activity, or other mitigating measures to reduce vibration at the property from where the complaint was received.

## Transportation

TRAN-1 The District shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable County of Orange and City of Orange standard design requirements.

## Tribal Cultural Resources

TCR-1 The District shall notify the Gabrieleño/Tongva San Gabriel Band of Mission Indians (Tribe) should any cultural materials be discovered during construction activities. Should any cultural materials be discovered, the District shall provide the Tribe with an opportunity to monitor the remainder of earthmoving activities, though the District shall not be obligated to fund the Tribe's monitoring activities. The District shall work with the Tribe to determine a mutually agreeable path forward for monitoring during the remainder of any earthmoving activities associated with the Project.

## Utilities and Service Systems

UTIL-1 Should the District select NF as the preferred treatment mechanism, and should the installation of NF require an extension or expansion of the existing sewer line to accommodate the disposal of the concentrate generated by the NF treatment system, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of wastewater collection infrastructure. Otherwise, the District shall select another alternative mechanism (either GAC or IX) to treat water extracted from the District's existing wells and the new well.

## REFERENCES

Arcadis, 2015 Urban Water Management Plan (Final) prepared for East Orange County Water District, June 2016

CRM TECH, "Native American Consultation, EOCWD North Well Project" dated April 11, 2020
Giroux \& Associates, "Air Quality and GHG Impact Analysis, East Orange County Water District Well Project, City of Orange, California" dated June 15, 2020.

Orange General Plan, March 2010
Orange General Plan Program Environmental Impact Report, March 2010
U.S. Fish and Wildlife Service IPaC Trust Resources and the California Natural Diversity Database reports generated on July 2, 2019
https://www.eocwd.com/about
https://www.ocsd.com/Home/ShowDocument?id=29415
https://www.ocsd.com/Home/ShowDocument?id=23429\#:~:text=Every\ day\%2C\ 0CSD\ provid es\%20up,for\%20residents\%20of\%20Orange\%20County

## FIGURES




FIGURE 2
Tom Dodson \& Associates
Environmental Consultants


FIGURE 3


Source: City of Orange General Plan EIR
FIGURE I-1
Tom Dodson \& Associates



FIGURE VII-1



FIGURE IX-1


## Site History

No site history available
Back to Top
Conditions of Use
Privacy Policy
Accessibility


```
2747 CHAPMAN
ORANGE, CA 9286
OUSTGEEANUP SITE (INFO)
PRIRTABLE CASE SUMMARY/CSM REPORT
Summary Cleanup Action ReportRegulatory ActivitiesEmwironniental Data (ESI)Ste Haps i DocumentsComenunity huolvemen
```

```Summary Cleanup Action Repert
```

CLEANUP OVERSIGHT AGENCIES
ORANGE COUNTY LOP (LEAD) - CASE *: O3UT097
CASEWORKER SHYA MALA RA UAGOPAL
SANTA AMA RNMCB (REGION S)
CASEWORKER: ROSESCOTT

## Regulatory Profile <br> Regulatory Profile

PRINTABLE CASE SUMMAFY

CLEANUP STATUS - DEFINITIONS
COMPLETED - CASE CLOSED AS OF 3/14/2005 -CLEANUP \&TATUS HETORY
POTENTIAL CONTAMINANTS OF CONCERN
GASOLINE
ELLELOCATION
LOCAL AGENCY
DWR GROUNDWAIER SUB-BASIN NAME
Coastal Plain Of Orange County (B-001)

## POTENTIAL MEDIA OF CONCERN

 SOILDESIGNATED GROUNDWATER BENEFICIAL USE(S) - REFINITIONS MUN, AGR, IND, PROC

CALWATER WATERSHED NAME
Santa Ana River - Lower Santa Ana River - East Coastal Plain (B01.11)
Site History
No site history available


FIGURE IX-3


```
6282019


TEXACO SERVICE STATION (TO605901727) - (MAP)
```

3232 GHAPMAN
ORANGE,CA 92869
ORANGE'COUNTY
PRINTABLE CASE SUMMARY/ CSM REPORT
Summary Cleanup Action Report

CLEANUP OVERSIGHT AGENCIES
ORANGE COUNTY LOP (LEAD) -CASE : P9UTOO
CASEWORKER: SHYA MAL A RAJASOPAL
SANTAANARVOCB(REGION 8)-CASE*: 0830024157
CASEWORKER: ROSE SCOTT

CLEANUP STATUS - DEEINITIONS
COMPLETED - CASE CLIOSED AS OF 3/5/1998
CLEANUP STATUS HISTOFY
POTENTIAL CONTAMINANTS OF CONCERN
GASOLINE
FILE LOCATION
LOCAL AGENCY
DWR GROUNDWAIER SUB-BASIN NAME
Coastal Plain Of Orange County (8-001)

POTENTIAL MEDIA OF CONCERN SOIL
DESIGNATED GROUNDWATER BENEFICIAL USE(S) - DEFINITIOMS
MUN, AGR, IND, PROC
CALWATER WATER SHED NAME
Santa Ana River - Lower Santa Ana River - East Coastal Plain (801.11)

Site History
No site history available

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MOBIL \#18-J7X (T0601993707) - (MA2)


## Post Closure Site Management Requirements

NOTIFY PRIOR TO CHANGE IN LAND USE
PERFORM HZS PLAN PRIOR TI SUBSUR FACE WORK

```
Future Land Use Feported at Closure
    commercial
```


## Site History

Please refer to recent Site Documents or Monitoring Reports in GeoTracker for site history. Orange County is not responsible for the accuracy of any professional interpretalions provided in reports submitted by consultants for the responsible party
geotrackerwaterburards.ca.goviprofile_report.asp?global_id=T0601993707

FIGURE IX-7
ORANGE, CA 92608
LUST GLEANUP SITE INFO
PRINTABLE CASE SUMMAAY/ CSM REFORT
Summary Eleanup Action Report
Regulatory Activities Envir onmertas Daió $\mathbb{1}$ Sn
Ie Maps i Documerts

## CLEARUP OVERSIGHT AGENCIES <br> OR ANGE COUNTY LOP (IEADT-CASE : 85UTOO <br> CASEWORKER: SHYAMAL A RA JAGOFAL <br> SANTA ANA RWCRCB (REGION 8) - CASE $: 083000928$ T <br> CASEWORKER: RATRICIA HANNON

## Regulatory Profile

PRINTABLE CASE SUMMAAY

CLEANUP STATUS - DEFINITIONS
COMPLETED - CASE CLOSED AS OF 2/15/1990 - CLLEANUP STATUS HSTORY POTENTIAL CONTAMINANTS OF CONCERN
DIESEL. WASTE OIL / MOTOR / HYDRAULIC / LUBRICATING

## EILELOCATION

LOCAL AGENCY
DWR GROUND WATER SUB-BASIN NAME
Coastal Plain Of Orange County (B-001)

## POTENTIAL MEDIA OF CONCERN

 SOILDESIGNATED GROUNDWATER BENEFICIAL USE(S) - DEFINITIONS
MUN, AGR, IND, PROC
CALWATER WATERSHED NAME
Santa Ana River - Lower Santa Aria River - East Coastal Plain (801.11)

## Site History

No site history available


FIGURE IX-8



Source: City of Orange General Plan


# wo SCREEN Area of Minimal Flood Hazard Zonex $x$ $\square$ Effective LoMRS Area of Undetermined Flood Hazard Zons 0 [": ": 3 otherwise Protected Area OTHER AREAS $\$ 5.8$ coastal Earrier Resource System Area 

Approximate location based on user input and does not represent an authonitative property location

Selected FloodMap Boundary Digital Data Available No Digital Data Avalable

MAP PANELS
Unmapped

|  | Without Base Flood Elevation (BFE) <br> Zons A V. A99 |
| :--- | :--- |
| WPECIAL FLOOD | With BFE or Depth |
| HAZARD AREAS | Regulatory Floodway Zone AE, AO, AN, VE, AR |

$0.2 \%$ Annual Chance Flood Hazard, Areas of $1 \%$ annual chance flood with average depth less than one foot or with drainage areas of less than one square mile zone $x$ Future Conditions 1\% Annual Future Conditions 1\% Annual
Chance Flood Hazard Zone $x$ Area with Reduced Flood Risk due to Levee. See Notes. Zone $x$ Area with Flood Risk due to Levee Zone $D$


FIGURE X-


Source: City of Orange General Plan

## APPENDIX 1

# AIR QUALITY and GHG IMPACT ANALYSES EAST ORANGE COUNTY WATER DISTRICT WELL PROJECT CITY OF ORANGE, CALIFORNIA 

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Project No.: P19-032 V1 AQ

## ATMOSPHERIC SETTING

## Regional Climate

The climate of Orange, technically called a Mediterranean-type climate, is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. Temperatures near the project area average a very comfortable $63^{\circ} \mathrm{F}$ year-round. Summer afternoons are typically in the middle 80s and winter mornings drop to the low- to mid-40s. About 45 summer days reach 90 degrees F , and five days per year may drop to 32 degrees, but significant extremes of temperature are rare in the project area. Rainfall in the Los Angeles Basin varies considerably in both time and space. Rainfall amounts vary from an average of 10 to 18 inches as a function of local exposure and topography. Orange averages 14.6 inches of rain during a normal year. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early April with summers often completely dry. Light rain ( $0.1^{\prime \prime}$ in 24 hours) falls on 20 days during a normal year with 10 days in the moderate ( 0.5 " in 24 hours category).

Winds blow primarily from southwest to northeast by day and from northeast to the southwest at night in response to the regional pattern of onshore flow by day and offshore flow at night. Average wind speeds are 5 mph average in the Orange area, reaching 6-8 mph in the afternoon but dropping to near calm conditions ( $1-3 \mathrm{mph}$ ) at night.

The net effect of local airflow in terms of air pollution is that daytime ventilation is good and any locally generated air pollutants will be rapidly dispersed by the strong daytime turbulence. At night, however, pooling of cool air in low elevations combined with light winds does allow for air stagnation in protected areas, especially near area freeways with elevated pollution levels. Because such effects are highly localized, however, the project area is sufficiently far from any major roadways such that it will be little affected by such air stagnation effects.

In addition to winds that control the rate and direction of pollution dispersal, Southern California is notorious for strong temperature inversions that limit the vertical depth through which pollution can be mixed. In summer, coastal areas are characterized by a sharp discontinuity between the cool marine air at the surface and the warm, sinking air aloft within the high-pressure cell over the ocean to the west. This marine/subsidence inversion allows for good local mixing but acts like a giant lid over the basin. Air starting onshore at the beach is relatively clean but becomes progressively more polluted as sources continue to add pollution from below without any dilution from above. Air arriving at Orange during warm season marine flow conditions has undergone limited photochemical reactions, but not to its fullest extent possible. Summer smog levels in Orange are much lower than in inland valleys of the basin such as the San Gabriel or the PomonaWalnut Valleys. Summer air quality is only moderately degraded compared to the severe degradation found farther inland within the air basin.

A second inversion type forms on clear, winter nights when cold air off the mountains sinks to the surface while the air aloft remains warm. This process forms radiation inversions. These inversions, in conjunction with calm winds, trap pollutants such as automobile exhaust near their source. During the long nocturnal drainage flow from land to sea, the exhaust pollutants continually accumulate within the shallow, cool layer of air near the ground. Central Orange

County thus may experience elevated levels of carbon monoxide and nitrogen oxides because of this winter inversion condition. With ongoing vehicular improvements, clean air standards are generally not exceeded during nocturnal stagnation periods as they were 10-20 years ago.

Both types of inversions occur throughout the year to some extent, but the marine inversions are very dominant during the day in summer, and radiation inversions are much stronger on winter nights when nights are long, and air is cool. The governing role of these inversions in atmospheric dispersion leads to a substantially different air quality environment in summer near the project area than in winter.

## AIR QUALITY SETTING

## Ambient Air Quality Standards (AAQS)

In order to gauge the significance of the air quality impacts of the proposed project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended several times in air quality problem areas like Southern California. In 2003, the Environmental Protection Agency (EPA) adopted a rule, which extended and established a new attainment deadline for ozone for the year 2021. Because the State of California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table 1. Sources and health effects of various pollutants are shown in Table 2.

The Federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environmental Protection Agency (EPA) review all national AAQS in light of currently known health effects. EPA was charged with modifying existing standards or promulgating new ones where appropriate. EPA subsequently developed standards for chronic ozone exposure ( $8+$ hours per day) and for very small diameter particulate matter (called "PM-2.5"). New national AAQS were adopted in 1997 for these pollutants.

Planning and enforcement of the federal standards for PM-2.5 and for ozone (8-hour) were challenged by trucking and manufacturing organizations. In a unanimous decision, the U.S. Supreme Court ruled that EPA did not require specific congressional authorization to adopt national clean air standards. The Court also ruled that health-based standards did not require preparation of a cost-benefit analysis. The Court did find, however, that there was some inconsistency between existing and "new" standards in their required attainment schedules. Such attainment-planning schedule inconsistencies centered mainly on the 8 -hour ozone standard. EPA subsequently agreed to downgrade the attainment designation for a large number of communities to "non-attainment" for the 8 -hour ozone standard.

Table 1


## Table 1 (continued)

1. Califomia standards for ozone, carbon monoxide (except $\$$-hour lake lahoc), sulfur dioxide ( 1 and 24 hour), nitrogen dioxide, and paticulate mitler (PM10. PM2.5, and visibitity whemg patictes), ate values that are now to be exeeded. All others are not to be
 Califomia Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than

 calendar year with a 24-hour average concentration above $150 \mu \mathrm{~g} \mathrm{~m}^{2}$ is equal to or less than one For PM 2.5 , the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. T.PA for limher clarification ame cument halional polkics.

 temperature of $25^{\circ} \mathrm{C}$ and a relerence paessure ol 760 ton: $p$ pin in this table relers to ppu by volume. or mindondes of pollutant per mole of pas.
3. Any equivalent measurement method which can be shown to the satisfaction of the $A R B$ to give equivalent results at or near the level of the air quality standard may be used.

4. National Secondary Standards: The levels of air quality necessary to protect the public weltare from any knoxn or anticipated adverse effects of a pollutant
5. Reference method as described by the TUS. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

 Lour PM2. 5 slaudards (primary aud secondary) were retained al $35 \mathrm{mg}^{3} \mathrm{~m}^{3}$. as was the anual secondary standard of 15 , g /in ${ }^{2}$ The existing 21-hour PM10 standiards (primary and secondary) of $150 \mu \mathrm{~g} / \mathrm{m}^{7}$ also were retained. The form of the annual primaty and secondary standats is the amual mean, averaged over 3 yars.
6. To atain the 1-hour national standard, the 3-year average of the annual 98 th percentile of the 1 -hour daily maximum concentrations at each site must not exceed 100 ppb . Note that the national 1-hour standard is in units of parts per billion (ppb). Califorma standards are in
 lionu ppo to ppus. In tlis case, the national staudard of 100 ppb is identical to 0.100 ppm .
7. On Tune 2, 2010, a netw 1 -hom $\mathrm{SO}_{2}$ standad was eqablished and the existing 24 -hom and anmal primary standards were tevoked. To attain the 1 -hour national standard, the 3 -year average of the annual 99 th percentile of the 1 -hour daily maximum concentrations at each
 designated for the 2010 standard, excepr that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
 dircetly compare the 1 -hour national standard to the ('alifornia standard the units can he ennverted to ppm. In this case. the national standard of 75 ppl is itemitical to 0.075 pqum .
8. The ARB has identificd lead and vinyl chloride as 'toxic air contaminants' with no threshold level of cxposure for adverse health effects
 Ilicse pelluatas.
9. The national standand for lead was revised on Octuber 15,2008 to a nolling 3-month average. The 1978 lead standard ( $1.5 \mu \mathrm{~g} / \mathrm{m}^{3}$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard. except that in areas designated
 standard are approved.
 mistrumeratal equvalents, which are "extmelion of' 0.23 per kilometen" and "extinction al' 0.07 per kilomelet" for the slalewide and Take Tahoe Air Busin standards, respectively.

Table 2
Health Effects of Major Criteria Pollutants

| Pollutants | Sources | Primary Effects |
| :---: | :---: | :---: |
| Carbon Monoxide (CO) | - Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. <br> - Natural events, such as decomposition of organic matter. | - Reduced tolerance for exercise. <br> - Impairment of mental function. <br> - Impairment of fetal development. <br> - Death at high levels of exposure. <br> - Aggravation of some heart diseases (angina). |
| Nitrogen Dioxide $\left(\mathrm{NO}_{2}\right)$ | - Motor vehicle exhaust. <br> - High temperature stationary combustion. <br> - Atmospheric reactions. | - Aggravation of respiratory illness. <br> - Reduced visibility. <br> - Reduced plant growth. <br> - Formation of acid rain. |
| Ozone $\left(\mathrm{O}_{3}\right)$ | - Atmospheric reaction of organic gases with nitrogen oxides in sunlight. | - Aggravation of respiratory and cardiovascular diseases. <br> - Irritation of eyes. <br> - Impairment of cardiopulmonary function. <br> - Plant leaf injury. |
| Lead (Pb) | - Contaminated soil. | - Impairment of blood function and nerve construction. <br> - Behavioral and hearing problems in children. |
| Respirable Particulate Matter (PM-10) | - Stationary combustion of solid fuels. <br> - Construction activities. <br> - Industrial processes. <br> - Atmospheric chemical reactions. | - Reduced lung function. <br> - Aggravation of the effects of gaseous pollutants. <br> - Aggravation of respiratory and cardio respiratory diseases. <br> - Increased cough and chest discomfort. <br> - Soiling. <br> - Reduced visibility. |
| Fine Particulate Matter (PM-2.5) | - Fuel combustion in motor vehicles, equipment, and industrial sources. <br> - Residential and agricultural burning. <br> - Industrial processes. <br> - Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics. | - Increases respiratory disease. <br> - Lung damage. <br> - Cancer and premature death. <br> - Reduces visibility and results in surface soiling. |
| Sulfur Dioxide $\left(\mathrm{SO}_{2}\right)$ | - Combustion of sulfur-containing fossil fuels. <br> - Smelting of sulfur-bearing metal ores. <br> - Industrial processes. | - Aggravation of respiratory diseases (asthma, emphysema). <br> - Reduced lung function. <br> - Irritation of eyes. <br> - Reduced visibility. <br> - Plant injury. <br> - Deterioration of metals, textiles, leather, finishes, coatings, etc. |

Source: California Air Resources Board, 2002.

Evaluation of the most current data on the health effects of inhalation of fine particulate matter prompted the California Air Resources Board (ARB) to recommend adoption of the statewide PM-2.5 standard that is more stringent than the federal standard. This standard was adopted in 2002. The State PM-2.5 standard is more of a goal in that it does not have specific attainment planning requirements like a federal clean air standard, but only requires continued progress towards attainment.

Similarly, the ARB extensively evaluated health effects of ozone exposure. A new state standard for an 8 -hour ozone exposure was adopted in 2005, which aligned with the exposure period for the federal 8 -hour standard. The California 8 -hour ozone standard of 0.07 ppm is more stringent than the federal 8 -hour standard of 0.075 ppm . The state standard, however, does not have a specific attainment deadline. California air quality jurisdictions are required to make steady progress towards attaining state standards, but there are no hard deadlines or any consequences of nonattainment. During the same re-evaluation process, the ARB adopted an annual state standard for nitrogen dioxide $\left(\mathrm{NO}_{2}\right)$ that is more stringent than the corresponding federal standard, and strengthened the state one-hour $\mathrm{NO}_{2}$ standard.

As part of EPA's 2002 consent decree on clean air standards, a further review of airborne particulate matter (PM) and human health was initiated. A substantial modification of federal clean air standards for PM was promulgated in 2006. Standards for PM- 2.5 were strengthened, a new class of PM in the 2.5 to 10 micron size was created, some PM-10 standards were revoked, and a distinction between rural and urban air quality was adopted. In December, 2012, the federal annual standard for PM- 2.5 was reduced from $15 \mu \mathrm{~g} / \mathrm{m}^{3}$ to $12 \mu \mathrm{~g} / \mathrm{m}^{3}$ which matches the California AAQS. The severity of the basin's non-attainment status for PM- 2.5 may be increased by this action and thus require accelerated planning for future PM-2.5 attainment.

In response to continuing evidence that ozone exposure at levels just meeting federal clean air standards is demonstrably unhealthful, EPA had proposed a further strengthening of the 8-hour standard. A new 8-hour ozone standard was adopted in 2015 after extensive analysis and public input. The adopted national 8-hour ozone standard is 0.07 ppm which matches the current California standard. It will require three years of ambient data collection, then 2 years of nonattainment findings and planning protocol adoption, then several years of plan development and approval. Final air quality plans for the new standard are likely to be adopted around 2022. Ultimate attainment of the new standard in ozone problem areas such as Southern California might be after 2025 .

In 2010 a new federal one-hour primary standard for nitrogen dioxide $\left(\mathrm{NO}_{2}\right)$ was adopted. This standard is more stringent than the existing state standard. Based upon air quality monitoring data in the South Coast Air Basin, the California Air Resources Board has requested the EPA to designate the basin as being in attainment for this standard. The federal standard for sulfur dioxide $\left(\mathrm{SO}_{2}\right)$ was also recently revised. However, with minimal combustion of coal and mandatory use of low sulfur fuels in California, $\mathrm{SO}_{2}$ is typically not a problem pollutant.

## Baseline Air Quality

Existing and probable future levels of air quality around the project area can best be best inferred from ambient air quality measurements conducted by the SCAQMD at the Anaheim monitoring station. This station measures both regional pollution levels such as smog, as well as primary vehicular pollution levels near busy roadways such as carbon monoxide and nitrogen oxides. Pollutants such as particulates (PM-10 and PM-2.5) are also monitored at Anaheim. Table 3 is a 4 -year summary of monitoring data for the major air pollutants compiled from this air monitoring station. From this data the following conclusions regarding air quality trends can be drawn:

Photochemical smog (ozone) levels occasionally exceed standards. All state and federal ozone standards have been exceeded on less than 1 percent of all days in the past four years. While ozone levels are still occasionally elevated, they are much lower than 10 to 20 years ago.

Respirable dust (PM-10) levels exceed the state standard on approximately 3 percent of measured days. The less stringent federal PM-10 standard has not been exceeded in the last four years.

The federal ultra-fine particulate (PM-2.5) standard of $35 \mu \mathrm{~g} / \mathrm{m}^{3}$ has been exceeded on less than one percent of measurement days in the last four years.

More localized pollutants such as carbon monoxide, nitrogen oxides, etc. are very low near the project site. There is substantial excess dispersive capacity to accommodate localized vehicular air pollutants such as NOx or CO without any threat of violating applicable AAQS. Data from a "near roadway" monitoring study directly along the I-5 shoulder ( $<50$ feet) in Anaheim showed noticeably elevated levels of NOx and CO, but even at this close distance federal clean air standards were not exceeded.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table 3
Air Quality Monitoring Summary (2015-2018) (Number of Days Standards Were Exceeded, and Maximum Levels During Such Violations) (Entries shown as ratios = samples exceeding standard/samples taken)

| Pollutant/Standard | $\mathbf{2 0 1 5}$ | $\mathbf{2 0 1 6}$ | $\mathbf{2 0 1 7}$ | $\mathbf{2 0 1 8}$ |
| :--- | :---: | :---: | :---: | :---: |
| Ozone |  |  |  |  |
| 1-Hour > 0.09 ppm (S) | 1 | 2 | 0 | 1 |
| 8-Hour > 0.07 ppm (S) | 1 | 4 | 4 | 1 |
| 8- Hour > 0.075 ppm (F) | 1 | 0 | 2 | 0 |
| Max. 1-Hour Conc. $(\mathrm{ppm})$ | 0.100 | 0.103 | 0.090 | 0.112 |
| Max. 8-Hour Conc. $(\mathrm{ppm})$ | 0.080 | 0.074 | 0.076 | 0.071 |
| Carbon Monoxide |  |  |  |  |
| 8- Hour > 9. ppm (S,F) | 0 | 0 | 0 | 0 |
| Max 8-hour Conc. $(\mathrm{ppm})$ | 2.2 | 2.1 | 2.1 | 1.9 |
| Nitrogen Dioxide |  |  |  |  |
| 1-Hour > 0.18 ppm (S) | 0 | 0 | 0 | 0 |
| Max. 1-Hour Conc. $(\mathrm{ppm})$ | 0.059 | 0.064 | 0.081 | 0.066 |
| Inhalable Particulates (PM-10) |  |  |  |  |
| 24-hour > 50 $\mu \mathrm{g} / \mathrm{m}^{3}(\mathrm{~S})$ | $11 / 363$ | $3 / 353$ | $17 / 332$ | $13 / 320$ |
| 24-hour > 150 $\mu \mathrm{g} / \mathrm{m}^{3}(\mathrm{~F})$ | $0 / 363$ | $0 / 353$ | $0 / 332$ | $0 / 320$ |
| Max. 24-Hr. Conc. $\left(\mu \mathrm{g} / \mathrm{m}^{3}\right)$ | 66. | 74. | 128. | 129. |
| Ultra-Fine Particulates $(\mathbf{P M}-2.5)$ |  |  |  |  |
| 24-Hour > 35 $\mu \mathrm{g} / \mathrm{m}^{3}(\mathrm{~F})$ | $3 / 295$ | $1 / 349$ | $6 / 305$ | $3 / 353$ |
| Max. $24-H r$. Conc. $\left(\mu \mathrm{g} / \mathrm{m}^{3}\right)$ | 45.8 | 44.4 | 53.9 | 54.1 |

Source: South Coast AQMD Air Monitoring Station Data Summary, Anaheim Station (3176)

## AIR QUALITY PLANNING

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with "serious" or worse ozone problems submit a revision to the State Implementation Plan (SIP). Amendments to the SIP have been proposed, revised and approved over the past decade. The most current regional attainment emissions forecast for ozone precursors (ROG and NOx) and for carbon monoxide (CO) and for particulate matter are shown in Table 4. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air "blueprint" in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal onehour ozone standard which was revoked late in 2005 and replaced by an 8 -hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8 -hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8 -hour standard. As previously noted, the attainment date was to "slip" from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary "bump-up" from a "severe non-attainment" area to an "extreme non-attainment" designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on "black-box" measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from "severe-17" to "extreme." This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

Table 4
South Coast Air Basin Emissions Forecasts (Emissions in tons/day)

| Pollutant | $\mathbf{2 0 1 5}^{\mathbf{a}}$ | $\mathbf{2 0 2 0}^{\mathbf{b}}$ | $\mathbf{2 0 2 5}^{\mathbf{b}}$ | $\mathbf{2 0 3 0}^{\mathbf{b}}$ |
| :--- | :---: | :---: | :---: | :---: |
| NOx | 357 | 289 | 266 | 257 |
| VOC | 400 | 393 | 393 | 391 |
| PM-10 | 161 | 165 | 170 | 172 |
| PM-2.5 | 67 | 68 | 70 | 71 |

${ }^{\text {a } 2015 ~ B a s e ~ Y e a r . ~}$
${ }^{b}$ With current emissions reduction programs and adopted growth forecasts.
Source: California Air Resources Board, 2013 Almanac of Air Quality
In other air quality attainment plan reviews, EPA had disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. EPA stated that the current attainment plan relied on PM2.5 control regulations that had not yet been approved or implemented. It was expected that a number of rules that were pending approval would remove the identified deficiencies. If these issues were not resolved within the next several years, federal funding sanctions for transportation projects could result. The 2012 AQMP included in the current California State Implementation Plan (SIP) was expected to remedy identified PM-2.5 planning deficiencies.

The federal Clean Air Act requires that non-attainment air basins have EPA approved attainment plans in place. This requirement includes the federal one-hour ozone standard even though that standard was revoked almost ten years ago. There was no approved attainment plan for the onehour federal standard at the time of revocation. Through a legal quirk, the SCAQMD is now required to develop an AQMP for the long since revoked one-hour federal ozone standard. Because the current SIP for the basin contains a number of control measures for the 8 -hour ozone standard that are equally effective for one-hour levels, the 2012 AQMP was believed to satisfy hourly attainment planning requirements.

AQMPs are required to be updated every three years. The 2012 AQMP was adopted in early 2013. An updated AQMP was required for completion in 2016. The 2016 AQMP was adopted by the SCAQMD Board in March, 2017, and has been submitted the California Air Resources Board for forwarding to the EPA. The 2016 AQMP acknowledges that motor vehicle emissions have been effectively controlled and that reductions in NOx, the continuing ozone problem pollutant, may need to come from major stationary sources (power plants, refineries, landfill flares, etc.). The current attainment deadlines for all federal non-attainment pollutants are now as follows:

| 8-hour ozone $(70 \mathrm{ppb})$ | 2032 |
| :--- | :--- |
| Annual PM-2.5 $\left(12 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | 2025 |
| 8-hour ozone $(75 \mathrm{ppb})$ | 2024 (old standard) |
| 1-hour ozone $(120 \mathrm{ppb})$ | 2023 (rescinded standard) |

The key challenge is that NOx emission levels, as a critical ozone precursor pollutant, are forecast to continue to exceed the levels that would allow the above deadlines to be met. Unless additional stringent NOx control measures are adopted and implemented, ozone attainment goals may not be met.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing water improvement projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

## AIR QUALITY IMPACT

## Standards of Significance

Air quality impacts are considered "significant" if they cause clean air standards to be violated where they are currently met, or if they "substantially" contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix $G$ of the California CEQA Guidelines offers the following five tests of air quality impact significance. A project would have a potentially significant impact if it:
a. Conflicts with or obstructs implementation of the applicable air quality plan.
b. Results in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
c. Exposes sensitive receptors to substantial pollutant concentrations.
d. Creates objectionable odors affecting a substantial number of people.

## Primary Pollutants

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide $(\mathrm{CO})$ is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

## Secondary Pollutants

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table 5
Daily Emissions Thresholds

| Pollutant | Construction | Operations |
| :---: | :---: | :---: |
| ROG | 75 | 55 |
| NOx | 100 | 55 |
| CO | 550 | 550 |
| PM-10 | 150 | 150 |
| PM-2.5 | 55 | 55 |
| SOx | 150 | 150 |
| Lead | 3 | 3 |

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

## Additional Indicators

In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.


## Construction Activity Impacts

CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

The project entails drilling, production development and testing of the new well. The total area of disturbance will be less than one acre. The proposed well will be drilled to about 500 feet below the ground surface. Drilling will be accomplished by using a reverse rotary drill unit. After testing the well will be equipped for production and converted to a production well. The new well will be connected to the District's distribution system located about 60 feet from the proposed well location. The project in its entirety is anticipated to require about 6 months to complete.

Estimated construction emissions were modeled using CalEEMod2016.3.2 to identify maximum daily emissions for each pollutant during project construction. Modeling reflected the construction schedule and equipment list as shown in Table 6.

Table 6
Construction Activity Equipment Fleet

| Casing and Well Drilling <br> 2 weeks | 1 Drill Rig |
| :--- | :--- |
|  | 1 Pump |
|  | 1 Loader/Backhoe |
| Equipping <br> 20 weeks | 1 Crane |
|  | 1 Welder |
|  | 1 Loader/Backhoe |
|  | 1 Generator Set |
|  | 1 Forklift |
| Pipeline Installation <br> 2 weeks | 1 Concrete Saw |
|  | 1 Trencher |
|  | 1 Forklift |
|  | 1 Loader/Backhoe |

For drilling, some equipment would operate 24 hours a day and were modeled accordingly. Utilizing the indicated equipment fleet and durations shown in Table 6 the following worst-case daily construction emissions are calculated by CalEEMod and are listed in Table 7.

Table 7
Well Construction Activity Emissions
Maximum Daily Emissions (pounds/day)

| Maximal Construction <br> Emissions | ROG | NOx | CO | SO $_{2}$ | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 2 0}$ | 2.4 | 23.3 | 20.5 | 0.1 | 2.0 | 1.5 |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 |

Peak daily construction activity emissions are estimated be below SCAQMD CEQA thresholds without the need for added mitigation.

There will be several solar installation sites, primarily on the top of carports and the warehouse rooftop. The installations will include solar arrays, batteries and inverters. Although most of the install will be on rooftops, to be conservative and allow for minor future changes, 0.25 acres were assumed to be disturbed for grading and concrete pads if ground mounting was to be required. The solar array installation could occur concurrent with the well and treatment system and is expected to require 3 months with a 5-person work crew. Installation of the solar arrays will require forklifts, loader/backhoes and a welder. The construction emissions are shown in Table 8.

Table 8
Solar Array Installation Emissions
Maximum Daily Emissions (pounds/day)

| Maximal Construction <br> Emissions | ROG | NOx | $\mathbf{C O}$ | $\mathbf{S O}_{\mathbf{2}}$ | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 2 0}$ | 0.8 | 5.8 | 6.2 | 0.0 | 0.6 | 0.4 |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 |

Emissions from solar array installation are minimal but were nevertheless added to construction emissions of the well to determine total project impact.

Table 9
Well and Solar Installation Construction Activity Emissions
Maximum Daily Emissions (pounds/day)

| Maximal Construction <br> Emissions | ROG | NOx | CO | SO $_{\mathbf{2}}$ | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Well | 2.4 | 23.3 | 20.5 | 0.1 | 2.0 | 1.5 |
| Solar Installation | 0.8 | 5.8 | 6.2 | 0.0 | 0.6 | 0.4 |
| Total | 3.2 | 29.1 | 26.7 | 0.1 | 2.6 | 1.9 |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 |

As shown in Table 9, installation of the solar arrays will not result in emissions that would exceed the SCAQMD daily thresholds even if the worst day of solar array install were added to the worst day construction emissions for the well.

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24 -hour per day, 365 days per year, 70-year lifetime exposure. The SCAQMD does not generally require the analysis of construction-related diesel emissions relative to health risk due to the short period for which the majority of diesel exhaust would occur. Health risk analyses are typically assessed over a $9-, 30-$, or 70-year timeframe and not over a relatively brief construction period due to the lack of health risk associated with such a brief exposure.

## Localized Significance Thresholds

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For the proposed project, the primary source of possible LST impact would be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM-10 and PM-2.5). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables are available for $25,50,100,200$ and 500 meter source-receptor distances. For this project, there are several adjacent residential uses such that the most conservative 25 meter distance was modeled.

LST pollutant screening level concentration data is currently published for 1,2 and 5 acre sites for varying distances. For this project, the most stringent thresholds for a 1 acre site were applied.

The following thresholds and emissions in Table 10 are therefore determined (pounds per day):

Table 10
LST and Project Emissions (pounds/day)

| LST 1 acre/25 meters <br> Central Orange County | CO | NOx | PM-10 | PM-2.5 |
| :--- | :---: | :---: | :---: | :---: |
| LST Threshold | 485 | 81 | 4 | 3 |
| Max On-Site Emissions |  |  |  |  |
| Well | 20 | 23 | 2 | 1 |
| Solar Array | 6 | 6 | $<1$ | $<1$ |

LSTs were compared to the maximum daily construction activities. Emissions are below the LST construction thresholds without the need for any added mitigation even if worst day activities for each component were to overlap. LST impacts are less-than-significant.

## Operational Impacts

Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping. Electrical consumption has no single uniquely related air pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

An emergency backup generator will be provided to power the pump when necessary. Permits from the SCAQMD and/or CARB are necessary for the operation of portable generators. Acquisition and compliance with relevant permits would ensure that generator operations would not result in exceedance of criteria pollutants.

The proposed solar arrays will provide 40 kw and 65 kw for a total of 105 kw . This would most likely offset the energy required for the emergency generator or pump.

## CONSTRUCTION EMISSIONS MINIMIZATION

Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, emissions minimization through enhanced dust control measures is recommended for use because of the non-attainment status of the air and proximity of residential uses. Recommended measures include:

## Fugitive Dust Control

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard
- Sweep streets daily if visible soil material is carried out from the construction site

Similarly, ozone precursor emissions (ROG and NOx) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control options include:

## Exhaust Emissions Control

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better rated heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.


## GREENHOUSE GAS EMISSIONS

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." These greenhouse gases contribute to an increase in the temperature of the earth's atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel consumption in the transportation sector (onroad motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wideranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40\%, from business as usual, to be achieved by 2020.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency. Additionally, through the California Climate Action Registry (CCAR now called the Climate Action Reserve), general and industry-specific protocols for assessing and reporting GHG emissions have been
developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and offroad mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

## Thresholds of Significance

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March, 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative or based on performance standards. CEQA guidelines allow the lead agency to "select the model or methodology it considers most appropriate." The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) $\mathrm{CO}_{2}$ equivalent/year. In September 2010, the SCAQMD CEQA Significance Thresholds GHG Working Group released revisions which recommended a threshold of $3,000 \mathrm{MT} \mathrm{CO}_{2} \mathrm{e}$ for all land use projects. This $3,000 \mathrm{MT} /$ year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

## Project Related GHG Emissions Generation

## Construction Activity GHG Emissions

The project is assumed to require less than one year for construction. During project construction, the CalEEMod2016.3.2 computer model predicts that the construction activities will generate the annual $\mathrm{CO}_{2} \mathrm{e}$ emissions identified in Table 11.

Table 11
Amortized 2020 Construction Emissions (Metric Tons CO2e)

| Source | MT CO22 |
| :--- | :---: |
| Wells | 144.5 |
| Solar Install | 23.3 |
| Total | 167.8 |
| Amortized | $\mathbf{5 . 6}$ |

CalEEMod Output provided in appendix
SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30year lifetime. The amortized level is also provided. GHG impacts from construction are considered less-than-significant.

## Consistency with GHG Plans, Programs and Policies

The City of Orange, in its 2015 General Plan Update, stated that there will be planning efforts for the development and adoption of a Climate Action Plan (CAP), as outlined in the General Plan Implementation Program Appendix. The City was to develop and adopt the CAP by December 31, 2012.

The City has not yet completed a finalized Greenhouse Gas Reduction Plan. Regardless, construction of a water well would likely not be relevant to a CAP. The applicable GHG planning document is AB-32. The project is not expected to result in a significant increase in GHG emissions. The project results in GHG emissions below the recommended SCAQMD 3,000 ton threshold. Therefore, the project would not conflict with any applicable plan, policy, or regulation to reduce GHG emissions.

# CALEEMOD2016.3.2 COMPUTER MODEL OUTPUT 

## WELL

- DAILY EMISISONS
- ANNUAL EMISSIONS


## SOLAR INSTALLATION

- DAILY EMISISONS
- ANNUAL EMISSIONS

East Orange Water District Well - Orange County, Summer

## East Orange Water District Well

## Orange County, Summer

### 1.0 Project Characteristics

1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
| :---: | :---: | :---: | :---: | :---: | :---: |
| User Defined Industrial | 1.00 | User Defined Unit | 0.00 | 0.00 | 0 |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.2 | Precipitation Freq (Days) | 30 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Climate Zone | 8 |  |  | Operational Year | 2020 |
| Utility Company | Souther |  |  |  |  |
| CO2 Intensity (lb/MWhr) | 702.44 | CH4 Intensity (lb/MWhr) | 0.029 | N2O Intensity (lb/MWhr) | 0.006 |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use -
Construction Phase - Drilling: 2 weeks, Equiping: 20 weeks, Pipeline Install: 2 weeks
Off-road Equipment - Drilling: 1 loader/backhoe, 1 pump @24 hrs/day, 1 drill rig@24 hours/day
Off-road Equipment - Equipping: 1 crane, 1 forklift, 1 loader/backhoe, 1 gen set, 1 welder
Trips and VMT - 20 worker trips

| Table Name | Column Name | Default Value | New Value |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | NumDays | 2.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 6/5/2020 | 6/19/2020 |

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| tblConstructionPhase | PhaseEndDate | 1/17/2020 | 1/29/2020 |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | PhaseEndDate | 6/12/2020 | 7/14/2020 |
| tblConstructionPhase | PhaseStartDate | 1/18/2020 | 2/1/2020 |
| tblConstructionPhase | PhaseStartDate | 6/6/2020 | 7/1/2020 |
| tbiLandUse | LotAcreage | 0.10 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentrype |  | Generator Sets |
| tbiOffRoadEquipment | OffRoadEquipmentype |  | Welders |
| tbioffRoadEquipment | OffRoadEquipmentype |  | Bore/Drill Rigs |
| tbiOffRoadEquipment | OffRoadEquipmentype |  | Pumps |
| tbioffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbIÖffroadEquipment | OffRoadEquipmentünitämount | 0.00 | 1.00 |
| tbiöfforoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbiöffroadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbiöfforoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tbioffroadEquipment | OffRoadEquipmentÜnitAmount | 0.00 | 1.00 |
| tbiöfforoadEquipment | PhaseName |  | Equipping |
| tbiöffo-adEquipment | PhaseName |  | Equipping |
| tbiöfforoadEquipment | PhaseName |  | Weill Drilling |
| tbiöfforoadEquipment | PhaseName |  | Weill Drilling |
| --7BOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tbiTripsÄdVMT | VendorTripNumber | 0.00 | 1.00 |
| tbiTripsÄndVMT | VendorTripNumber | 0.00 | 1.00 |
|  | WorkerTripNumber | 0.00 | 20.00 |
|  | WorkerTripNumber | 10.00 | 20.00 |
| tbiTripsÄndVMT | WorkerTripNumber | 18.00 | 20.00 |

## East Orange Water District Well - Orange County, Summer

### 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| 2020 | 2.3884 | 23.3074 | 20.4643 | 0.0532 | 0.9763 | 1.0607 | 2.0370 | 0.4731 | 1.0255 | 1.4986 | 0.0000 | 5,117.3016 | 5,117.3016 | 1.0968 | 0.0000 | 5,144.722 |
| Maximum | 2.3884 | 23.3074 | 20.4643 | 0.0532 | 0.9763 | 1.0607 | 2.0370 | 0.4731 | 1.0255 | 1.4986 | 0.0000 | $\begin{array}{\|c} \hline 5,117.301 \\ 6 \end{array}$ | $\begin{array}{\|c\|} \hline 5,117.301 \\ 6 \end{array}$ | 1.0968 | 0.0000 | $\begin{array}{\|c} \hline 5,144.722 \\ 0 \end{array}$ |

## Mitigated Construction

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| 2020 | 2.3884 | 7.3792 | 20.4643 | 0.0532 | 0.9763 | 1.0607 | 2.0370 | 0.4731 | 1.0255 | 1.4986 | 0.0000 | 7.3016 | 5,117.3016 | 1.0968 | 0.0000 | $\begin{gathered} 5,144.722 \\ 0 \end{gathered}$ |
| Maximum | 2.3884 | 7.3792 | 20.4643 | 0.0532 | 0.9763 | 1.0607 | 2.0370 | 0.4731 | 1.0255 | 1.4986 | 0.0000 | $\begin{array}{\|c\|} \hline 5,117.301 \\ 6 \end{array}$ | $\begin{array}{\|c\|} \hline 5,117.301 \\ 6 \end{array}$ | 1.0968 | 0.0000 | $\begin{array}{\|c\|} \hline 5,144.722 \\ 0 \end{array}$ |

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|  | ROG | NOx | co | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | $\begin{array}{r} \hline \text { PM2.5 } \\ \text { Total } \end{array}$ | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 68.34 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 2.2 Overall Operational

## Unmitigated Operational

|  | ROG | NOx | CO | SO2 | Fugitive | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Area | $1.0000 \mathrm{e}-$ 005 | 0.0000 | $1.0000 \mathrm{e}-$ 004 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 2.2000e- | $\begin{aligned} & 2.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 |  | $\begin{gathered} 2.3000 \mathrm{e}- \\ 004 \end{gathered}$ |
| Total | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 2.3000 \mathrm{e}- \\ 004 \end{gathered}$ |

## Mitigated Operational

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Area | $1.0000 \mathrm{e}-$ 005 | 0.0000 | $1.0000 \mathrm{e}-$ 004 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $2.2000 \mathrm{e}-1$ 004 | $2.2000 \mathrm{e}-$ 004 | 0.0000 |  | $2.3000 \mathrm{e}-$ 004 |
| Total | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 2.3000 \mathrm{e}- \\ 004 \end{gathered}$ |

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|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 3.0 Construction Detail

Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Well Drilling | Grading | 1/16/2020 | 1/29/2020 |  | 10 |  |
| 2 | Equipping | Building Construction |  |  |  | $100$ |  |
| 3 | Pipeline Install to Connect | Trenching | 7/1/2020 | 1/14/2020 | 5 | 10! |  |

## Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

## Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating - sqft)

OffRoad Equipment

East Orange Water District Well - Orange County, Summer

| Phase Name | Offroad Equipment Type | Amount | 1 Usage Hours | Horse Power | Load Factor |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Well Drilling | Bore/Drill Rigs |  | 24.0 | 221 | 0.50 |
| Pipeline Install to Connect | Cement and Mortar Mixers |  | 6.0 | 9 | 0.56 |
| Well Drilling | Pumps |  | 24.0 | 84 | 0.74 |
| Equipping | Generator Sets |  | 18.0 | 84 | 0.74 |
| Equipping | Cranes |  | 4.0 | 231 | 0.29 |
| Equipping | Forklifts |  | 6.0 | 89 | --20 |
| Equipping | Welders |  | 8.0 | 46 | 0.45 |
| Pipeline Install to Connect | Pavers |  | 7.0 | 130 | --72 |
| Pipeline Install to Connect | Rollers |  | 7.0 | 80 | 0.38 |
| Equipping | Tractors/Loaders/Backhoes |  | 8.0 | 97 | 0.37 |
| Well Drilling | Tractors/Loaders/Backhoes |  | 8.0 | 97 | 0.37 |
| Pipeline Install to Connect | Tractors/Loaders/Backhoes |  | 7.0 | 97 | 0.37 |

Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Equipping |  | 20.00 | 1.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | JHDT_Mix | HHDT |
| Well Drilling |  | 20.00 | 0.00 | 0.0 | 14.70 | 6. | 20.0 | D_Mi | -EDT_Mix | 1 |
| Pipeline Install to Cnnnont |  | 20.00 | 1.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | :HDT_Mix | $\stackrel{\mathrm{HHDT}}{ }$ |

3.1 Mitigation Measures Construction

East Orange Water District Well - Orange County, Summer

### 3.2 Well Drilling - 2020

## Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  |  |  | 0.7528 | 0.4138 | 0.0000 | 0.4138 |  |  | 0.0000 |  |  |  |
| Off-Road | 2.3116 | 23.2590 | 19.8096 | 0.0511 |  |  | 1.0592 |  | 1.0242 | 1.0242 |  | $4,899.292$ <br> 8 | ${ }_{8}^{4,899.292}$ | 1.0919 |  | $4,926.589$ 1 |
| Total | 2.3116 | 23.2590 | 19.8096 | 0.0511 | 0.7528 | 1.0592 | 1.8119 | 0.4138 | 1.0242 | 1.4380 |  | $4,899.292$ <br> 8 | $4,899.292$ 8 | 1.0919 |  | $4,926.589$ |

## Unmitigated Construction Off-Site



East Orange Water District Well - Orange County, Summer

### 3.2 Well Drilling - 2020

Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 0.7528 | 0.0000 | 0.7528 | 0.4138 | 0.0000 | 0.4138 |  |  | 0.0000 |  |  |  |
| Off-Road | 2.3116 | 2.1052 | 19.8096 | 0.0511 |  | 1.0592 | 1.0592 |  | 1.0242 | 1.0242 | 0.0000 | ${ }_{\text {- }}^{\text {4,899.292 }}$ | 88 | 1.0919 |  | ${ }_{1}^{4,926.589}$ |
| Total | 2.3116 | 2.1052 | 19.8096 | 0.0511 | 0.7528 | 1.0592 | 1.8119 | 0.4138 | 1.0242 | 1.4380 | 0.0000 | $4,899.292$ <br> 8 | $\begin{array}{\|c\|} \hline 4,899.292 \\ 8 \end{array}$ | 1.0919 |  | $4,926.589$ 1 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N 2 O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Worker | 0.0769 | 0.0484 | 0.6547 | $\begin{gathered} 2.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2236 | $\begin{gathered} 1.4800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2250 | 0.0593 | $\begin{gathered} 1.3600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0607 |  | 218.0087 | 218.0087 | $\begin{gathered} 4.9700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 218.1330 |
| Total | 0.0769 | 0.0484 | 0.6547 | $\begin{gathered} 2.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2236 | $\begin{gathered} 1.4800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2250 | 0.0593 | $\begin{gathered} 1.3600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0607 |  | 218.0087 | 218.0087 | $\begin{gathered} 4.9700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 218.1330 |

East Orange Water District Well - Orange County, Summer

### 3.3 Equipping - 2020

## Unmitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 1.7842 | 15.1722 | 14.3271 | 0.0245 |  | 0.8452 | 0.8452 |  | 0.8198 | 0.8198 |  | ${ }_{\text {2,300.492 }}$ | ${ }_{0}^{2,300.492}$ | 0.3332 |  | $\begin{gathered} 2,308.820 \\ 6 \end{gathered}$ |
| Total | 1.7842 | 15.1722 | 14.3271 | 0.0245 |  | 0.8452 | 0.8452 |  | 0.8198 | 0.8198 |  | $\begin{array}{\|c\|} \hline 2,300.492 \\ 0 \end{array}$ | $\begin{array}{\|c\|} \hline 2,300.492 \\ 0 \end{array}$ | 0.3332 |  | $\begin{array}{\|c} 2,308.820 \\ 6 \end{array}$ |

## Unmitigated Construction Off-Site



East Orange Water District Well - Orange County, Summer

### 3.3 Equipping-2020

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road |  | 5.7740 | 14.3271 | 0.0245 |  | 0.8452 | 0.8452 |  | 0.8198 | 0.8198 | 0.0000 | !2,300.492 <br>  <br>  | 2,300.492 | 0.3332 |  | $\begin{gathered} 2,308.820 \\ 6 \end{gathered}$ |
| Total | 1.7842 | 5.7740 | 14.3271 | 0.0245 |  | 0.8452 | 0.8452 |  | 0.8198 | 0.8198 | 0.0000 | $\underset{0}{2,300.492}$ | 2,300.492 <br> 0 | 0.3332 |  | $\underset{\text { 2,308.820 }}{6}$ |

## Mitigated Construction Off-Site



East Orange Water District Well - Orange County, Summer

### 3.4 Pipeline Install to Connect - 2020

## Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 0.7716 | 7.2266 | 7.1128 | 0.0113 |  | 0.3950 | 0.3950 |  | 0.3669 | 0.3669 |  | : $\begin{gathered}1,035.392 \\ 6\end{gathered}$ | $\begin{array}{\|c} \hline 1,035.392 \\ 6 \end{array}$ | 0.3016 |  | $\begin{array}{\|c} 1,042.932 \\ 3 \end{array}$ |
| Total | 0.7716 | 7.2266 | 7.1128 | 0.0113 |  | 0.3950 | 0.3950 |  | 0.3669 | 0.3669 |  | $1,035.392$ <br> 6 | $\underset{6}{1,035.392}$ | 0.3016 |  | $1,042.932$ 3 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Vendor | $3.1900 \mathrm{e}-$ 003 | 0.1042 | 0.0275 | $\begin{aligned} & 2.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 6.3900 \mathrm{e}- \\ 003 \end{gathered}$ | $5.4000 \mathrm{e}-$ 004 | $\begin{gathered} 6.9300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $2.3600 \mathrm{e}-$ 003 |  | 27.1129 | 27.1129 | $2.1900 \mathrm{e}-$ 003 |  | 27.1677 |
| Worke | 0.0769 | 0.0484 | 0.6547 | $\begin{gathered} 2.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2236 | $\begin{gathered} 1.4800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2250 | 0.0593 | $\begin{gathered} 1.3600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0607 |  | 218.0087 | 218.0087 | $\begin{gathered} 4.9700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 218.1330 |
| Total | 0.0801 | 0.1526 | 0.6822 | $\begin{gathered} 2.4400 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2299 | $\begin{gathered} 2.0200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2320 | 0.0611 | $\begin{gathered} 1.8800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0630 |  | 245.1216 | 245.1216 | 7.1600e- 003 |  | 245.3007 |

East Orange Water District Well - Orange County, Summer

### 3.4 Pipeline Install to Connect - 2020

Mitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road |  | 7.2266 | 7.1128 | 0.0113 |  | 0.3950 | 0.3950 |  | 0.3669 | 0.3669 | 0.0000 | :1,035.392 | 1,035.392 | 0.3016 |  | $\begin{array}{\|c} 1,042.932 \\ 3 \end{array}$ |
| Total | 0.7716 | 7.2266 | 7.1128 | 0.0113 |  | 0.3950 | 0.3950 |  | 0.3669 | 0.3669 | 0.0000 | $\begin{array}{\|c\|} \hline 1,035.392 \\ 6 \end{array}$ | $1,035.392$ <br> 6 | 0.3016 |  | $\begin{array}{\|c} 1,042.932 \\ 3 \end{array}$ |

## Mitigated Construction Off-Site



### 4.0 Operational Detail - Mobile

East Orange Water District Well - Orange County, Summer

### 4.1 Mitigation Measures Mobile

### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Total |  |  |  |  |  |

### 4.3 Trip Type Information

|  | Miles |  |  | Trip \% |  |  | Trip Purpose \% |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | .5559 | 0.0438 | 0.21035 | 0.1163 | 0.01676 | 0.00579 | 0.0250 | 0.01616 | 0.00167 | 0.00158 | 0.0048 | 0.00058 | 0.001002 |

### 5.0 Energy Detail

Historical Energy Use: N
5.1 Mitigation Measures Energy

### 6.0 Area Detail

6.1 Mitigation Measures Area

East Orange Water District Well - Orange County, Summer


### 6.2 Area by SubCategory

## Unmitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Architectural Coating | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Consumer Products | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| - - -andscaping | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 2.3000 \mathrm{e} \\ 004 \end{gathered}$ |
| Total | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{array}{\|c\|} \hline 2.2000 \mathrm{e}- \\ 004 \end{array}$ | 0.0000 |  | $\begin{gathered} 2.3000 \mathrm{e}- \\ 004 \end{gathered}$ |

East Orange Water District Well - Orange County, Summer

### 6.2 Area by SubCategory

Mitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive <br> PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory |  |  | lb/day |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Architectural Coating | $0.0000$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Consumer Products | $0.0000$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| --E----7- | $1.0000 \mathrm{e}-$ 005 | 0.0000 | $1.0000 \mathrm{e}-$ 004 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | (2.2000e- | 2.2000e- | 0.0000 |  | $2.30000-$ 004 |
| Total | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 2.3000 \mathrm{e}- \\ 004 \end{gathered}$ |

### 7.0 Water Detail

7.1 Mitigation Measures Water

### 8.0 Waste Detail

8.1 Mitigation Measures Waste

### 9.0 Operational Offroad

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

### 10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

## Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: |

## User Defined Equipment

$\square$

## East Orange Water District Well - Orange County, Annual

## East Orange Water District Well

Orange County, Annual

### 1.0 Project Characteristics

1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
| :---: | :---: | :---: | :---: | :---: | :---: |
| User Defined Industrial | 1.00 | User Defined Unit | 0.00 | 0.00 | 0 |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.2 | Precipitation Freq (Days) | 30 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Climate Zone | 8 |  |  | Operational Year | 2020 |
| Utility Company | Southern California Edison |  |  |  |  |
| CO2 Intensity (lb/MWhr) | 702.44 | CH4 Intensity (lb/MWhr) | 0.029 | N2O Intensity (lb/MWhr) | 0.006 |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use -
Construction Phase - Drilling: 2 weeks, Equiping: 20 weeks, Pipeline Install: 2 weeks
Off-road Equipment - Drilling: 1 loader/backhoe, 1 pump @24 hrs/day, 1 drill rig@24 hours/day
Off-road Equipment - Equipping: 1 crane, 1 forklift, 1 loader/backhoe, 1 gen set, 1 welder
Trips and VMT - 20 worker trips

| Table Name | Column Name | Default Value | New Value |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | NumDays | 2.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 6/5/2020 | 6/19/2020 |

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| tblConstructionPhase | PhaseEndDate | 1/17/2020 | 1/29/2020 |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | PhaseEndDate | 6/12/2020 | 7/14/2020 |
| tblConstructionPhase | PhaseStartDate | 1/18/2020 | 2/1/2020 |
| tblConstructionPhase | PhaseStartDate | 6/6/2020 | 7/1/2020 |
| tbiLandUse | LotAcreage | 0.10 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentype |  | Generator Sets |
| tbiOffRoadEquipment | OffRoadEquipmentype |  | Welders |
| tbiOffRoadEquipment | OffRoadEquipmentType |  | Bore/Drill Rigs |
| tbioffRoadEquipment | OffRoadEquipmentype |  | Pumps |
| tbioffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tbloffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbiöffioadEquipment | OffRoadEquipmentünitämount | 0.00 | 1.00 |
| tbiöfforoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbiöffroadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbiöfforoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tbioffroadEquipment | OffRoadEquipmentÜnitAmount | 0.00 | 1.00 |
| tbiöfforoadEquipment | PhaseName |  | Equipping |
| tbiöffo-adEquipment | PhaseName |  | Equipping |
| tbiöfforoadEquipment | PhaseName |  | Weill Drilling |
| tbiöfforoadEquipment | PhaseName |  | Weill Drilling |
| --7BOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tbiTripsÄdVMT | VendorTripNumber | 0.00 | 1.00 |
| tbiTripsÄndVMT | VendorTripNumber | 0.00 | 1.00 |
| tbiTripsÄndVMT | WorkerTripNumber | 0.00 | 20.00 |
|  | WorkerTripNumber | 10.00 | 20.00 |
| tbiTripsÄndVm | WorkerTripNumber | 18.00 | 20.00 |

## East Orange Water District Well - Orange County, Annual

### 2.0 Emissions Summary

### 2.1 Overall Construction

## Unmitigated Construction

|  | ROG | NOx | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2020 | 0.1095 | 0.9202 | 0.8898 | $\begin{gathered} 1.6800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0173 | 0.0497 | 0.0669 | $5.6700 \mathrm{e}-$ 003 | 0.0481 | 0.0537 | 0.0000 | ${ }^{144.0086}$ | 144.0086 | 0.0218 | 0.0000 | 144.5537 |
| Maximum | 0.1095 | 0.9202 | 0.8898 | $\begin{gathered} 1.6800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0173 | 0.0497 | 0.0669 | $\begin{gathered} 5.6700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0481 | 0.0537 | 0.0000 | 144.0086 | 144.0086 | 0.0218 | 0.0000 | 144.5537 |

## Mitigated Construction

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2020 | 0.1095 | 0.3445 | 0.8898 | $\begin{gathered} 1.6800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0173 | 0.0497 | 0.0669 | $\begin{gathered} 5.6700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0481 | 0.0537 | 0.0000 | 144.0085 | 144.0085 | 0.0218 | 0.0000 | 144.5535 |
| Maximum | 0.1095 | 0.3445 | 0.8898 | $\begin{gathered} 1.6800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0173 | 0.0497 | 0.0669 | $\begin{gathered} 5.6700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0481 | 0.0537 | 0.0000 | 144.0085 | 144.0085 | 0.0218 | 0.0000 | 144.5535 |

East Orange Water District Well - Orange County, Annual

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \hline \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 <br> Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 62.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |


| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
| :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1}$ | $\mathbf{1 - 1 - 2 0 2 0}$ | $\mathbf{3 - 3 1 - 2 0 2 0}$ | 0.4972 |  |
| $\mathbf{2}$ | $4-1-2020$ | $6-30-2020$ | 0.4911 | 0.1901 |
| $\mathbf{3}$ | $7-1-2020$ | $9-30-2020$ | 0.0412 | 0.2226 |
|  |  | Highest | 0.4972 | 0.0412 |


| 00\％ | 00＇0 | 00\％ | 00\％ | 00\％ | 00\％ | 00\％ | 00\％ | 00\％ | 00＇0 | 00＇0 | 00\％ | 00＇0 | 00＇0 | 00＇0 | 00\％ | uoḷэnpəy ұиәэләд |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ə乙ОЈ | OZN | 七Hכ | ZOכ 1ełol | ZOJ－O！9N | ZOכ－0！9 | $\begin{aligned} & \text { Ielol } \\ & \text { s'zUld } \end{aligned}$ | s＇ZWd tsneyx | s＇zWd әк！！！！${ }^{6} \mathrm{n}_{\mathrm{J}}$ | $\begin{aligned} & \text { Iełol } \\ & \text { OLWd } \end{aligned}$ | $\begin{gathered} \text { OLNd } \\ \text { isneyx } \end{gathered}$ |  | zOS | $0 \bigcirc$ | XON | פ0¢ |  |


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### 3.0 Construction Detail

Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Well Drilling | Grading | 1/16/2020 | 1/29/2020 |  | 10 |  |
| 2 | Equipping | Building Construction | 2/1/2020 | 16/19/2020 | 5 | 100 |  |
| 3 | Pipeline Install to Connect | Trenching | ;7/1/2020 | :7/14/2020 | 5 | 10 |  |

## Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

## Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating - sqft)

OffRoad Equipment

East Orange Water District Well - Orange County, Annual

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Well Drilling | Bore/Drill Rigs |  | 24.00 | 221! | 0.50 |
| Pipeline Install to Connect | Cement and Mortar Mixers |  | 6.00 | 91 | 0.56 |
| Well Drilling | Pumps |  | 24.0 | 84 | 0.74 |
| Equipping | Generator Sets |  | 18.0 | 84 | 0.74 |
| Equipping | Cranes |  | 4.0 | 231 | 0.29 |
| Equipping | Forklifts |  | 6.00 | 891 | 0.20 |
| Equipping | Welders |  | 8.00 | 46! | --7 |
| Pipeline Install to Connect | Pavers |  | 7.0 | 130 | --7 |
| Pipeline Install to Connect | Rollers |  | 7.0 | 80 | 0.38 |
| Equipping | Tractors/Loaders/Backhoes |  | 8.0 | 97! | 0.37 |
| Well Drilling | Tractors/Loaders/Backhoes |  | 8.00 | 97! | 0.37 |
| Pipeline Install to Connect | Tractors/Loaders/Backhoes |  | 7.00 | 97: | 0.37 |

Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Equipping |  | 20.00 | 1.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | JHDT_Mix | HHDT |
| Well Drilling |  | 20.00 | 0.00 | 0.0 | 14.70 | 6. | 20.0 | D_Mi | -EDT_Mix | 1 |
| Pipeline Install to Cnnnont |  | 20.00 | 1.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | :HDT_Mix | $\stackrel{\mathrm{HHDT}}{ }$ |

3.1 Mitigation Measures Construction

### 3.2 Well Drilling - 2020

## Unmitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | ${ }^{3.7600 e-}$ | 0.0000 | $3.76000-$ 003 | $2.0700 \mathrm{e}-$ 003 | 0.0000 | ${ }^{2.07000-}$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0116 | 0.1163 | 0.0991 | ${ }^{2.6000 e-}$ |  | ${ }^{5.30000-}$ | ${ }^{5.30000-}$ |  | $5.1200 \mathrm{e}-$ 003 | $5.1200 \mathrm{e}-$ 003 | 0.0000 | 22.2228 | 22.2228 | ${ }^{4.9500 e-}$ | 0.0000 | 22.3466 |
| Total | 0.0116 | 0.1163 | 0.0991 | $\begin{gathered} 2.6000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.7600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.3000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 9.0600 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 2.0700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.1200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 7.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 22.2228 | 22.2228 | ${ }^{4.95000-}$ | 0.0000 | 22.3466 |

## Unmitigated Construction Off-Site



### 3.2 Well Drilling - 2020

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | $\begin{gathered} 3.7600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | $\begin{gathered} 3.7600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 2.0700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | $\begin{gathered} 2.0700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0116 | 0.0105 | 0.0991 | $\begin{gathered} -2.6000 \mathrm{e}- \\ 004 \end{gathered}$ |  | 5.3000e- | 5.3000e- |  | 5.1200 e 003 | $5.1200 \mathrm{e}-$ 003 | 0.0000 | 22.2228 | 22.2228 | 4.9500e- 003 | 0.0000 | 22.3466 |
| Total | 0.0116 | 0.0105 | 0.0991 | $\begin{gathered} \hline 2.6000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.7600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.3000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.0600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 2.0700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.1200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 7.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 22.2228 | 22.2228 | ${ }_{\text {4.9500e- }}^{003}$ | 0.0000 | 22.3466 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | PM10 <br> Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | $\begin{aligned} & 3.9000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1100 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 2.9000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 0.9502 | 0.9502 | $\begin{gathered} 2.0000 \mathrm{e} \\ 005 \end{gathered}$ | 0.0000 | 0.9507 |
| Total | $\begin{gathered} 3.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1100 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 2.9000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 0.9502 | 0.9502 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | 0.9507 |

### 3.3 Equipping - 2020

## Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 0.0892 | 0.7586 | 0.7164 | $1.2200 \mathrm{e}-$ 003 |  | 0.0423 | 0.0423 |  | 0.0410 | 0.0410 | 0.0000 | 104.3486 | 104.3486 | 0.0151 | 0.0000 | 104.7263 |
| Total | 0.0892 | 0.7586 | 0.7164 | $\begin{gathered} 1.2200 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0423 | 0.0423 |  | 0.0410 | 0.0410 | 0.0000 | 104.3486 | 104.3486 | 0.0151 | 0.0000 | 104.7263 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $1.6000 \mathrm{e}-$ 004 | $5.3000 \mathrm{e}-$ 003 | $1.4400 \mathrm{e}-$ 003 | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $3.0000 \mathrm{e}-$ 005 | $\begin{gathered} 3.4000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 9.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $3.0000 \mathrm{e}-$ 005 | $1.2000 \mathrm{e}-$ 004 | 0.0000 | 1.2171 | 1.2171 | $1.0000 \mathrm{e}-$ 004 | 0.0000 | 1.2197 |
| Worker | $\begin{gathered} 3.9000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 2.7300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0310 | $\begin{aligned} & 1.1000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0110 | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0111 | $\begin{aligned} & 2.9200 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 2.9800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 9.5016 | 9.5016 | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 9.5070 |
| Total | $\begin{gathered} 4.0600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 8.0300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0324 | $\begin{aligned} & 1.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0113 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0114 | $\begin{gathered} 3.0100 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 10.7187 | 10.7187 | $3.2000 \mathrm{e}-$ 004 | 0.0000 | 10.7267 |

### 3.3 Equipping - 2020

## Mitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 0.0892 | 0.2887 | 0.7164 | $1.2200 \mathrm{e}-$ 003 |  | 0.0423 | 0.0423 |  | 0.0410 | 0.0410 | 0.0000 | : 104.3484 | 104.3484 | 0.0151 | 0.0000 | 104.7262 |
| Total | 0.0892 | 0.2887 | 0.7164 | $\begin{gathered} 1.2200 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0423 | 0.0423 |  | 0.0410 | 0.0410 | 0.0000 | 104.3484 | 104.3484 | 0.0151 | 0.0000 | 104.7262 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $1.6000 \mathrm{e}-$ 004 | $5.3000 \mathrm{e}-$ 003 | $1.4400 \mathrm{e}-$ 003 | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $3.0000 \mathrm{e}-$ 005 | $\begin{gathered} 3.4000 \mathrm{e}- \\ 004 \end{gathered}$ | $9.0000 \mathrm{e}-$ 005 | $3.0000 \mathrm{e}-$ 005 | $1.2000 \mathrm{e}-$ 004 | 0.0000 | 1.2171 | 1.2171 | $1.0000 \mathrm{e}-$ 004 | 0.0000 | 1.2197 |
| Worker | $\begin{aligned} & 3.9000 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 2.7300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0310 | $\begin{aligned} & 1.1000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0110 | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0111 | $\begin{aligned} & 2.9200 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 2.9800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 9.5016 | 9.5016 | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 9.5070 |
| Total | $\begin{aligned} & 4.0600 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 8.0300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0324 | $\begin{aligned} & 1.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0113 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0114 | $\begin{gathered} 3.0100 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 10.7187 | 10.7187 | $3.2000 \mathrm{e}-$ 004 | 0.0000 | 10.7267 |

### 3.4 Pipeline Install to Connect - 2020

## Unmitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 3.8600e- 003 | 0.0361 | 0.0356 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |  | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ |  | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 1.8300 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0000 | 4.6965 | 4.6965 | $\begin{aligned} & 1.3700 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0000 | 4.7307 |
| Total | $\begin{gathered} 3.8600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0361 | 0.0356 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |  | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ |  | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 4.6965 | 4.6965 | $\begin{gathered} 1.3700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 4.7307 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $2.0000 \mathrm{e}-$ 005 | $5.3000 \mathrm{e}-$ 004 | $1.4000 \mathrm{e}-$ 004 | 0.0000 | $3.0000 \mathrm{e}-$ 005 | 0.0000 | $3.0000 \mathrm{e}-$ 005 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | 0.1217 | 0.1217 | 1.0000 e 005 | 0.0000 | 0.1220 |
| Worker | $\begin{gathered} 3.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 2.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 1.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 1.1100 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 2.9000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 0.9502 | 0.9502 | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.9507 |
| Total | $\begin{gathered} 4.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 8.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 3.2400 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 3.0000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{aligned} & 3.1000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 1.0719 | 1.0719 | $3.0000 \mathrm{e}-$ 005 | 0.0000 | 1.0727 |

### 3.4 Pipeline Install to Connect - 2020

## Mitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 3.8600e- 003 | 0.0361 | 0.0356 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |  | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ |  | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 1.8300 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0000 | 4.6965 | 4.6965 | $\begin{aligned} & 1.3700 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0000 | 4.7307 |
| Total | $\begin{gathered} 3.8600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0361 | 0.0356 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |  | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9800 \mathrm{e}- \\ 003 \end{gathered}$ |  | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 4.6965 | 4.6965 | $\begin{gathered} 1.3700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 4.7307 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|  | $2.0000 \mathrm{e}-$ 005 | $5.3000 \mathrm{e}-$ 004 | $1.4000 \mathrm{e}-$ 004 | 0.0000 | $3.0000 \mathrm{e}-$ 005 | 0.0000 | $3.0000 \mathrm{e}-$ 005 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | 0.1217 | 0.1217 | 1.0000 e 005 | 0.0000 | 0.1220 |
| Worker | $\begin{gathered} 3.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{aligned} & 1.1000 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $1.1100 \mathrm{e}-$ 003 | $\begin{gathered} 2.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 0.9502 | 0.9502 | 2.0000 e 005 | 0.0000 | 0.9507 |
| Total | $\begin{aligned} & 4.1000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{aligned} & 8.0000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.2400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{aligned} & 1.1300 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.1400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 1.0719 | 1.0719 | $3.0000 \mathrm{e}-$ 005 | 0.0000 | 1.0727 |

### 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT |
| Total |  |  |  | Annual VMT |

### 4.3 Trip Type Information

|  | Miles |  |  | Trip \% |  |  | Trip Purpose \% |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | .5559 | 0.0438 | 0.21035 | 0.1163 | 0.01676 | 0.00579 | 0.0250 | 0.01616 | 0.00167 | 0.00158 | 0.0048 | 0.00058 | 0.001002 |

### 5.0 Energy Detail

Historical Energy Use: N
5.1 Mitigation Measures Energy

### 6.0 Area Detail

6.1 Mitigation Measures Area


### 6.2 Area by SubCategory

## Unmitigated

|  | ROG | NOX | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{array}{\|l\|} \hline \text { Exhaust } \\ \text { PM10 } \end{array}$ | $\begin{aligned} & \hline \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Architectural Coating | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | $0.00000^{-7}$ |
| - - -andscaping | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 2.0000 \mathrm{e} \\ 005 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e} \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e} \\ 005 \end{gathered}$ |
| Total | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

### 6.2 Area by SubCategory

## Mitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO 2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Architectural Coating | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|  | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 2.0000- \\ 005 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 e_{-}^{-} \\ 005 \end{gathered}$ |
| Total | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e} \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

### 7.0 Water Detail

7.1 Mitigation Measures Water

### 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## Category/Year

|  | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
|  |  |  |  |  |

### 8.2 Waste by Land Use

Unmitigated

|  | Waste <br> Disposed | Total CO2 | CH4 | N2O | CO2e |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | tons | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |  |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |  |

## East Orange Water District Well - Orange County, Annual

### 8.2 Waste by Land Use

Mitigated


### 9.0 Operational Offroad

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

### 10.0 Stationary Equipment

Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: |

User Defined Equipment
$\square$
11.0 Vegetation

## EOWD Solar Arrays

Orange County, Summer

### 1.0 Project Characteristics

1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
| :---: | :---: | :---: | :---: | :---: | :---: |
| User Defined Industrial | 0.25 | User Defined Unit | 0.25 | 0.0 |  |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.2 | Precipitation Freq (Days) |
| :--- | :--- | :--- | :--- | :--- |
| Climate Zone | 8 |  | Operational Year |  |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use - 0.25 acre max
Construction Phase - 3 month construction
Off-road Equipment - Construction: 2 forklifts, 2 loader/backhoes
Trips and VMT - 5 workers
Off-road Equipment - 1 loader/backhoe, 1 compactor, 1 mixer, 1 pump
Construction Off-road Equipment Mitigation -
Off-road Equipment - Solar Array Install: 2 forklifts, 1 loader/backhoe, 1 welder

EOWD Solar Arrays - Orange County, Summer


EOWD Solar Arrays - Orange County, Summer


### 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

## Unmitigated Construction

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| 2020 |  | 5.7511 | 6.1719 | $\begin{gathered} 9.2900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.4193 | 0.3663 | 0.6397 | 0.1970 | 0.3440 | 0.4094 | 0.0000 | ; 866.4097 | 866.4097 | 0.2044 | 0.0000 | 871.5206 |
| Maximum | 0.8092 | 5.7511 | 6.1719 | $\begin{gathered} 9.2900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.4193 | 0.3663 | 0.6397 | 0.1970 | 0.3440 | 0.4094 | 0.0000 | 866.4097 | 866.4097 | 0.2044 | 0.0000 | 871.5206 |

## Mitigated Construction

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| 2020 | 0.8092 | 4.1798 | 6.1719 | $\begin{gathered} 9.2900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2537 | 0.3663 | 0.4845 | 0.1060 | 0.3440 | 0.3754 | 0.0000 | 866.4097 | 866.4097 | 0.2044 | 0.0000 | 871.5206 |
| Maximum | 0.8092 | 4.1798 | 6.1719 | $\begin{gathered} 9.2900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2537 | 0.3663 | 0.4845 | 0.1060 | 0.3440 | 0.3754 | 0.0000 | 866.4097 | 866.4097 | 0.2044 | 0.0000 | 871.5206 |


|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | $\begin{array}{r} \text { PM2.5 } \\ \text { Total } \end{array}$ | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 27.32 | 0.00 | 0.00 | 39.50 | 0.00 | 24.27 | 46.21 | 0.00 | 8.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 2.2 Overall Operational

## Unmitigated Operational

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio-CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | 1b/day |  |  |  |  |  |  |  |  |  | 1b/day |  |  |  |  |  |
| Area | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | ${ }^{5.0000 e-}$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | $0.0000^{-1}$ |
| Total | 0.0000 | 0.0000 | $3.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

## Mitigated Operational

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day ${ }^{\text {l/ }}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Area | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $: \begin{gathered} 5.0000 e- \\ 005 \end{gathered}$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ${ }^{-0.0000} 0^{-1}$ |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Total | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | $\begin{aligned} & 5.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

EOWD Solar Arrays - Orange County, Summer

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | $\begin{gathered} \hline \text { PM2.5 } \\ \text { Total } \end{gathered}$ | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 3.0 Construction Detail

## Construction Phase



## Acres of Grading (Site Preparation Phase): 0

## Acres of Grading (Grading Phase): 0

## Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating - sqft)

OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Solar Array Install | :Welders | 1 | 8.00 | 46 | 0.45 |
| Grading and Concrete Pad | Cement and Mortar Mixers | 1 | 4.00 | 9 | --9.56 |
| Grading and Concrete Pad | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Solar Array Install | Forklifts | 2 | 6.00 | 89 | 0.20 |
| Solar Ärray Install | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Grading and Concrete-Pad | Plate Compactors | 1 | 7.00 | 8 | 0.43 |
| Grading and Concrete Pad | Pumps | 1 | 4.00 | 84 | 0.74 |

EOWD Solar Arrays - Orange County, Summer

## Trips and VMT



### 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Grading and Concrete Pad - 2020

## Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | 1b/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 0.3011 |  | 0.3011 | 0.1655 | 0.0000 |  |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 0.4332 | 3.7474 | 3.9294 | $\begin{gathered} 6.4000 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.2191 | 0.2191 |  | 0.2112 | 0.2112 |  | 592.5213 | 592.5213 | 0.0974 |  | 594.9550 |
| Total | 0.4332 | 3.7474 | 3.9294 | $\begin{gathered} 6.4000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3011 | 0.2191 | 0.5202 | 0.1655 | 0.2112 | 0.3767 |  | 592.5213 | 592.5213 | 0.0974 |  | 594.9550 |

### 3.2 Grading and Concrete Pad - 2020

## Unmitigated Construction Off-Site

|  | ROG | NOx | co | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2. 5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lib/day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Vendor | $\begin{aligned} & 3.1900 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.1042 | 0.0275 | $\begin{aligned} & 2.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 6.3900 \mathrm{e}- \\ 003 \end{gathered}$ | 5.4000e- | $\begin{gathered} 6.9300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8400 \mathrm{e}- \\ 003 \end{gathered}$ | ${ }^{5.2000 e-}$ | $\begin{gathered} 2.3600 \mathrm{e}- \\ 003 \end{gathered}$ |  | 27.1129 | 27.1129 | ${ }^{2.19000} 0$ |  | 27.1677 |
| Worker | 0.0384 | 0.0242 | 0.3273 | $\begin{gathered} 1.0900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1118 | $\begin{gathered} 7.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.1125 | 0.0296 | $\begin{aligned} & 6.8000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0303 |  | 109.0044 | 109.0044 | $\begin{gathered} 2.4800 \mathrm{e} \\ 003 \end{gathered}$ |  | 109.0665 |
| Total | 0.0416 | 0.1284 | 0.3548 | ${ }^{1.34000-}$ | 0.1182 | ${ }^{1.2800 e-}$ | 0.1195 | 0.0315 | $1.2000 \mathrm{e}-$ 003 | 0.0327 |  | 136.1173 | 136.1173 | ${ }^{4.6700 \mathrm{e}} 0$ |  | 136.2342 |

Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | Ib/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 0.1355 | 0.0000 | 0.1355 | 0.0745 | 0.0000 | 0.0745 |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 0.4332 | 1.5789 | 3.9294 | $6.4000 \mathrm{e}-$ |  | 0.2191 | 0.2191 |  | 0.2112 | 0.2112 | 0.0000 | 592.5213 | 592.5213 | 0.0974 |  | 594.9550 |
| Total | 0.4332 | 1.5789 | 3.9294 | $\begin{gathered} 6.4000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1355 | 0.2191 | 0.3546 | 0.0745 | 0.2112 | 0.2856 | 0.0000 | 592.5213 | 592.5213 | 0.0974 |  | 594.9550 |

### 3.2 Grading and Concrete Pad-2020

## Mitigated Construction Off-Site

|  | ROG | NOx | co | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2. 5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lib/day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Vendor | $\begin{aligned} & 3.1900 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.1042 | 0.0275 | $\begin{aligned} & 2.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 6.3900 \mathrm{e}- \\ 003 \end{gathered}$ | 5.4000e- | $\begin{gathered} 6.9300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8400 \mathrm{e}- \\ 003 \end{gathered}$ | ${ }^{5.2000 e-}$ | $\begin{gathered} 2.3600 \mathrm{e}- \\ 003 \end{gathered}$ |  | 27.1129 | 27.1129 | ${ }^{2.19000} 0$ |  | 27.1677 |
| Worker | 0.0384 | 0.0242 | 0.3273 | $\begin{gathered} 1.0900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1118 | $\begin{gathered} 7.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.1125 | 0.0296 | $\begin{aligned} & 6.8000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0303 |  | 109.0044 | 109.0044 | $\begin{gathered} 2.4800 \mathrm{e} \\ 003 \end{gathered}$ |  | 109.0665 |
| Total | 0.0416 | 0.1284 | 0.3548 | ${ }^{1.34000-}$ | 0.1182 | ${ }^{1.2800 e-}$ | 0.1195 | 0.0315 | $1.2000 \mathrm{e}-$ 003 | 0.0327 |  | 136.1173 | 136.1173 | ${ }^{4.6700 \mathrm{e}} 0$ |  | 136.2342 |

3.3 Solar Array Install - 2020

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 0.7676 | 5.6227 | 5.8171 | $\begin{aligned} & 7.9500 \mathrm{e}- \\ & 003 \end{aligned}$ |  | 0.3650 | 0.3650 |  | 0.3428 | 0.3428 |  | 730.2925 | 730.2925 | 0.1998 |  | 735.2864 |
| Total | 0.7676 | 5.6227 | 5.8171 | $\begin{aligned} & \hline 7.9500 \mathrm{e}- \\ & 003 \end{aligned}$ |  | 0.3650 | 0.3650 |  | 0.3428 | 0.3428 |  | 730.2925 | 730.2925 | 0.1998 |  | 735.2864 |

### 3.3 Solar Array Install - 2020

## Unmitigated Construction Off-Site

|  | ROG | NOx | co | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2. 5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lib/day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 |
| Vendor | $\begin{aligned} & 3.1900 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.1042 | 0.0275 | $\begin{aligned} & 2.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 6.3900 \mathrm{e}- \\ 003 \end{gathered}$ | 5.4000e- | $\begin{gathered} 6.9300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8400 \mathrm{e}- \\ 003 \end{gathered}$ | ${ }^{5.2000 e-}$ | $\begin{gathered} 2.3600 \mathrm{e}- \\ 003 \end{gathered}$ |  | 27.1129 | 27.1129 | $2.1900 \mathrm{e}-$ 003 |  | 27.1677 |
| Worker | 0.0384 | 0.0242 | 0.3273 | $\begin{gathered} 1.0900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1118 | $\begin{gathered} 7.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.1125 | 0.0296 | $\begin{aligned} & 6.8000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0303 |  | 109.0044 | 109.0044 | $\begin{gathered} 2.4800 \mathrm{e} \\ 003 \end{gathered}$ |  | 109.0665 |
| Total | 0.0416 | 0.1284 | 0.3548 | ${ }^{1.34000-}$ | 0.1182 | ${ }^{1.2800 e-}$ | 0.1195 | 0.0315 | $1.2000 \mathrm{e}-$ 003 | 0.0327 |  | 136.1173 | 136.1173 | ${ }^{4.6700 \mathrm{e}} 0$ |  | 136.2342 |

Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 0.7676 | 4.0514 | 5.8171 | 7.9500e- |  | 0.3650 | 0.3650 |  | 0.3428 | 0.3428 | 0.0000 | 730.2925 | 730.2925 | 0.1998 |  | 735.2864 |
| Total | 0.7676 | 4.0514 | 5.8171 | $\begin{gathered} 7.9500 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.3650 | 0.3650 |  | 0.3428 | 0.3428 | 0.0000 | 730.2925 | 730.2925 | 0.1998 |  | 735.2864 |

EOWD Solar Arrays - Orange County, Summer

### 3.3 Solar Array Install - 2020

Mitigated Construction Off-Site


### 4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile


### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| User Defined Industrial | 0.00 | 0.00 | 0.00 |  |  |
| Total | 0.00 | 0.00 | 0.00 |  |  |

### 4.3 Trip Type Information

|  | Miles |  |  | Trip \% |  |  | Trip Purpose \% |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| User Defined Industrial | 16.60 | 8.40 | 6.90 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| User Defined Industrial | 0.55596 | 0.0438 | 0.2103 | 0.1163 | 0.01676 | 0.00579 | 0.0250 | 0.0161 | 0.00167 | 0.00158 | 0.0048 | 0.00058 | 0.001002 |

### 5.0 Energy Detail

Historical Enerav Use: N


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### 5.2 Energy by Land Use - NaturaIGas

Mitigated

|  | $\begin{gathered} \text { NaturalGa } \\ \text { s Use } \end{gathered}$ | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | lb/day |  |  |  |  |  |  |  |  |  | 1b/day |  |  |  |  |  |
| User Defined Industrial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 6.0 Area Detail

### 6.1 Mitigation Measures Area



### 6.2 Area by SubCategory

## Unmitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive <br> PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory |  |  |  |  |  |  |  |  |  |  |  |  | lb/d |  |  |  |
| Architectural Coating | $0.0000$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 1 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Consumer Products | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | $0.0000^{-1}$ |
| Landscaping | 0.0000 | 0.0000 | $3.0000 \mathrm{e}-$ 005 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 10.0000 |  | ( $5.0000 \mathrm{e}-1$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | $6.00000-$ 005 |
| Total | 0.0000 | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | $\begin{aligned} & 5.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 |  | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

## Mitigated


7.0 Water Detail

### 7.1 Mitigation Measures Water

### 8.0 Waste Detail

8.1 Mitigation Measures Waste

### 9.0 Operational Offroad

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

### 10.0 Stationary Equipment

Fire Pumps and Emergency Generators


Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: |

User Defined Equipment

| Equipment Type | Number |
| :--- | :---: |

### 11.0 Vegetation

## EOWD Solar Arrays - Orange County, Annual

## EOWD Solar Arrays <br> Orange County, Annual

### 1.0 Project Characteristics

1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area |
| :---: | :---: | :---: | :---: | :---: |
| User Defined Industrial | 0.25 | User Defined Unit | 0.25 | 0.00 |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.2 | Precipitation Freq (Days) |
| :--- | :--- | :--- | :--- | :--- |
| Climate Zone | 8 |  | Operational Year |  |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use - 0.25 acre max
Construction Phase - 3 month construction
Off-road Equipment - Construction: 2 forklifts, 2 loader/backhoes
Trips and VMT - 5 workers
Off-road Equipment - 1 loader/backhoe, 1 compactor, 1 mixer, 1 pump
Construction Off-road Equipment Mitigation -
Off-road Equipment - Solar Array Install: 2 forklifts, 1 loader/backhoe, 1 welder

EOWD Solar Arrays - Orange County, Annual


EOWD Solar Arrays - Orange County, Annual

| tblTripsAndVMT | PhaseName | Grading | Grading and Concrete Pad |
| :---: | :---: | :---: | :---: |
| tbiTripsÄdVMT | PhaseName | Building Construction | Solar Array Install |
| tbiTripsÄdVMT | VendorTripNumber | 0.00 | 1.00 |
| tbiTripsÄndVMT | VendorTripNumber | 0.00 | 1.00 |
| tbiTripsAndVMT | WorkerTripNumber | 0.00 | 10.00 |

### 2.0 Emissions Summary

### 2.1 Overall Construction

## Unmitigated Construction

|  | ROG | NOx | co | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2020 |  | 0.1680 | 0.1800 | $\begin{gathered} 2.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 4.2400 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0106 | 0.0149 | $\begin{gathered} 1.3400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.9900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0113 | 0.0000 | 23.1436 | 23.1436 | $\begin{gathered} 5.3300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 23.2769 |
| Maximum | 0.0235 | 0.1680 | 0.1800 | $\begin{gathered} 2.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 4.2400 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0106 | 0.0149 | $\begin{gathered} 1.3400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.9900 e- \\ 003 \end{gathered}$ | 0.0113 | 0.0000 | 23.1436 | 23.1436 | $\begin{gathered} 5.3300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 23.2769 |

## Mitigated Construction

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2020 | 0.0235 | 0.1194 | 0.1800 | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.8200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0106 | 0.0145 | $\begin{gathered} 1.1200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.9900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0111 | 0.0000 | 23.1436 | 23.1436 | $\begin{gathered} 5.3300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 23.2768 |
| Maximum | 0.0235 | 0.1194 | 0.1800 | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.8200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0106 | 0.0145 | $\begin{aligned} & 1.1200 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 9.9900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0111 | 0.0000 | 23.1436 | 23.1436 | $\begin{gathered} 5.3300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 23.2768 |


|  | ROG | NOx | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | $\begin{array}{r} \text { PM2.5 } \\ \text { Total } \end{array}$ | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 28.95 | 0.00 | 0.00 | 9.91 | 0.00 | 2.76 | 16.42 | 0.00 | 1.94 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

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| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Highest |  |  |

### 2.2 Overall Operational

Unmitigated Operational

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \hline \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Area | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ |
| Mergy | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | -0.0000 |
| Mobil | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Was |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Wat |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Total | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

### 2.2 Overall Operational

## Mitigated Operational



### 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Grading and Concrete Pad | Grading | 10/1/2020 | 10/7/2020 |  | 5 |  |
| 2 | Solar Ärray Install | Building Construction | 10/15/2020 | :12/30/2020 | 5 | 55 |  |

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## Acres of Grading (Site Preparation Phase): 0

## Acres of Grading (Grading Phase): 0

## Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating - sqft)

## OffRoad Equipment



Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Grading and Con Dad |  | 10.00 | 1.00 | 0.00 | 14.70 | 6.90 | 20.00!LD_Mix |  | HDT_Mix | HHDT |
| Solar Array Install |  | 10.00 | 1.00 | 0.00 | 14.70 | 6.90 | 20.00:LD_Mix |  | :HDT_Mix | HHDT |

### 3.1 Mitigation Measures Construction

Water Exposed Area

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### 3.2 Grading and Concrete Pad - 2020

## Unmitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | $7.5000 \mathrm{e}-$ 004 | 0.0000 | $7.5000 \mathrm{e}-1$ 004 | $4.1000 \mathrm{e}-$ 004 | 0.0000 | $4.1000 \mathrm{e}-$ 004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | $1.0800 \mathrm{e}-$ 003 | ${ }^{9.37000-}$ | ${ }^{9.82000-}$ | ${ }^{2.00000-}$ |  | 5.5000e- | 5.5000e- |  | 5.3000e- | ${ }^{5.3000 e-}$ | 0.0000 | 1.3438 | 1.3438 | ${ }^{2.2000 e-}$ | 0.0000 | 1.3493 |
| Total | $\begin{array}{\|c\|} \hline 1.0800 \mathrm{e}- \\ 003 \end{array}$ | $\begin{gathered} 9.3700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.8200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 7.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 5.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.3000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 4.1000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 5.3000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 9.4000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 1.3438 | 1.3438 | ${ }^{2.20000-}$ | 0.0000 | 1.3493 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|  | $1.0000 \mathrm{e}-$ 005 | $2.7000 \mathrm{e}-$ 004 | $7.0000 \mathrm{e}-$ 005 | 0.0000 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0000 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0609 | 0.0609 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0610 |
| Worker | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 7.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | $\begin{gathered} 2.8000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.2375 | 0.2375 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.2377 |
| Total | $\begin{gathered} 1.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 3.4000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{aligned} & 8.4000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | $\begin{aligned} & 2.9000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{aligned} & 8.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | 0.0000 | 0.2984 | 0.2984 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | 0.2987 |

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### 3.2 Grading and Concrete Pad - 2020

## Mitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | ${ }^{3.40000-}$ | 0.0000 | 3.4000e- | $\begin{gathered} 1.9000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | ${ }^{1.90000-}$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |
| Off-Road | ${ }^{1.08000-}$ | ${ }^{3.95000} 00$ | ${ }^{9.8200 e-}$ | $2.0000 \mathrm{e}-$ 000 |  | $5.5000 \mathrm{e}-$ 004 | 5.5000e- |  | 5.3000e- | $5.3000 \mathrm{e}-$ 004 | 0.0000 | 1.3438 | 1.3438 | ${ }^{2.2000 e-}$ | 0.0000 | 1.3493 |
| Total | $\begin{gathered} 1.0800 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 3.9500 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 9.8200 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.4000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 5.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 8.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.9000 \mathrm{e} \\ 004 \end{gathered}$ | $\begin{gathered} 5.3000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 1.3438 | 1.3438 | $\begin{aligned} & 2.20000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 1.3493 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|  | $1.0000 \mathrm{e}-$ 005 | $2.7000 \mathrm{e}-$ 004 | $7.0000 \mathrm{e}-$ 005 | 0.0000 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0000 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0609 | 0.0609 | $1.0000 \mathrm{e}-$ 005 | 0.0000 | 0.0610 |
| Worker | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 7.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $\begin{aligned} & 2.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | $\begin{gathered} 2.8000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.2375 | 0.2375 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.2377 |
| Total | $\begin{gathered} 1.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 3.4000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{aligned} & 8.4000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | $\begin{aligned} & 2.9000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $\begin{aligned} & 8.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | 0.0000 | 0.2984 | 0.2984 | $2.0000 \mathrm{e}-$ 005 | 0.0000 | 0.2987 |

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### 3.3 Solar Array Install - 2020

## Unmitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{gathered} \text { PM10 } \\ \text { Total } \end{gathered}$ | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road |  | 0.1546 | 0.1600 | $\begin{aligned} & 2.2000 \mathrm{e}- \\ & 004 \end{aligned}$ |  | 0.0100 | 0.0100 |  | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 9.4300 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0000 | 18.2190 | 18.2190 | $\begin{aligned} & 4.9800 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0000 | 18.3436 |
| Total | 0.0211 | 0.1546 | 0.1600 | $\begin{gathered} 2.2000 \mathrm{e}- \\ 004 \end{gathered}$ |  | 0.0100 | 0.0100 |  | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 18.2190 | 18.2190 | $\begin{gathered} 4.9800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 18.3436 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH 4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $9.0000 \mathrm{e}-$ 005 | $2.9200 \mathrm{e}-$ 003 | $7.9000 \mathrm{e}-$ 004 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $1.7000 \mathrm{e}-$ 004 | $2.0000 \mathrm{e}-$ 005 | $\begin{gathered} 1.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $1.0000 \mathrm{e}-$ 005 | 6.0000 e 005 | 0.0000 | 0.6694 | 0.6694 | 6.0000 e 005 | 0.0000 | 0.6708 |
| Worker | $\begin{aligned} & 1.0700 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 7.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 8.5200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 3.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 3.0200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.0400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 8.0000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 8.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 2.6129 | 2.6129 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 2.6144 |
| Total | $\begin{gathered} 1.1600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 9.3100 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.1900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 4.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 3.2300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 8.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 8.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 3.2824 | 3.2824 | $1.2000 \mathrm{e}-$ 004 | 0.0000 | 3.2853 |

### 3.3 Solar Array Install - 2020

Mitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 0.0211 | 0.1114 | 0.1600 | $2.2000 \mathrm{e}-$ 004 |  | 0.0100 | 0.0100 |  | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 18.2190 | 18.2190 | $\begin{gathered} 4.9800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 18.3436 |
| Total | 0.0211 | 0.1114 | 0.1600 | $\begin{aligned} & 2.2000 \mathrm{e}- \\ & 004 \end{aligned}$ |  | 0.0100 | 0.0100 |  | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.4300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 18.2190 | 18.2190 | $\begin{gathered} 4.9800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 18.3436 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $9.0000 \mathrm{e}-$ 005 | $2.9200 \mathrm{e}-$ 003 | $7.9000 \mathrm{e}-$ 004 | $1.0000 \mathrm{e}-$ 005 | $1.7000 \mathrm{e}-$ 004 | $2.0000 \mathrm{e}-$ 005 | $1.9000 \mathrm{e}-$ 004 | $5.0000 \mathrm{e}-$ 005 | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $6.0000 \mathrm{e}-$ 005 | 0.0000 | 0.6694 | 0.6694 | 6.0000 e 005 | 0.0000 | 0.6708 |
| Worker | $\begin{gathered} 1.0700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 7.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{aligned} & 8.5200 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{aligned} & 3.0200 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.0400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 8.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 2.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{aligned} & 8.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 2.6129 | 2.6129 | $\begin{gathered} 6.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 2.6144 |
| Total | $\begin{gathered} 1.1600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 9.3100 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.1900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 3.2300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 8.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 8.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 3.2824 | 3.2824 | $\begin{aligned} & 1.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 3.2853 |

### 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | $\begin{aligned} & \text { Fugitive } \\ & \text { PM22.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |

### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| User Defined Industrial | 0.00 | 0.00 | 0.00 |  |  |
| Total | 0.00 | 0.00 | 0.00 |  |  |

### 4.3 Trip Type Information

|  | Miles |  |  |  | Trip \% |  |  |  | Trip Purpose \% |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |  |  |  |
| User Defined Industrial | 16.60 | 8.40 | 6.90 | 0.00 | 0.00 | 0.00 | $:$ | 0 | $:$ |  |  |  |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| User Defined Industrial | 0.555968 | 0.04384 | 0.21035 | 0.1163 | 0.01676 | 0.00579 | 0.02500 | 0.0161 | 0.00167 | 0.00158 | 0.0048 | 0.00058 | 0.001002 |

## EOWD Solar Arrays - Orange County, Annual

### 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | $\begin{aligned} & \hline \text { PM10 } \\ & \text { Total } \end{aligned}$ | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2. 5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Electricity Mitigated |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | -0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| -NaturalGas Unmitigated | $-0.0000$ | 0.0000 | $-\overline{0.0000}$ | $-\overline{0.0000}$ |  | $-\overline{0.0000}$ |  |  |  |  |  | $-\overline{0.0000}$ | $-0.0000$ |  | $-\overline{0.0000}$ | 0.0000 |

## EOWD Solar Arrays - Orange County, Annual

### 5.2 Energy by Land Use - NaturalGas

Unmitigated

|  | NaturalGa s Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| User Defined Industrial |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## Mitigated

|  | NaturalGa s Use | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| User Defined Industrial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.3 Energy by Land Use - Electricity

Unmitigated

|  | Electricity <br> Use | Total CO2 | CH 4 | N 2 O | CO2e |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | $\mathrm{kWh} / \mathrm{yr}$ | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |
| User Defined <br> Industrial | 0 | 0 | 0.0000 | 0.0000 | 0.0000 |  |
| Total |  | 0.0000 | 0.0000 | 0.0000 |  |  |

## Mitigated

|  | Electricity <br> Use | Total CO2 | CH 4 | N 2 O | CO2e |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | $\mathrm{kWh} / \mathrm{yr}$ | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |
| User Defined <br> Industrial | 0 |  | 0.0000 | 0.0000 | 0.0000 |  |
| Total |  | $\mathbf{1}$ |  | 0.0000 |  |  |

### 6.0 Area Detail

### 6.1 Mitigation Measures Area

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Mitigated |  | 0.0000 |  |  |  |  | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | [1.0000e- | $1.00000-$ 005 | 0.0000 | 0.0000 | 1.0000e- |
| nmitigated |  |  |  |  |  |  |  |  |  |  |  | $1.0000 \mathrm{e}-$ 005 | $\begin{gathered} 1.0000 \mathrm{e} \\ 005 \end{gathered}$ |  |  | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

### 6.2 Area by SubCategory

## Unmitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \hline \text { PM10 } \\ \text { Total } \end{gathered}$ | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Architectural Coating | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| - Consumer Products | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |
| - ${ }^{-a n d s c a p i n g ~}$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $:$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{aligned} & 1.00000 \mathrm{e} \\ & 005 \end{aligned}$ |
| Total | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

## EOWD Solar Arrays - Orange County, Annual

### 6.2 Area by SubCategory

## Mitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust | PM10 | Fugitive PM2.5 | Exhaust | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory |  |  |  |  |  |  |  |  |  |  |  |  | MT |  |  |  |
| Architectural Coating | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| --Mandscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 0.0000 | $\begin{gathered} 9.0000 \mathrm{e} \\ 005 \end{gathered}$ |
| Total | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | 0.0000 | 0.0000 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ |

### 7.0 Water Detail

7.1 Mitigation Measures Water


### 7.2 Water by Land Use

Unmitigated

|  | Indoor/Out door Use | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Mgal | MT/yr |  |  |  |
| User Defined Industrial |  | $0.0000$ | 0.0000 | 0.0000 | 0.0000 |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 7.2 Water by Land Use

Mitigated

|  | Indoor/Out <br> door Use | Total CO2 | CH4 | N 2 O | CO2e |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Mgal | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |  |
| User Defined <br> Industrial | $0 / 0$ | L | 0.0000 | 0.0000 | 0.0000 |  |  |
| Total |  | 0.0000 | 0.0000 | 0.0000 |  |  |  |

### 8.0 Waste Detail

8.1 Mitigation Measures Waste

## Category/Year



## EOWD Solar Arrays - Orange County, Annual

### 8.2 Waste by Land Use

Unmitigated

|  | Waste <br> Disposed | Total CO2 | CH4 | N 2 O | CO2e |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | tons | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |  |
| User Defined <br> Industrial | 0 | L | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |  |

## Mitigated

|  | Waste <br> Disposed | Total CO2 | CH 4 | N 2 O | $\mathrm{CO2e}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | tons | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |
| User Defined <br> Industrial | 0 |  |  |  |  |  |
| Total |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |

### 9.0 Operational Offroad

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

### 10.0 Stationary Equipment

Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: |

User Defined Equipment


### 11.0 Vegetation

## APPENDIX 2

## IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as trust resources) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional sitespecific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Orange County, California


## Local office

Carlsbad Fish And Wildlife Office
C (760) 431-9440
唃 (760) 431-5901
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
http://www.fws.gov/carlsbad/

## Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and projectspecific information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species ${ }^{1}$ and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are not shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Birds

NAME

Coastal California Gnatcatcher Polioptila californica californica
There is final critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/8178

Least Bell's Vireo Vireo bellii pusillus
There is final critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/5945

## Fishes

## NAME

 STATUSSanta Ana Sucker Catostomus santaanae
Threatened
There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3785

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Actํ․ and the Bald and Golden Eagle Protection Act ${ }^{2}$.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/ birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds
http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/
conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

len's Hummingbird Selasphorus sasin
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637

Bald Eagle Haliaeetus leucocephalus
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Clark's Grebe Aechmophorus clarkii
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

BREEDING SEASON (IFA
BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Breeds Feb 1 to Jul 15

Breeds Jan 1 to Aug 31

Breeds Jan 1 to Dec 31

Common Yellowthroat Geothlypis trichas sinuosa
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

## Costa's Hummingbird Calypte costae

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9470

## Golden Eagle Aquila chrysaetos

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

## Lawrence's Goldfinch Carduelis lawrencei

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Nuttall's Woodpecker Picoides nuttallii
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Song Sparrow Melospiza melodia
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483

## Willet Tringa semipalmata

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Wrentit Chamaea fasciata

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Mar 15 to Aug 10

Breeds elsewhere

Breeds elsewhere

Breeds Mar 15 to Aug 10

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

## Probability of Presence ()

Each green bar represents the bird's relative probability of presence in the 10 km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 124 -week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25 .
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05 , and that the probability of presence at week $12(0.25)$ is the maximum of any week
of the year. The relative probability of presence on week 12 is $0.25 / 0.25=1$; at week 20 it is $0.05 / 0.25=0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

## Breeding Season ( )

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

## Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10 km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

## No Data ( - )

A week is marked as having no data if there were no survey events for that week.

## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

$B C C-B C R$ (This is a Bird of Conservation Concern (BCC) only in particular Bird
Conservation Regions (BCRs) in the continental USA)

Costa's
Hummingbird $B C C-B C R$ (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)
Golden Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)
Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its
range in the
continental USA and Alaska.)



 BCC - BCR (This is a Bird of Conservation
Concern (BCC) only in
particular Bird
Conservation Regions
(BCRs) in the
continentalUSA)


## Thisis a Bird of

Conservation Concern
(BCC) throughout its
range in the
continental USA and
Alaska.)
Rufous
Hummingbird
 BCC Rangewide (CON)
(Thisis a Bird of
Conservation Concern
(BCC) throughoutits
range in the
continentat USA and
Alaska.)

Short-billed
Dowitcher BCC Rangewide (CON) $\xrightarrow[\text { (This is a Bird of }]{\text { Conservation Concern }}$ (BCC) throughout its continental USA and Alaska.)

Song Sparrow BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird
Conservation Regions (BCRs) in the continental USA)
SPECIES J

Spotted Towhee
BCC - BCR (This is a
Bird of Conservation
Concern (BCC) only in
particular Bird
Conservation Regions (BCRs) in the
continentalUSA)
Tricolored Blackbird BCC Rangewide (CON)
(This is a Bird of
Conservation Concern
(BCC) throughout its
range in the
continental USA and
Alaska.)
Whimbrel BCC Rangewide (CON) (This is a Bird of
Conservation Concern
(BCC) throughout its
range in the
continentaT USA and
Alaska.)
Willet
BCC Rangewide (CON)
"Thisis a Bird of
Conservation Concern
(BCC) throughout its
range in the
continental USA and
Alaska.)

(This is a Bird of
Conservation Concern
(BCC) throughout its
range in the
continental USA and
Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any Tocation year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding
their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

## What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) , and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10 km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or yearround), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

## What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts
and requirements for eagles, please see the FAQs for these topics.

## Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring,

## What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

## Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

## Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

## Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

## Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

## Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Selected Elements by Scientific Name
curfatim
California Department of Fish and Wildlife
California Natural Diversity Database

Query Criteria: Quad<span style='color:Red'> IS </span>(Orange (3311777))
EO-168

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Abronia villosa var. aurita chaparral sand-verbena | PDNYC010P1 | None | None | G5T2? | S2 | 1B. 1 |
| Accipiter cooperii Cooper's hawk | ABNKC12040 | None | None | G5 | S4 | WL |
| Agelaius tricolor tricolored blackbird | ABPBXB0020 | None | Threatened | G2G3 | S1S2 | SSC |
| Aimophila ruficeps canescens southern California rufous-crowned sparrow | ABPBX91091 | None | None | G5T3 | S3 | WL |
| Anniella stebbinsi southern California legless lizard | ARACC01060 | None | None | G3 | S3 | SSC |
| Ardea herodias great blue heron | ABNGA04010 | None | None | G5 | S4 |  |
| Aspidoscelis hyperythra orange-throated whiptail | ARACJ02060 | None | None | G5 | S2S3 | WL |
| Bombus crotchii <br> Crotch bumble bee | IIHYM24480 | None | None | G3G4 | S1S2 |  |
| California Walnut Woodland California Walnut Woodland | CTT71210CA | None | None | G2 | S2.1 |  |
| Calochortus weedii var. intermedius intermediate mariposa-lily | PMLILOD1J1 | None | None | G3G4T2 | S2 | 1B. 2 |
| Campylorhynchus brunneicapillus sandiegensis coastal cactus wren | ABPBG02095 | None | None | G5T3Q | S3 | SSC |
| Catostomus santaanae Santa Ana sucker | AFCJC02190 | Threatened | None | G1 | S1 |  |
| Centromadia parryi ssp. australis southern tarplant | PDAST4R0P4 | None | None | G3T2 | S2 | 1B. 1 |
| Choeronycteris mexicana <br> Mexican long-tongued bat | AMACB02010 | None | None | G4 | S1 | SSC |
| Coccyzus americanus occidentalis western yellow-billed cuckoo | ABNRB02022 | Threatened | Endangered | G5T2T3 | S1 |  |
| Dudleya multicaulis many-stemmed dudleya | PDCRA040H0 | None | None | G2 | S2 | 1B. 2 |
| Elanus leucurus white-tailed kite | ABNKC06010 | None | None | G5 | S3S4 | FP |
| Eriastrum densifolium ssp. sanctorum Santa Ana River woollystar | PDPLM03035 | Endangered | Endangered | G4T1 | S1 | 1B. 1 |
| Eumops perotis californicus western mastiff bat | AMACD02011 | None | None | G5T4 | S3S4 | SSC |
| Euphydryas editha quino quino checkerspot butterfly | IILEPK405L | Endangered | None | G5T1T2 | S1S2 |  |


| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Falco peregrinus anatum | ABNKD06071 | Delisted | Delisted | G4T4 | S3S4 | FP |
| American peregrine falcon |  |  |  |  |  |  |
| Icteria virens yellow-breasted chat | ABPBX24010 | None | None | G5 | S3 | SSC |
| Laterallus jamaicensis coturniculus California black rail | ABNME03041 | None | Threatened | G3G4T1 | S1 | FP |
| Myotis yumanensis <br> Yuma myotis | AMACC01020 | None | None | G5 | S4 |  |
| Nasturtium gambelii <br> Gambel's water cress | PDBRA270V0 | Endangered | Threatened | G1 | S1 | 1B. 1 |
| Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS | AFCHA0209J | Endangered | None | G5T1Q | S1 |  |
| Phrynosoma blainvillii coast horned lizard | ARACF12100 | None | None | G3G4 | S3S4 | SSC |
| Polioptila californica californica coastal California gnatcatcher | ABPBJ08081 | Threatened | None | G4G5T2Q | S2 | SSC |
| Setophaga petechia yellow warbler | ABPBX03010 | None | None | G5 | S3S4 | SSC |
| Sidalcea neomexicana salt spring checkerbloom | PDMAL110J0 | None | None | G4 | S2 | 2B. 2 |
| Southern California Arroyo Chub/Santa Ana Sucker Stream <br> Southern California Arroyo Chub/Santa Ana Sucker Stream | CARE2330CA | None | None | GNR | SNR |  |
| Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest | CTT61310CA | None | None | G4 | S4 |  |
| Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest | CTT61330CA | None | None | G3 | S3.2 |  |
| Sternula antillarum browni California least tern | ABNNM08103 | Endangered | Endangered | G4T2T3Q | S2 | FP |
| Vireo bellii pusillus least Bell's vireo | ABPBW01114 | Endangered | Endangered | G5T2 | S2 |  |

Record Count: 35

## APPENDIX 3

April 11, 2020

Kaitlyn Dodson-Hamilton

Tom Dodson and Associates
2150 N. Arrowhead Avenue
San Bernardino, CA 92405

Re: Native American Consultation
East Orange County Water District (EOCWD) North Well Project
City of Orange, Orange County, California
CRM TECH Contract No. 3597

Dear Ms. Dodson-Hamilton:

At your request, CRM TECH has completed Native American consultation procedures for the proposed undertaking referenced above, which entails the installation of a water production well at one of two alternate sites. One of the sites is located at 185 N. McPherson Road in the City of Orange, and the other is approximately 275 feet across the street at 210 N. McPherson Road. Both properties are currently occupied by existing EOCWD facilities, and both lie in a portion of the Santiago de Santa Ana land grant within T4S R9W, San Bernardino Baseline and Meridian (Fig. 1).

On February 25, 2020, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File (see appendix). In response, NAHC reports in a letter dated March 4, 2020, that the Sacred Lands File identified no Native American cultural resources in the vicinity of the Area of Potential Effects (APE) but recommends that local Native American groups be contacted for further information. For that purpose, NAHC provided a list of potential contacts in the region (see appendix).

Following NAHC's recommendations, on March 9, 2020, CRM TECH sent written requests for comments to all six Native American tribes on the referral list (see appendix). For one of the tribes, name the Juaneño Band of Mission Indians Acjachemen Nation, the designated spokesperson on cultural resource issues was contacted in lieu of the tribal chairperson on the referral list, as recommended in the past by the tribal government staff. Telephone solicitations were subsequently carried out on March 23 and April 2 (see appendix). The six tribal representatives contacted are listed below:

- Andrew Salas, Chairperson, Gabrieleno Band of Mission Indians-Kizh Nation;
- Anthony Morales, Chairperson, Gabrieleño/Tongva San Gabriel Band of Mission Indians;
- Sandonne Goad, Chairperson, Gabrielino/Tongva Nation;
- Robert Dorame, Chairperson, Gabrieleno Tongva Indians of California Tribal Council;
- Charles Alvarez, Chairperson, Gabrielino-Tongva Tribe;
- Joyce Perry, Tribal Manager, Juaneño Band of Mission Indians Acjachemen Nation.


Figure 1. Project location. (Based on USGS Orange, Calif., 7.5' quadrangle)

As of this time, three of the six tribes have replied in writing or by telephone (see appendix). Among them, Robert Dorame of the Gabrieleno Tongva Indians of California Tribal Council stated that the tribe would need more information regarding the water source for the new well (i.e., a natural spring, aqueduct, or other nearby waterway) before providing any comments. Brandy Salas, Administrative Specialist for the Gabrieleno Band of Mission Indians-Kizh Nation, requested contact information for the lead agency, which CRM TECH provided via e-mail on March 23.

Anthony Morales of the Gabrieleño/Tongva San Gabriel Band of Mission Indians requested archaeological monitoring of ground-disturbing activities associated with the installation of the new well and immediate notification if cultural resources are encountered. Mr. Morales further noted that, if such discoveries occur, the tribe might request Native American monitoring for the undertaking. Throughout the Native American consultation process, no specific sites of traditional cultural value were identified in the project vicinity.

Thank you for this opportunity to be of service. If you have any question or need further information regarding the records search results, please do not hesitate to contact our office.


## APPENDIX <br> CORRESPONDENCE WITH Native American Representatives*

[^4]Sacred Lands File \& Native American Contacts List Request<br>NATIVE AMERICAN HERITAGE COMMISSION<br>1550 Harbor Boulevard, Suite 100<br>West Sacramento, CA 95691<br>(916)373-3710<br>(916)373-5471 (Fax)<br>nahc@nahc.ca.gov

Project: Proposed East Orange County Water District North Well Project (CRM TECH No. 3597)

County: Orange
USGS Quadrangle Name: Orange, Calif.
Township_4 South Range 9 West SB BM; Section(s): Santiago de Santa Ana land grant
Company/Firm/Agency: CRM TECH
Contact Person: Nina Gallardo

Street Address: 1016 E. Cooley Drive, Suite A/B
City: Colton, CA
Zip: 92324

Phone: (909) 824-6400 Fax: (909) 824-6405

Email:ngallardo@crmtech.us
Project Description: The primary component of the project is to install a single production well at one of two sites owned by the East Orange County Water District (EOCWD). The two sites are located within or across the street from the EOCWD offices at 185 N. McPherson Road, in the City of Orange, Orange County, California.


Chairperson
Laura Miranda Luiseño

VICE Chairperson
Reginald Pagaling Chumash

Secretary
Mari Lopez-Keifer
Luiseño

Parliamentarian

## Russell Attebery

 KarukCOMmISSIONER
Marshall McKay
Winton

## COMMISSIONER

William Hungary
Paiute/White Mountain Apache

COMMISSIONER

## Joseph Myers

Poo

COMMISSIONER
Julie Tumamait-

## Stenslie

Chumash

COMMISSIONER
[Vacant]

Executive Secretary

## Christina Snider

 Pom
# NATIVE AMERICAN HERITAGE COMMISSION 

March 4, 2020
Nina Gallardo
CR TECH
Via Email to: $\underline{\text { ngallardo@crmtech.us }}$

## Re: Proposed East Orange County Water District North Well Project, Orange County

Dear Ms. Gallardo:
A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,
Andrew Oren

## Andrew Green

 Cultural Resources AnalystAttachment
NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 9569
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

# Native American Heritage Commission 

Native American Contact List
Orange County
3/4/2020

| Gabrieleno Band of Mission |  | Juaneno Band of Mission <br> Indians Acjachemen Nation - |  |
| :--- | :--- | :--- | :--- |
| Indians - Kizh Nation | Belardes |  |  |
| Andrew Salas, Chairperson | Gabrieleno | Joyce Perry, Tribal Manager |  |
| P.O. Box 393 | 4955 Paseo Segovia | Juaneno |  |
| Covina, CA, 91723 | Irvine, CA, 92603 |  |  |
| Phone: (626) 926-4131 |  | Phone: (949)293-8522 |  |
| admin@gabrielenoindians.org | kaamalam@gmail.com |  |  |
|  |  |  |  |

## Gabrieleno/Tongva San Gabriel

Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box $693 \quad$ Gabrieleno

San Gabriel, CA, 91778
Phone: (626) 483-3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

## Gabrielino /Tongva Nation

Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., Gabrielino \#231
Los Angeles, CA, 90012
Phone: (951) 807-0479
sgoad@gabrielino-tongva.com

## Gabrielino Tongva Indians of California Tribal Council

## Robert Dorame, Chairperson

P.O. Box 490

Gabrielino
Bellflower, CA, 90707
Phone: (562) 761-6417
Fax: (562) 761-6417
gtongva@gmail.com

## Gabrielino-Tongva Tribe

Charles Alvarez, 23454 Vanowen Street Gabrielino West Hills, CA, 91307 Phone: (310) 403-6048 roadkingcharles@aol.com

## Juaneno Band of Mission

 Indians Acjachemen Nation BelardesMatias Belardes, Chairperson
32161 Avenida Los Amigos Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293-8522
kaamalam@gmail.com

[^5]Robert F. Dorame, Tribal Chair
Gabrielino Tongva Indians of California Tribal Council
P. O. Box 490

Bellflower, CA 90707

RE: Proposed East Orange County Water District North Well Project<br>Two Alternative Sites in the City of Orange<br>Orange County, California<br>CRM TECH Contract \#3597

Dear Mr. Dorame:
I am writing to bring your attention to an ongoing CEQA-Plus study for the proposed project referenced above. The project entails the installation of a single production well at one of two proposed locations, both owned by the East Orange County Water District (EOCWD). One is located within the EOCWD office compound at 185 N . McPherson Road, and the other is a small area across the street from the EOCWD office. The accompanying map, based on the USGS Orange, Calif., 7.5' quadrangle, depicts these alternative sites within the Santiago de Santa Ana land grant, T4S R9W, SBBM.

In a letter dated March 4, 2020, the Native American Heritage Commission reports that the Sacred Lands File produced negative results but recommends that local Native American groups be contacted for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the Area of Potential Effects (APE).

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value in or near the APE, or any other information to consider during the cultural resources investigations. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agencies, namely the EOCWD and State Water Resource Control Board.

We would also like to clarify that, as the cultural resources consultant for the project, CRM TECH is not involved in the AB 52-compliance process or in government-to-government consultations. The purpose of this letter is to seek any information that you may have to help us determine if there are cultural resources in or near the APE that we should be aware of and to help us assess the sensitivity of the APE. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo
Project Archaeologist/Native American liaison
CRM TECH
Email: ngallardo@crmtech.us
Encl.: NAHC SLF response letter and project location map

From: Gabrieleno Administration [admin@gabrielenoindians.org](mailto:admin@gabrielenoindians.org)
Sent: Monday, March 23, 2020 3:25 PM
To: Nina Gallardo
Subject: Re: NA Scoping for the Proposed East Orange County Water District North Well Project; 185 N. McPherson Road, in the City of Orange, Orange County (CRM TECH \#3597)

Hello Nina good afternoon
Thank you for your email dated March 9th. Can you please provide the lead agency's contact information?

Thank you
Sincerely,
Brandy Salas
Admin Specialist
Gabrieleno Band of Mission Indians - Kizh Nation
PO Box 393
Covina, CA 91723
Office: 844-390-0787
website: www.gabrielenoindians.org
From: Nina Gallardo [ngallardo@crmtech.us](mailto:ngallardo@crmtech.us)
Sent: Monday, March 23, 2020 3:55 PM
To: 'Gabrieleno Administration'
Subject: RE: NA Scoping for the Proposed East Orange County Water District North Well Project; 185 N. McPherson Road, in the City of Orange, Orange County (CRM TECH \#3597)

Hello Brandi,
Below is the lead agency's contact information for the above-referenced project.
Jeff Smyth, P.E Engineering Manager
East Orange County Water District
185 N. McPherson Road
Orange, CA 92869
714-538-5815

Thanks again for your time and input,
Nina Gallardo
Project Archaeologist/Native American liaison
CRM TECH
1016 E. Cooley Drive Ste. A/B
Colton, CA 92324
(909) 824-6400

## TELEPHONE LOG

| Name | Tribe/Affiliation | Telephone Contacts | Note |
| :---: | :---: | :---: | :---: |
| Sandonne Goad, Chairperson | Gabrielino/Tongva Nation | $\begin{aligned} & \text { 3:09 pm, March 23, 2020; } \\ & \text { 12:03 pm, April 2, } 2020 \end{aligned}$ | Left voice messages; no response to date. |
| Andrew Salas, Chairman | Gabrieleño Band of Mission IndiansKizh Nation | $\begin{aligned} & \text { 2:42 pm, March 23, 2020; } \\ & 10: 55 \mathrm{am} \text {, April } 2,2020 \end{aligned}$ | Brandy Salas, Administrative Specialist, responded by e-mail on March 23, 2020, and requested contact information for the lead agency, which was subsequently provided to the tribe by e-mail (see copies attached). |
| Anthony Morales, Chairperson | Gabrieleno/Tongva San Gabriel Band of Mission Indians | 2:53 pm, March 23, 2020 | Mr. Morales requested archaeological monitoring of ground-disturbing activities associated with well installation and notification of any cultural resources encountered. If such discoveries occur, the tribe may then request Native American monitoring. |
| Charles Alvarez, Chairperson | Gabrielino-Tongva Tribe | $\begin{aligned} & 3: 20 \mathrm{pm} \text {, March 23, 2020; } \\ & \text { 12:15 pm, April 2, } 2020 \end{aligned}$ | Left voice messages; no response to date. |
| Robert F. Dorame, Tribal Chair | Gabrielino Tongva Indians of California Tribal Council | $\begin{aligned} & 3: 14 \mathrm{pm} \text {, March 23, 2020; } \\ & 12: 07 \mathrm{pm} \text {, April 2, } 2020 \end{aligned}$ | Mr. Dorame stated that the tribe would need further information about the water source for the proposed well before providing any comments. |
| Joyce Perry, Tribal Manager | Juaneño Band of Mission Indians Acjachemen Nation | $\begin{aligned} & \text { 3:23 pm, March 23, 2020; } \\ & \text { 12:19 pm, April 2, } 2020 \end{aligned}$ | Left voice messages; no response to date. |

## APPENDIX 4






Date(s) aerial images were photographed: May 16, 2014-Jul 2,
2014 Soil map units are labeled (as space allows) for map scales
1:50,000 or larger. Survey Area Data: Version 12, Sep 12, 2018 Soil Survey Area: Orange County and Part of Riverside County,
California This product is generated from the USDA-NRCS certified data as
of the version date(s) listed below. accurate calculations of distance or area are required. distance and area. A projection that preserves area, such as the
Albers equal-area conic projection, should be used if more projection, which preserves direction and shape but distorts Coordinate System: Web Mercator (EPSG:3857)
Maps from the Web Soil Survey are based on the Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: Please rely on the bar scale on each map sheet for map
measurements.
contrasting soils that could have been shown at a more detailed
scale. misunderstanding of the detail of mapping and accuracy of soil
line placement. The maps do not show the small areas of
contrasting soils that could have been shown at a more detailed Enlargement of maps beyond the scale of mapping can cause
misunderstanding of the detail of mapping and accuracy of soil

Warning: Soil Map may not be valid at this scale.
The soil surveys that comprise your AOI were mapped at
1:24,000.
NOIL甘WYOJNI dVW
Soil Map-Orange County and Part of Riverside County, California
(EOCWD Well Site)

## Map Unit Legend

| Map Unit Symbol |  | Map Unit Name | Acres in AOI |
| :--- | :---: | ---: | ---: |


(Well Location \#2)


## Map Unit Legend




[^0]:    ${ }^{1}$ https://www.eocwd.com/about

[^1]:    ${ }^{2} 2015$ EOCWD UWMP

[^2]:    ${ }^{3} h$ ttps://www.ocsd.com/Home/ShowDocument?id=29415
    ${ }^{4}$ https://www.ocsd.com/Home/ShowDocument?id=23429\#:~:text=Every\%20day\%2C\%20OCSD\%20provides\%20up,f or\%20residents\%20of\%20Orange\%20County

[^3]:    Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; Sundstrom v. County of Mendocino,(1988) 202 Cal.App.3d 296; Leonoff v. Monterey Board of Supervisors, (1990) 222 Cal.App.3d 1337; Eureka Citizens for Responsible Govt. v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.

[^4]:    * Six local Native American representatives were contacted during this study; a sample letter is included in the appendix.

[^5]:    This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

    This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed East Orange County Water District North Well Project, Orange County.

