AGENDA
IRVINE RANCH WATER DISTRICT
BOARD OF DIRECTORS
REGULAR MEETING

May 11, 2015

PLEDGE OF ALLEGIANCE

CALL TO ORDER 5:00 p.m., Board Room, District Office
15600 Sand Canyon Avenue, Irvine, California

ROLL CALL Directors Matheis, Reinhart, Swan, Withers and President LaMar

NOTICE

If you wish to address the Board on any item, including Consent Calendar items, please file your name with the Secretary. Forms are provided on the lobby table. Remarks are limited to five minutes per speaker on each subject. Consent Calendar items will be acted upon by one motion, without discussion, unless a request is made for specific items to be removed from the Calendar for separate action.

COMMUNICATIONS TO THE BOARD

1. A. Written:

   B. Oral:

2. ITEMS RECEIVED TOO LATE TO BE AGENDIZED

   Recommendation: Determine that the need to discuss and/or take immediate action on item(s)

WORKSHOPS **Resolution No. 2015-9**

3. PRELIMINARY RECYCLED WATER AND SEWER SYTEMS STRATEGIC PLAN

   Staff will present a preliminary Recycled Water and Sewer Systems Strategic Plan analysis for discussion.

4. DRAFT DROUGHT ACTION PLAN

   Staff will discuss with the Board ideas for programs, projects and policies to achieve the District's mandated water use reduction.

CONSENT CALENDAR **Resolution No. 2015-9** **Items 5-7**

5. MINUTES OF REGULAR BOARD MEETING

   Recommendation: That the minutes of the April 27, 2015 Regular Board meeting be approved as presented.

6. RATIFY/APPROVE BOARD OF DIRECTORS' ATTENDANCE AT MEETINGS AND EVENTS

   Recommendation: That the Board ratify/approve meetings and events for Steven LaMar, Mary Aileen Matheis, Douglas Reinhart, Peer Swan and John Withers.

7. ADDENDUM NO. 1 TO THE FINAL IS/MND FOR THE RESERVOIR MANAGEMENT SYSTEM, CHLORINE ANALYZERS AND RESERVOIR MIXERS/SAMPLERS AT DOMESTIC WATER RESERVOIRS PROJECT

   Recommendation: That the Board approve the proposed Addendum No.1 to the Final Initial Study/Mitigated Negative Declaration for the Reservoir Management System, Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs project, including the determinations set forth in Addendum No. 1; approve the modifications to the project; and authorize staff to file a Notice of Determination with the Orange County Clerk/Recorder and State Clearinghouse.

ACTION CALENDAR

8. MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF ORANGE AND IRWD REGARDING THE PROVISION OF SEWER SERVICE IN THE CITY OF ORANGE SPHERE OF INFLUENCE

   Recommendation: That the Board authorize the General Manager to execute a Memorandum of Understanding with the City of Orange regarding the provision of sewer service in the City of Orange sphere of influence, subject to non-substantive changes.

OTHER BUSINESS

Pursuant to Government Code Section 54954.2, members of the Board of Directors or staff may ask questions for clarification, make brief announcements, make brief reports on his/her own activities. The Board or a Board member may provide a reference to staff or other resources for factual information, request staff to report back at a subsequent meeting concerning any matter, or direct staff to place a matter of business on a future agenda. Such matters may be brought up under the General Manager's Report or Directors' Comments.

OTHER BUSINESS - Continued

9. A. General Manager's Report

B. Directors' Comments

C. Adjourn

* *

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the Irvine Ranch Water District Board of Directors in connection with a matter subject to discussion or consideration at an open meeting of the Board of Directors are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Board less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Board Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available at the entrance to the Board of Directors Room of the District Office.

The Irvine Ranch Water District Board Room is wheelchair accessible. If you require any special disability-related accommodations (e.g., access to an amplified sound system, etc.), please contact the District Secretary at (949) 453-5300 during business hours at least seventy-two (72) hours prior to the scheduled meeting. This agenda can be obtained in alternative format upon written request to the District Secretary at least seventy-two (72) hours prior to the scheduled meeting.

May 11, 2015
Prepared by: M. Hoolihan
Submitted by: K. Burton
Approved by: Paul Cook

WORKSHOP

PRELIMINARY RECYCLED WATER AND SEWER SYSTEMS STRATEGIC PLAN

SUMMARY:

Current projections of future Capital Outlay Revolving Funds and Equity payments (together referred to as CORF) to Orange County Sanitation District (OCSD) indicate that IRWD may expend approximately $255 million over the next 25 years for these expenses. Staff has developed a preliminary recycled water and sewer systems strategic plan to analyze potential alternative options to paying CORF. The plan analyzes various potential IRWD capital projects on the recycled water and sewer collection systems for cost effectiveness and payback. Staff will present the strategic plan analysis at the Board meeting for discussion.

BACKGROUND:

The goal of the recycled water and sewer systems strategic plan analysis is to optimize the combined operations of the recycled water and sewer systems, and reduce the sewer flow sent to OCSD, which reduces IRWD's annual CORF liabilities and need for imported water.

OCSD CORF and Equity:

The strategic plan analysis was prompted in part by projected increases in CORF costs over the next several years due to higher flow monitoring results in the Irvine Business Center (IBC) area. Preliminary flow monitoring results indicate sewer flows in the IBC area have increased from 3.16 million gallons per day (MGD) to 5.42 MGD between 2008 and 2014. Staff estimates IRWD's CORF liability will increase from the current cost of approximately $1.5 million per year to an average of $14 million per year over the next three years as a result of the increased flow. In addition, the average CORF cost over the next 25 years is estimated to be approximately $10.2 million per year or a combined total of $255 million. These CORF estimates have prompted staff to analyze various potential capital projects that could reduce CORF liabilities to OCSD.

Strategic Planning Model:

IRWD's Mass Balance Model was used to perform the strategic plan analysis. The Mass Balance Model compares treatment capacities, sewer flows, and seasonal storage availability to help staff evaluate IRWD's ability to meet recycled water demands. As an output, the model will predict the amount of sewer flow that will be sent to OCSD for treatment and disposal, and the need for imported untreated water to supplement the recycled water system.

A baseline model run was completed as a comparison to other model runs to evaluate impacts. The baseline run included three key assumptions:

- The Michelson Water Recycling Plant (MWRP) operating at its current flowrate (approximately 20 MGD;
- The current OCWD Green Acres Project (GAP) agreement is not renewed by July 1, 2026; and
- IRWD's seasonal storage remains at its existing capacity of 4,550 acre-feet (AF).

In order to establish the most accurate baseline comparison for the model, staff requested the most updated 50 years sewer flow projections and capital cost estimates from OCSD. In addition, updated sewer flow and recycled water demand projections for IRWD's service were used in the analysis. The CORF estimates were calibrated to the past five years of actual CORF billings.

The Mass Balance Model compares a single project or combinations of projects to the baseline model to measure the impacts to OCSD CORF and Metropolitan Water District of Southern California's untreated water requirements. In the strategic plan, staff analyzed the following potential capital projects:

- *ILP North Conversion Project* – conversion of approximately 3,500 AF per year of untreated water demand to recycled water;
- *Syphon Reservoir Expansion* – expansion of Syphon Reservoir to approximately 5,000 AF of seasonal storage;
- *Michelson Lift Station Sewage Flows to MWRP* – treating sewer flows from the Michelson Lift Station at MWRP;
- *IBC Sewer Flows to MWRP* – treating sewer flows from the IBC area at MWRP;
- *MWRP Phase 3 Expansion* – expansion of MWRP treatment capacity from 28 MGD to 33 MGD; and
- *OCWD GAP Service* – the service of all GAP demands from MWRP. This would extend the availability of the GAP interconnection beyond 2026 for wintertime disposal purposes.

Each project was analyzed individually and in combination with the other projects listed above. Because of substantial increases in the OCSD CORF in recent years that is expected to grow as development continues, the model indicates that an immediate reduction in IRWD flows to OCSD would be beneficial to IRWD. The output of the model is used to predict a financial benefit for analyzed projects. Staff will present the analysis at the Board meeting.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

This project is exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15262, which provides exemption for planning studies.

COMMITTEE STATUS:

This item was reviewed by the Engineering and Operations Committee on January 20, 2015.

RECOMMENDATION:

RECEIVE AND FILE.

LIST OF EXHIBITS:

None.

May 11, 2015
Prepared by: Fiona Sanchez
Submitted by: Paul Weghorst
Approved by: Paul Cook

WORKSHOP

DRAFT DROUGHT ACTION PLAN

SUMMARY:

California is entering a fourth year of drought and in April 2015 Governor Brown issued an Executive Order mandating a 25% reduction in statewide urban potable water use from 2013 levels. On May 5, the State Water Resources Control Board (SWRCB) adopted regulations that establish requirements for potable water reductions for each urban water agency in the State. The requirement for IRWD is to achieve a 16% reduction in potable water use which equates to a savings of approximately 8,000 acre-feet. At the workshop, staff will present a series of draft actions designed to achieve the District's mandated reduction. Staff recommends that the Board provide input and ideas for revising IRWD's proposed Draft Drought Action Plan.

BACKGROUND:

In order to successfully achieve the SWRCB's requirement for a 16% reduction of potable water use in IRWD's service area, it will be critical to gain significant reductions between June and August 2015. This period offers the greatest potential for water savings in discretionary outdoor use. Staff has identified a suite of immediate programs that can be implemented by July 31, 2015. Other longer-term programs identified will be implemented by December 31, 2015. The proposed programs and actions are summarized in the Draft Drought Action Plan provided as Exhibit "A.

Programs will be implemented through an adaptive approach, based upon customer response as well as the results of tracking of the water savings achieved in meeting the District's mandated 16% reduction. The programs may be modified and schedules adjusted as determined to be necessary. Additional resources including financial incentives, temporary staffing and consultant assistance will be required in order to support significantly expanded customer outreach and education, as well as to support expanded and enhanced water conservation programs. At the Board meeting, staff will provide a presentation and will solicit input and ideas from the Board that will be used in revising the Draft Drought Action Plan.

As the Drought Action Plan is implemented, staff will provide updates to the Board on the IRWD's progress toward meeting its 16% potable water use reduction target. Staff will also make recommendations to the Board for proposed program or budget modifications that are required throughout the implementation of the plan.

FISCAL IMPACTS:

Staff proposes reallocating and redirecting budgeted water efficiency and outreach funding from the adopted FY 2014-15 Operating Budget and from the proposed FY 2015-16 Operating Budget to implement the Drought Action Plan. Requests for any additional funding will be presented to the Board for consideration as additional and expanded programs are brought on-line.

ENVIRONMENTAL COMPLIANCE:

None.

RECOMMENDATION:

That the Board provide input and ideas for incorporation into the Draft Drought Action Plan.

LIST OF EXHIBITS:

Exhibit "A" – Draft Drought Action Plan

EXHIBIT "A"

Irvine Ranch Water District
DRAFT - Drought Action Plan

BACKGROUND:

California is entering a fourth year of unprecedented drought, and in April 2015 Governor Brown issued an Executive Order mandating a 25% reduction in statewide urban potable water use from 2013 levels. The State Water Resources Control Board adopted a regulation on May 5, 2015 that allocated reduction percentages to each urban water agency. IRWD's mandated reduction is 16%, a reduction of approximately 8,000 acre-feet. This Drought Action Plan (Plan) identifies a suite of actions designed to achieve the mandated reduction. The plan will be modified and adapted as necessary to ensure that IRWD meets or exceeds its targeted reduction.

OBJECTIVES:

- Meet or exceed the District's 16% mandated reduction, and reduce the District's potable water use by approximately 8,000 acre-feet by February 2016.
- Maintain the District's financial stability while promoting increased conservation and associated reduced water sales.
- Provide regulatory, policy and legislative leadership to meet local and state goals of increased urban efficiency and the effective and balanced use of water resources to meet customer needs, sustain a strong economy and protect California's environment.

STRATEGIES:

Irvine Ranch Water District has always taken a proactive approach to water conservation and is looked to as a leader by other water agencies throughout the state and country. This plan provides a menu of District-wide opportunities for water savings and includes water efficiency programs, customer education and outreach, expansion of the use of recycled water, operational practices and modifications, as well as policy and regulatory considerations.

Programs and projects were also prioritized based upon ease of implementation and the potential water savings. They are further broken down, into immediate programs that can be implemented by July 31, 2015, and those that are expected to be implemented by December 31, 2015. Some projects will require additional evaluation.

Programs will be implemented using an adaptive approach, based upon customer response as well as the water savings achieved to meet the District's mandated 16% reduction. Under this approach, the following programs may be modified and schedules adjusted. The following is a description of the programs to be implemented immediately and the longer term programs to be implemented by December 31, 2015.

WATER EFFICIENCY PROGRAMS

Immediate Programs to be Implemented by July 31, 2015

Drought Response Center	In order to respond to increased customer requests for on-site assistance, higher call volumes, and new and expanded water efficiency program offerings, additional temporary staff and consultants will be brought on to augment the water efficiency staff. Five full-time temporary staff will be recruited as part of the initial effort. We anticipate two positions will be dedicated to answering phone calls and scheduling customer surveys. Two additional temps will assist in conducting surveys. Another temp will back-fill for water efficiency staff assigned to testing proposed rate changes and other reporting needs in the billing system. They may be supplemented with consultants, based on customer response and resources needs in an adaptive approach.
On-line Customer Contact Form	In order to better organize and manage the increase in customer incoming communications and requests, staff will create an online form that customers can easily use to request information from district speakers, site surveys, and report water waste. This will make managing the steady stream of incoming customer requests and reports into a more manageable form and ensure all inquiries are addressed in a timely manner by the appropriate staff.
Home Check-Up Survey Program Expansion	IRWD will contract with a qualified firm or recruit temporary staff to significantly increase the resources available to conduct residential home water efficiency surveys targeted toward customers with over-allocation use. The surveys will include an inventory of plumbing fixtures and irrigation equipment. Customers will receive recommendations for the retrofit of inefficient devices and information on IRWD rebate programs. The information collected will also be used by staff in designing additional programs targeted toward residential programs.
"Brown is the New Green" Lawn Coma Program	This new program is designed to maximize savings from a reduction in outdoor water use. Customers will be encouraged to let their lawns go dormant or die , and either leave them brown or cover them with mulch. Customers can make reservations for turf removal program funding with the timeline extended into the fall. Staff will work with MWDOC and Metropolitan to modify the current requirement for live turf at time of installation. As an option, customers can choose to receive a one-time incentive of $500 at the end of the drought, based on photo plus water use data, to re-seed their landscapes with drought tolerant varieties.
RightScape Workshop Series	Staff has increased the frequency of the RightScape Workshop Series. The next series is scheduled for June 3, June 17 and July 1. It will be video recorded, edited and posted on the IRWD website as a resource to customers.

RightScape Contest	This contest will see which residential customers can save the most water by rewarding the winner with a new RightScape front yard. The contest will be for three months: July, August, and September to coincide with the peak of summer. Water use from the same month in 2014 will be used for the baseline to compare their 2015 usage and determine the savings. Customers will opt in through an online registration form. A SWIM smart meter (see SWIM program description below) will be installed between May and June. Signs will be provided for the homeowners to place in their front yards. The contest will run from July through September. Staff will send out text alerts to participants on their status and post progress on social media. At the end of September one winner from each "village" in IRWD's service area will be selected. The winners' new landscapes will be installed in October which is a good time of year to plant. IRWD will rely on contracted labor from a landscape design and installation company that will already be under contract for the commercial turf removal direct install.
Water Smart Report Program Expansion	The successful Water Smart Report Program will be expanded to target all over-allocation customers (currently customers who are over allocation for at least three months are targeted) effective July 1. This program alerts customers about their water use relative to other similar customers and also refers them to specific programs and IRWD assistance.
Smart Water Integrated Management (SWIM) Meter Program	A pilot study using the SWIM smart meters will be conducted to determine the long term benefits to the District of this type of emerging technology. Smart Water Infrastructure Management (SWIM) enables meters to be read remotely via a cellular signal without the need for AMI or infrastructure to be constructed. Staff can install the SWIM meters in the same manner as a normal meter. The contractor would configure the meters and create customer dashboards for viewing the data. Customers can access their usage data by computer or smartphone and can set up alerts and notifications for defined parameters. SWIM enables instant feedback to customers on their water using behaviors which is a very powerful tool to use in achieving a behavior change. This system is fully compatible and can be easily incorporated into IRWD's existing meter reading and billing system. In the near term, these Smart Meters will also be important to several other programs to provide customers with immediate feedback on their water saving actions. Smart meters will be used in three primary ways: 1. Installed on over-allocation customers to more closely monitor their water use. 2. Installed on customers who opt to participate in any of the District's competition style programs. 3. Installations will also be available for any customer who would like one with the condition that IRWD have access to their real time usage data.

Increased Rebate Program Funding	Supplemental funding for the following devices will be increased to drive participation rates: Turf Removal Program – An increase of $1 for a total of $3 for IRWD customers was implemented effective May 1. This program will transition to the "Brown is the New Green" program during the peak of summer, and then will resume in fall. Applications in process will be honored. High Efficiency Clothes Washers and High Efficiency Toilet incentive levels will be reviewed and any recommended changes will be incorporated into the FY 2015-16 MWDOC Incentive Program Agreement. Staff anticipates bringing the new program agreement for consideration by the Board in June.
Commercial, Industrial, Institutional (CII) Program	Temporary staff and/or consultants will be brought on to work with CII customers to conduct surveys to review allocations and ensure they are set appropriately, as well as identify opportunities for water savings including plumbing fixtures and process water improvements. Information from the surveys will be used to design future programs such as plumbing retrofit programs targeted toward CII customers.

Programs Implemented by December 31, 2015

Staff will develop and begin implementation of the following programs by December 31, 2015.

Commercial Landscape Upgrade Direct Install Program	IRWD will contract with a qualified landscape design and installation company to remove turf in commercial complexes and/or HOAs that are using potable water for irrigation. This program initially will target older areas with mixed-use meters where the indoor use and irrigation are on the same meter (such as the Irvine Business Center, Santa Ana Heights). At these sites it is often difficult for customers to determine how much water is going to irrigation and tend to over-irrigated as a result. These are also large turf areas. The contractor for this program will also provide the work for the outdoor portion of the Water-Energy Residential Direct Install Program and the Landscape Renovation Contest. This program can also work in conjunction with follow on from the "Brown is the New Green" program once the weather is more appropriate for establishing new plants.
Cooling Tower Conversions and Efficiency Program	This program will offer financial assistance to convert cooling towers to recycled water where recycled water is readily available. In addition, since supermarkets often have poorly maintained cooling towers this program will provide financial assistance to hire a cooling tower maintenance contractor to install remote monitoring equipment. This will enable the customer and the contractor to monitor the water quality, chemical feed and most importantly the water usage through make-up and blow-down meters. This program was successfully implemented by LADWP with Ralphs supermarkets. There are four Ralphs markets in IRWD's service area that have interest in the proposed offering and there is interest from Whole Foods as well.
Water-Energy Residential Direct Install Program	IRWD was awarded a $1.2 million grant from the Department of Water Resources to fund the direct installation of plumbing fixtures within single family and multi-family homes. This program is in partnership with Southern California Edison (SCE) and Southern California Gas Company (SoCal Gas) and leverages their existing programs. This program will offer customers a whole-house water and energy efficiency upgrades. Staff will expand this program to include the outdoor using the contracted landscape design and installation company. The plumbing fixtures will be installed using the vendors that have been contracted with bySCE and SoCal Gas. . Joining with the energy utilities will enhance the program marketing and allow IRWD a foot in the door in new innovative water-energy nexus programs. Educational materials on water efficiency inside and outside the home will be developed and provided with the customers.

Reverse Osmosis Outreach Program	Staff will develop a new program to target customers with whole-house reverse osmosis (R/O) systems and educate them on the wasteful water characteristics of the systems, the affects that the systems have on their water bills and the importance in assisting the community in achieving water conservation target established by the State. The program will ask them to turn off the system during the drought. Customers with whole-house R/O systems are often unaware of how much additional water they require. In some cases customers are using R/O water for swimming pools and other outdoor potable uses.

CUSTOMER EDUCATION AND OUTREACH

The customer outreach plan to increase water savings will be divided into two approaches:

1) Short-term, which includes new immediate programs that we can get off the ground quickly and will have the most immediate impact, and
2) Longer-term, which includes new programs that will be started by December 31, 2015.

The goal of both approaches is to focus the attention of IRWD customers on the drought, the importance of saving water now, and the programs that IRWD offers assist them. The outreach plan will be coordinated with the water efficiency programs, and may be adapted as necessary to support planned program schedules and potential modifications. Following is a list of immediate and long-term outreach efforts that will be implemented.

Immediate Outreach

Turf Rebate Postcard
OPA Specific Rebate Postcard
Lawn Kill/Coma Incentive Program Postcard
What Does the Governor Mandate Mean To You Postcard
Service Area Bus Stop Advertisements
New Home Water Checkup Packet/Online Signup/Pre-Checkup Confirmation Letter
RightScape Landscape/Gardening Workshop Series
Magnetic Signs on District Vehicles
OPA Irrigation Controller Workshop
Irvine Communities Article (over 90,000 reached)
IRWD Plant Guide Development & Distribution
Drought Directory on IRWD Website (like Angie's List)
DroughtLines Customer Billing Insert Rebranding
Restaurant/Hotel Outreach – Includes Personal Visits with Table Top Displays/Cards
Save Water Banner outside IRWD
Window Posters for Businesses/Community Centers/City Offices/Schools
Social Media Advertisements
Bill Messages/Messages On-Hold Outreach
IRWD Drought Messages on Buses (local routes)
ValPak Advertisements
Outreach Materials in City Hall Lobbies
Community Landscape Contest – Win a Drought Makeover for your Home

Long-Term Outreach

Joint Community Events with COI/Lake Forest/Tustin
Movie Theater Advertisements
Drought Outreach Education Van for community events and home audits
Saturday Morning Landscape Consultant Services (at IRWD Drought Garden)
Articles for Property Managers to use for their websites/newsletters
Businesses/Chamber of Commerce Lunch Workshops
Video RightScape Workshops for online viewing
Targeted Outreach Letters for Whole Home Reverse Osmosis Customers
Bus Wrap Collaboration with OCTA
Include Rightscape Program Messages in School Education Program Materials
Continue Implementation of RightScape Program
Video Spots for City Television Channels
Save Water Messages at Irvine Auto Center Electronic Billboard
IRWD Garden Tour – join us and see local drought resistant gardens
Installation of Drought Demonstration Gardens at Schools

RECYCLED WATER PROGRAM EXPANSION

The recycled water customer development program will focus on expanding the authorized use of recycled water where it can replace potable water use through expediting conversions from potable water. Due to regulatory requirements, conversions and expansions of use may take longer to implement than other actions, but will be expedited when feasible, particularly for projects that are already in process. Following is a list of recycled water customer development programs that will be expedited:

Industrial Process Water Conversions	Staff has been working with Royalty Carpet to reintroduce recycled water used for carpet dyeing which will reportedly use approximately 200 acre-feet per year. Metropolitan Water District of Southern California will be providing funding for the project as part of its On-site Retrofit Pilot Project Program. Staff will be looking for other industrial process water conversion opportunities.
Cooling Towers Conversions	Staff is working with UCI to study the use of recycled water in their Central Plant and Anteater Recreation Center cooling towers. This effort will also assist UCI in meeting the 25% reduction mandate for State facilities. The conversion of the UCI cooling towers is expected to save 150 AF of potable water per year. Staff will be working to identify additional cooling tower conversion opportunities to promote the Cooling Tower Conversions and Efficiency Program described above.
Potable Irrigation Conversions	Staff is coordinating with the City of Irvine, the Irvine Company and other customers to discuss potential conversion from potable irrigation to recycled water. Staff is prioritizing the work based on potential water savings, determining whether recycled water is available at those locations and getting cost estimates to construct the recycled water services and arranging for the installation of necessary facilities.

Street Sweeping/Construction Activities	Street sweepers typically fill up their trucks with potable water from fire hydrants along their routes. Contractors typically get a temporary construction meter which they connect to a fire hydrant to fill their trucks to get water for construction related activities including grading and dust control. A challenge with using recycled water for theses uses is access to recycled water because there aren't fire-hydrants on the recycled water distribution system. Staff is looking at potential locations where street sweeping and construction related activities occur and where fire-hydrant like recycled water facilities can be located to facilitate recycled water use Staff is currently working with the Cities of Irvine and Lake Forest on the installation of fire-hydrant like recycled water facilities. Staff has also contacted the RWQCB staff to start a dialogue with them about any conditions associated with such uses of recycled water.
Avocado Orchards	Staff is in design for the necessary improvements to convert the upper reach of the Irvine Lake Pipeline from untreated, imported water to recycled water. A key customer that is currently served from this reach of the Irvine Lake Pipeline is the Irvine Company (TIC) which has hundreds of acres of avocado orchards which would be converted to recycled water. An assessment of the use of recycled water for the orchards will be completed within three months.

OPERATIONAL DROUGHT CONTROL MEASURES

The operations department has conducted a District-wide evaluation to identify ways and means to reduce potable water consumption. The evaluation also looked closely at recycled water use as well as supplemental water purchased from Metropolitan Water District of Southern California. Additionally, staff has also explored potential sources of new water supply for both IRWD's potable and recycled systems. Some of the ongoing and initial actions to be taken are identified below. The following is a list of identified opportunities broken down between potable and recycled water systems with subsections based on facility and location. Other opportunities require further review and perhaps physical modifications of equipment and processes.

Potable Water

Facility	Description	Timeline	Savings (AF/yr)
MWRP	Filter Pump Station (FPS) natural gas engine driven pump once thru cooling, convert to RW, or install a heat exchanger • 1 gas pump @ 3-5 gpm for 6-8 months/yr • 1 X 4 gpm X 1440 min/day X 30 days/mo X 7 mo/yr	MWRP Operations uses this pump during summer peak demand (time of use) period to minimize electrical cost.	4
	Packing water for pumps, convert to RW or mechanical seals •Circular RAS pump packing, 3.5 gpm X 1440 min/day X 365 day/yr	Few weeks. Need to investigate compatibility with RW and locate a nearby RW line.	6
	Odor scrubbers, convert to RW •2 units, 7 gpm and 4 gpm • (7+4) gpm X 1440 min/day X 365 day/yr	Few months, high priority due to the amount of potable water usage.	18
Collection	Sewer jetting and cleaning, convert to RW • 3 loads/day X 6,000 gal/load X 4.5 day/wk X 52 wk/yr	Long term. This requires additional RW hydrants to be installed throughout IRWD service area.	13
Biosolids	Evaluate converting potable water to RW for polymer mixing, packing, odor control (future)	TBD	TBD
Irrigation	Evaluate eliminating potable irrigation systems or converting them to RW	On going	TBD
Dyer Road Wells	Swamp coolers & pump pre-lube	Coolers return water to system - no waste.	TBD
		Total	40

Recycled Water

Facility	Description	Timeline	Savings (AF/yr)
MWRP	Waterless urinals	TBD	TBD
	Optimized plant utility water use (spray water, backwash). 500,000 MGD reduction since Jan 2014 (internal recirculation so this doesn't translate into additional RW to the customers)	TBD	TBD
	Reduction in sludge flow to OCSD = additional RW available • Approximately 1 MGD less is going to OCSD	Already in place. May see more reduction in the near future as operators are trying to optimize wasting.	1,120
Irrigation	18 sites on RW, and 7 sites can be turned off	TBD	TBD
Irvine Lake	Modify Irvine Lake summer season operations to reduce evaporation by using the 'match flow' strategy	Will occur May through September each year.	382
Facilities	Optimize preventive maintenance of auto-flush system to eliminate unrequested flushes		TBD
Total			1,502

Other Water Sources

Facility	Description	Timeline	Savings (AF/yr)
DATS, PTP, Wells 21 & 22	Could save up to 275 AF/Year if off spec water from DATS, PTP, and Wells 21/22 was captured and returned to the process.	Long term	275
Modify fire hydrant testing protocol	Could save 0.6 AF/Year if Fire Flows were calculated instead of performing an actual flow.	Could begin immediately	1
Leak detection	Reduce water loss through leak detection	On going	TBD
Lake Forest Wells	Rehabilitate Lake Forest Wells 1,3,4,5 and 7. Combined new source to the Potable and non-potable systems of 2420 AF/Year.	Long term	2,420
Wells 21 & 22	Explore 21/22 bypass ratio. This is not a new source but could save energy costs.	TBD	TBD
MWRP	Groundwater pumping	Few weeks depending on the amount of piping modifications needed. Need to verify the potential TDS and selenium impact to MWRP effluent	251
San Diego Creek	Water rights. Convert diversion to consumptive permit	Long term	TBD
SGU	Divert this into RW system	TBD	645
Rattlesnake and Sand Canyon Reservoirs	Consider seepage return systems at Rattlesnake and Sand Canyon Reservoirs. Could capture and save up to 14 AF/Year	Long term	14
	Total		910

OTHER ACTIONS

This section identifies other short-term actions that the District may consider that will require changes to District policies or outside agency regulatory changes. Longer term capital projects and institutional program modifications are also identified in this section. Capital projects require in-depth planning, design and the construction of facilities. Institutional program modifications would involve coordination and collaboration with other agencies and stakeholders to develop mutually beneficial projects. Long-term activities would require additional work to evaluate the feasibility of each action and would not be implemented to meet the state's short-term mandated potable use reduction. These activities could be implemented to provide the District with enhanced reliability and operational flexibility to respond to water shortages in the future.

Short-Term Activities

Policy/Capital	Require the use of recycled water instead of potable water for permitted non-potable purposes (street sweeping, construction). Install wharf valves painted purple in key locations around District.
Policy	Modify courtesy adjustment policies. Temporarily eliminate adjustments for pool maintenance drain and refill. Staff to review and bring revised variance and adjustment policies for Board consideration in June.
Policy	Revise Shady Canyon agreement eliminating the use of potable water.
Policy	Require all commercial car washes to use on-site recirculation/recycling systems.
Regulatory	Recycle gray water discharges (industrial).

Long-Term Activities

Capital	Install temporary Recycled Water Pump Station at Baker Ranch to convert dual piped irrigation areas from potable water system to recycled water system.
Capital	Activate the Lake Forest wells.
Capital	Divert Well 106 and Well 72 from the recycled water system to the Irvine Desalter Plant for use in the potable water system.
Capital	Install Smart Meters to allow the District and customers the ability to perform real-time monitoring of water use.
Institutional	Divert sewage flow from El Toro Water District's Lake Forest service area to LAWRP for recycled water production.
Institutional/Capital	Divert excess recycled water from El Toro Water District to IRWD.
Institutional/Capital	Divert Lake Forest area sewage flow from LAWRP to MWRP.
Regulatory / Institutional	Water conservation outside IRWD. This would allow IRWD to receive credit for implementing and achieving water savings in areas outside of IRWD's service area.
Institutional	OCWD: Shallow wells at Anaheim recharge basins
Institutional	OCWD: Shallow wells at South Basin contaminated area
Regulatory	San Diego Creek Diversion to MWRP RW system (consumptive right)
Regulatory	Non-potable water use in decorative lakes.
Regulatory	Work with State Board to recognize "Extraordinary Supplies".
Regulatory	Implement Indirect and Direct Potable Reuse (IPR/DPR).

May 11, 2015
Prepared and
Submitted by: L. Bonkowski
Approved by: P. Cook

CONSENT CALENDAR

MINUTES OF BOARD MEETING

SUMMARY:

Provided are the minutes of the April 27, 2015 Regular Board Meeting minutes for approval.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

Not applicable.

RECOMMENDATION:

THAT THE MINUTES OF THE APRIL 27, 2015 REGULAR BOARD MEETING BE APPROVED AS PRESENTED.

LIST OF EXHIBITS:

Exhibit "A" – Minutes of April 27, 2015 Regular Board Meeting

EXHIBIT "A"

MINUTES OF REGULAR MEETING – APRIL 27, 2015

The regular meeting of the Board of Directors of the Irvine Ranch Water District (IRWD) was called to order at 5:00 p.m. by President LaMar on April 27, 2015 in the District office, 15600 Sand Canyon Avenue, Irvine, California.

Directors Present: Withers, Matheis, Reinhart, LaMar and Swan.

Directors Absent: None.

Also Present: General Manager Cook, Executive Director of Engineering and Water Quality Burton, Executive Director of Finance and Administration Clary, Executive Director of Operations Sheilds, Executive Director of Water Policy Weghorst, Director of Public Affairs Beeman, Director of Human Resources Roney, Director of Water Resources Sanchez, Director of Treasury and Risk Management Jacobson, Director of Administration Mossbarger, Assistant Director of Recycling Operations Lee, Legal Counsel Arneson, Secretary Bonkowski, Mr. Christopher Smithson, Ms. Christine Compton, Principle Engineer Mori, Ms. Kellie Welch, Ms. Jo Ann Corey, Ms. Rosemary Riddle, Ms. Erika Blaska, Ms. Lindsey Stuvick, Mr. Dane Johnson, Ms. Sandra Garcia, Mr. Jim Reed, Mr. Bruce Newell, University of California, Irvine students, and other members of the public and staff.

Written and Oral Communications: None.

Items too late to be agendized: None.

WORKSHOPS

CITY OF SAN JUAN CAPISTRANO TIERED RATE CASE OVERVIEW

Using a PowerPoint presentation, Ms. Christine Compton provided an overview of the recent City of San Juan Capistrano's tiered rate case. Ms. Compton explained what the case means for rate setting noting that: 1) there must be a correlation between tiered water prices and the cost of service and that water agencies must calculate the costs of providing water at the level of use represented by each tier and not draw those lines based on water budgets; 2) water agencies should have financial cost data to support rates and any rate increases between tiers which should be part of the administrative record created by the agency in its rate setting; 3) costs of capital improvements, which provide additional increments of water, can be passed on to customers but the allocation of those costs must be justified based on cost of service; 4) when water service is immediately available to customers, there is no contravention of Proposition 218's "immediately available" requirement when charges are included for constructing and providing a new source of water which may only be serviced to some customers; and 5) higher conservation tiers cannot be treated as "penalties" which avoid Proposition 218's requirements. Ms. Compton said IRWD's allocation-based conservation rate structure complies with these requirements and that staff will continue to review the decision and evaluate potential impacts to IRWD. She also said that the

decision provides insight on how to comply with Proposition 218, but more legislative guidance and clarity is recommended on both Propositions 26 and 218.

Director Matheis reported that a Special Water Resources Policy and Communications meeting was held today relative to this issue. Following discussion, it was the consensus of the Board to seek clarity with legislators on the case relative to Propositions 26 and 218; work with like agencies; and contact the Association of California Water Agencies to involve them in this matter. Additionally, following legal counsel's brief summary of findings on the 2006 Bighorn case, Director Swan asked that it be revisited relative to special circumstances which prompted specific language for water rates.

FISCAL YEAR 2015-16 OPERATING BUDGET AND PROPOSED RATES AND CHARGES

Executive Director of Finance and Administration Clary reported on the revised Operating budget. Ms. Clary said that the primary drivers for increases include salaries and benefits increases ($47.7M); water ($40.4M), repairs and maintenance ($22.2M), electricity ($17.7M), and other ($20.0 M), for a total of $147.7M.

Ms. Clary said that Carollo Engineering, Inc. is working to finalize the update of the District's Cost of Service Study. Staff has incorporated Carollo's findings and recommendations, which have also been reviewed with the Finance and Personnel Committee, into the 2015-16 rate-setting process. She said that the details of the report will be presented at the May 26, 2015 Board meeting. She further reviewed targeted water budget reductions, discussed how to meet reduced requirements, and outlined how to motivate a reduction in usage.

Mr. Christopher Smithson reviewed the methodology for allocating costs to tiered rates; reviewed the proposed rates for both the Irvine Ranch and the Los Alisos rate areas, provided a comparison of Irvine Ranch and Los Alisos rate areas compared to neighboring agencies, and reviewed the next steps.

Director Swan said that this item was reviewed by the Finance and Personnel Committee on several occasions, and that the Committee concurs with staffs recommendations. He recommended that the Proposition 218 notices be mailed as soon as possible instead of the suggested May 8, 2015 date. On MOTION by Swan, seconded and unanimously carried, THE BOARD SET THE REGULAR MEETING OF THE BOARD OF DIRECTORS AT THE SECOND REGULARLY SCHEDULED BOARD MEETING IN JUNE 2015 AS THE TIME AND PLACE FOR A PUBLIC HEARING ON PROPOSED INCREASES IN PROPERTY-RELATED RATES AND CHARGES AND ANY PROPOSED NEW PROPERTY-RELATED RATES AND CHARGES, AND APPROVED THE MAILING OF PROPOSITION 218 NOTICES AS FINALIZED BY STAFF AND LEGAL COUNSEL IN COMPLIANCE WITH APPLICABLE LEGAL REQUIREMENTS .

CONSENT CALENDAR

On MOTION by Reinhart, seconded and unanimously carried, CONSENT CALENDAR ITEMS 5 THROUGH 9 WERE APPROVED AS FOLLOWS:

5. MINUTES OF REGULAR BOARD MEETING

Recommendation: That the minutes of the April 13, 2015 Regular Board meeting be approved as presented.

6. RATIFY/APPROVE BOARD OF DIRECTORS' ATTENDANCE AT MEETINGS AND EVENTS

Recommendation: That the Board ratify/approve meetings and events for Steven LaMar, Mary Aileen Matheis, Douglas Reinhart, Peer Swan and John Withers.

7. MARCH 2015 TREASURY REPORTS

Recommendation: That the Board receive and file the Treasurer's Investment Summary Report, the Monthly Interest Rate Swap Summary for March 2015, and Disclosure Report of Reimbursements to Board members and staff; approve the March 2015 summary of payroll ACH payments in the total amount of $1,506,822 and approve the March 2015 accounts payable Disbursement Summary of warrants 356620 through 357375, Workers' Compensation distributions, wire transfers, payroll withholding distributions and voided checks in the total amount of $21,586,695.

8. PLANNING AREA 5B (EASTWOOD) CAPITAL IMPROVEMENTS AND SUPPLEMENTAL REIMBURSEMENT AGREEMENT

Recommendation: That the Board authorize a budget increase for project 11717 (4512) in the amount of $19,800, from $112,200 to $132,000, project 30420 (4514) in the amount of $991,700, from $777,700 to $1,769,400, project 31717 (4513) in the amount of $65,000, from $233,200 to $298,200, and project 30421 (4515) in the amount of $42,900, from $57,200 to $100,100; authorize a budget decrease for project 30429 (4752) in the amount of <$943,800>, from $943,800 to $0; and authorize the General Manager to execute a Supplemental Reimbursement Agreement with Irvine Community Development Company for the design and construction of domestic water, sewer, and recycled water improvements in Planning Area 5B.

9. MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES VARIANCE AND CONTRACT CHANGE ORDER

Recommendation: That the Board authorize the General Manager to execute Variance No. 3 in the amount of $74,901.74 with Creative Alliance Group to provide supplemental partnering consultation services and approve Contract Change Order No. 27 in the amount of $107,253.26 with Filanc/Balfour-Beatty to provide electrical, instrumentation and controls, structural, and mechanical modifications at various treatment facilities for the MWRP Biosolids and Energy Recovery Facilities, project 20847 (1617).

ACTION CALENDAR

PETERS CANYON WASH CHANNEL WATER CAPTURE AND REUSE PIPELINE PROJECT FINAL INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

A Final Initial Study/Mitigated Negative Declaration (Final IS/MND) for the proposed Peters Canyon Channel Water Capture and Reuse Pipeline Project has been prepared. The project will contribute to compliance with Regional Water Quality Control Board (RWQCB) requirements to limit point discharges of selenium within the San Diego Creek/Newport Bay Watershed by diverting nuisance flows that contain high concentrations of selenium to the Main Street sewer. On MOTION by Swan, seconded and unanimously carried, THE BOARD FOUND THAT ON THE BASIS OF THE WHOLE RECORD BEFORE IT (INCLUDING THE INITIAL STUDY/MITIGATED NEGATIVE DECLARATION AND THE COMMENTS RECEIVED), THAT THERE WAS NO SUBSTANTIAL EVIDENCE THAT THE PETERS CANYON WASH CHANNEL WATER CAPTURE AND REUSE PIPELINE PROJECT WILL HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND THAT THE MITIGATED NEGATIVE DECLARATION REFLECTS IRWD'S INDEPENDENT JUDGMENT AND ANALYSIS; ADOPTED THE PROPOSED MITIGATED NEGATIVE DECLARATION FOR THE PETERS CANYON WASH CHANNEL WATER CAPTURE AND REUSE PIPELINE PROJECT AND THE ASSOCIATED MITIGATION MONITORING AND REPORTING PROGRAM; APPROVED THE PROJECT; AUTHORIZED STAFF TO POST AND FILE A NOTICE OF DETERMINATION AND SUBMIT PAYMENT FOR THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE SERVICE FILING FEE.

DIRECTORS' COMMENTS

Director Swan reported on his and Director Withers' attendance at an OCBC meeting relative to desalination; an OCWA lunch meeting relative to weather forecasting; a Southern California Dialogue meeting relative to the Colorado River's future; a water conference on water shortage at UCI's Beckman Center; and that he, Director Reinhart, and General Manager Cook attending an OCWD briefing on the Orange County groundwater contamination cleanup project. He said he asked OCWD staff to schedule a meeting with IRWD to address the plume issue.

Director Reinhart reported on his attendance at the OCWD briefing on groundwater contamination; a South Orange County Agencies' meeting; and a Southern California Water Committee Quarterly luncheon.

Director Matheis reported on her attendance at the OC Forum event.

Director Withers reported on his attendance at the Orange County Crime Victims' Monument groundbreaking.

Director LaMar reported on his attendance at the California Environmental Dialogue Long View Committee meeting in San Francisco, an NROC Executive Committee meeting, and an OCWD groundwater contamination cleanup meeting.

Consultant Jim Reed reported on the meetings he attended on behalf of the District including an OCWA lunch meeting, a SOCWA Board meeting, and a South Orange County Economic Coalition summit.

ADJOURNMENT

President LaMar adjourned the meeting at 6:45 p.m.

APPROVED and SIGNED this 11th day of May, 2015.

_____

President, IRVINE RANCH WATER DISTRICT

_____

Secretary IRVINE RANCH WATER DISTRICT

APPROVED AS TO FORM:

_____

Legal Counsel - Bowie, Arneson,
Wiles & Giannone

May 11, 2015
Prepared and
Submitted by: N. Savedra
Approved by: P. Cook

CONSENT CALENDAR

RATIFY/APPROVE BOARD OF DIRECTORS' ATTENDANCE AT MEETINGS AND EVENTS

SUMMARY:

Pursuant to Resolution 2006-29 adopted on August 28, 2006, approval of attendance of the following events and meetings are required by the Board of Directors.

	Events/Meetings
Steven LaMar	
5/15/15	Orange County Water Summit
5/16/15	IRWD Representative - Irvine Korean Cultural Festival Event
5/19/15	Monthly Meeting with General Manager Paul Cook regarding District Activities
5/21/15	Inland Empire Utilities Agency Water Association Leadership Breakfast
5/28/15	Society of American Military Engineers Panel Discussion
Mary Aileen Matheis	
5/30/15	IRWD Resident Tour
Douglas Reinhart	
5/15/15	Orange County Water Summit
5/29/15	IRWD Resident Tour
Peer Swan	
5/15/15	OC League of Conservation Voters Environmental Leadership Awards Event
5/20/15	Newport Bay Watershed Executive Committee Meeting
John Withers	
5/12/15	NWRI Operations Committee Meeting
5/15/15	Orange County Water Summit

RECOMMENDATION:

THAT THE BOARD RATIFY/APPROVE THE MEETINGS AND EVENTS FOR STEVEN LAMAR, MARY AILEEN MATHEIS, DOUGLAS REINHART, PEER SWAN AND JOHN WITHERS AS DESCRIBED.

LIST OF EXHIBITS:

None

May 11, 2015
Prepared by: J. Corey
Submitted by: F. Sanchez/P. Weghorst
Approved by: Paul Cook P. Cook.

CONSENT CALENDAR

ADDENDUM NO.1 TO THE FINAL IS/MND FOR THE RESERVOIR MANAGEMENT SYSTEM, CHLORINE ANALYZERS AND RESERVOIR MIXERS/SAMPLERS AT DOMESTIC WATER RESERVOIRS PROJECT

SUMMARY:

Nitrification due to the loss of chlorine residual, excess free ammonia and low water supply turnover has resulted in degraded water quality in Foothill Ranch Zone 6 and the Portola Hills Zone 8 Reservoirs. District staff proposes minor modifications to the project analyzed in the Final Initial Study/Mitigated Negative Declaration (Final IS/MND) for the Reservoir Management System, Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Reservoirs Project. Project modifications include the installation of a separate Reservoir Management System (RMS) to address the ongoing nitrification issues at these reservoirs. Environmental review has been completed and staff recommends that the Board approve the proposed modifications as well as approve Addendum No. 1 to the Final IS/MND.

BACKGROUND:

On April 30, 2007, the Board adopted a Final IS/MND and approved the RMS, Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs Project. The Final IS/MND analyzed the potential environmental impacts associated with the construction of an RMS and Chlorine Analyzer and Reservoir Mixers/Samplers at 19 reservoirs. A RMS was installed at nine reservoirs and Chlorine Analyzers and Reservoir Mixers/Samplers were constructed at the remaining ten reservoirs. All 19 project sites were constructed between 2007 and 2009.

After the Chlorine Analyzers and Reservoir Mixers/Samplers were installed, Foothill Ranch Zone 6 and Portola Hills Zone 8 Reservoirs continued to experience nitrification issues. The proposed project modifications involve replacing the Chlorine Analyzers and Reservoir Mixer/Samplers at the two locations with a RMS. The Foothill Ranch Zone 6 Reservoir is located north of Touraine Place in Foothill Ranch and the Portola Hills Zone 8 Reservoir is located north of Cedar Ridge Road in Portola Hills. Following is a description of proposed modifications to the project.

Project Modifications:

When the Final IS/MND was adopted, the Chlorine Analyzers and Reservoir Mixer/Sampler were the most effective solution for these reservoirs. Since installation, both Foothill Ranch Zone 6 and Portola Zone 8 Reservoirs continue to have water degradation as a result of nitrification. Based on the effectiveness of the RMS installations at other reservoirs, IRWD plans to install RMS at each of these two reservoir sites to address the on-going nitrification issues.

Changes in fire code requirements have occurred since the initial project was first analyzed. As a result, this project will increase the length of the chemical storage buildings from 24 feet to 37 feet at each site. Also at each reservoir site, a 500-gallon sodium hypochlorite storage tank will be installed inside each enlarged chemical storage building. An existing single 100-gallon ammonia storage tank will remain unchanged at each site.

Addendum No. 1:

Environmental review has been completed for the proposed modifications to the Project as described above and Addendum No. 1 to the Final IS/MND has been prepared. There are no substantial changes to the project that would require major revisions to the Final IS/MND due to new significant environmental effects or a substantial increase in the severity of impacts identified in the Final IS/MND. A copy of Addendum No. 1 is attached as Exhibit "A".

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Section 15164 of the State of California Environmental Quality Act (CEQA) Guidelines provides for the preparation of an addendum to a previously certified Environmental Impact Report/Mitigated Negative Declaration (EIR/MND) by a lead agency or a responsible agency if some changes or additions to the project are necessary, but none of the conditions described in CEQA calling for preparation of a subsequent EIR/MND have occurred. Based on the information and analysis conducted in the proposed Addendum No. 1, the determination section of the Addendum sets forth the proposed determinations by the District that none of such conditions have occurred. The proposed modifications would not change the regulatory framework, impact discussion, mitigation measures or conclusions as described in the Final IS/MND.

COMMITTEE STATUS:

Because Addendums to mitigated negative declaration reports are not typically taken to Committee prior to submittal for Board approval, this item was not reviewed by Committee.

RECOMMENDATION:

THAT THE BOARD APPROVE THE PROPOSED ADDENDUM NO.1 TO THE FINAL INITIAL STUDY/MITIGATED NEGATIVE DECLARATION FOR THE RESERVOIR MANAGEMENT SYSTEM, CHLORINE ANALYZERS AND RESERVOIR MIXERS/SAMPLERS AT DOMESTIC WATER RESERVOIRS PROJECT, INCLUDING THE DETERMINATIONS SET FORTH IN ADDENDUM NO. 1; APPROVE THE MODIFICATIONS TO THE PROJECT; AND AUTHORIZE STAFF TO FILE A NOTICE OF DETERMINATION WITH THE ORANGE COUNTY CLERK/RECORDER AND STATE CLEARINGHOUSE.

LIST OF EXHIBITS:

Exhibit "A" – Addendum No. 1 to the Reservoir Management System, Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs Final Initial Study/Mitigated Negative Impact Report

EXHIBIT "A"

Addendum No. 1 to the Reservoir Management System (RMS) and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs Final Initial Study/Mitigated Negative Declaration (State Clearinghouse No. 2007021140)

Prepared for:

Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, California 92618

Prepared by:

DUDEK
31878 Camino Capistrano, Suite 200
San Juan Capistrano, California 92675

APRIL 2015

Addendum No. 1 to the Reservoir Management System (RMS) and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs Final Initial Study/ Mitigated Negative Declaration

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APPENDIX

ACRONYMS AND ABBREVIATIONS

CalEEMod	California Emissions Estimator Model
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
GHG	greenhouse gas
HCP	Habitat Conservation Plan
IRWD	Irvine Ranch Water District
MND	Mitigated Negative Declaration
MT	metric ton
N_2O	nitrous oxide
NCCP	Natural Communities Conservation Plan
NO_x	oxides of nitrogen
PM_{10}	particulate matter with an aerodynamic diameter equal to or less than 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter equal to or less than 2.5 microns
RMS	Reservoir Management System
SCAQMD	South Coast Air Quality Management District
SO_2	sulfur dioxide
VOC	volatile organic compound

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Addendum No. 1 to the Reservoir Management System (RMS) and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs Final Initial Study/ Mitigated Negative Declaration

1 INTRODUCTION AND BACKGROUND

Irvine Ranch Water District (IRWD) is planning to install a Reservoir Management System (RMS) at the Foothill Zone 6 Reservoir and the Portola Zone 8 Reservoir to address degraded water quality in these existing potable water reservoirs. The degraded water quality is from nitrification due to loss of chlorine residual, excess free ammonia, and low water supply turnover within the existing reservoirs. These two reservoirs previously had Chlorine Analyzers and Reservoir Mixers/Samplers installed that were assessed in the RMS and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs Final Initial Study/Mitigated Negative Declaration (MND) (IRWD 2007). The MND evaluated the potential effects on the environment from constructing an RMS and Chlorine Analyzer and Reservoir Mixer/Samplers at 19 reservoirs. These 19 project locations are listed below.

These locations were assessed for installation of an RMS:

1. Quail Hill Zone 3 Reservoir in Irvine, California
2. Coastal Zone 6 Reservoir in Newport Beach, California
3. Central Zone 1 Reservoir in Irvine, California
4. Santiago Hills Zone 5 Reservoir in Irvine, California
5. Los Alisos Zone 2 East Reservoir in Lake Forest, California
6. Los Alisos Zone 2 West Reservoir in Lake Forest, California
7. Los Alisos Emergency Zone 1 Reservoir in Lake Forest, California
8. Williams Canyon Reservoir in Silverado Canyon, California
9. IIC East Irvine Zone 3 Reservoir in Irvine, California

These locations were assessed for installation of Chlorine Analyzers and Reservoir Mixer/Samplers:

1. Turtle Rock Zone 3 Reservoir in Irvine, California
2. Shady Canyon Reservoir in Irvine, California
3. Northwood Zone 3 East Reservoir in Irvine, California
4. Quail Hill Zone 4 Reservoir in Irvine, California
5. Portola Zone 8 Reservoir in Portola Hills, California

6. Foothill Zone 6 Reservoir in Foothill Ranch, California
7. Foothill Zone 6A Reservoir in Foothill Ranch, California
8. East Irvine Zone 4 Reservoir in Irvine, California
9. Northwood Zone 2 Reservoir in Irvine, California
10. Portola Zone 9 Reservoir in Portola Hills, California

All of these projects were constructed, and now modifications to the projects involve replacing the Chlorine Analyzers and Reservoir Mixer/Samplers at Portola Zone 8 and Foothill Zone 6 with an RMS.

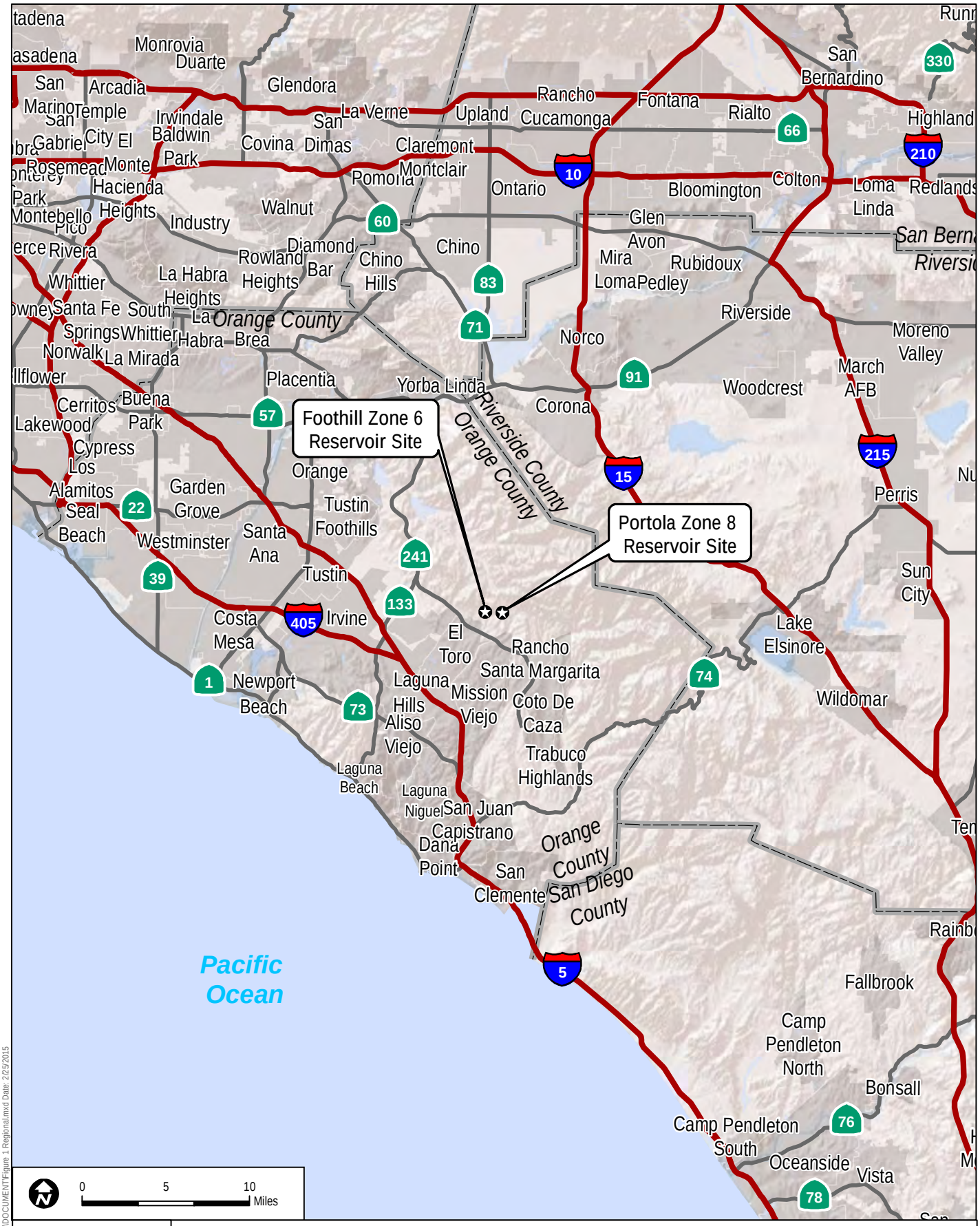
1.1 Project Setting

The Portola Zone 8 Reservoir is located in Portola Hills, and the Foothill Zone 6 Reservoir is located in Foothill Ranch in Orange County, California. Figure 1 shows the regional location of the two reservoirs. These sites are located within the IRWD service area. More specifically, the Foothill Zone 6 Reservoir site is located just north of Touraine Place (Figure 2), and the Portola Zone 8 Reservoir site is located just north of Cedar Ridge Road (Figure 3). These sites are located in fire prone areas and are near residential development.

1.2 Proposed Modifications to the Project

This addendum, prepared in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and its implementing CEQA Guidelines (California Code of Regulations (CCR) Title 14, Chapter 3, Section 15000 et seq.), addresses four changes from what was previously assessed in the original MND:

- Installation of an RMS at the Portola Zone 8 Reservoir to replace the Chlorine Analyzer and Reservoir Mixer/Sampler.
- Installation of an RMS at the Foothill Zone 6 Reservoir to replace the Chlorine Analyzer and Reservoir Mixer/Sampler.
- An increase in length of each chemical storage building from what was previously assessed from 24 feet to 37 feet.
- A decrease in the amount of chemicals to be stored at each site from 1,000 gallons of 12% sodium hypochlorite to 500 gallons of 12% sodium hypochlorite. As previously assessed, the 29% of aqueous ammonia remains the same.



SOURCE: Relief Shaded 2014

FIGURE 1

Regional Map

Addendum No. 1 to the RMS and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs
Final Initial Study/Mitigated Negative Declaration

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SOURCE: Google Earth Maps 2015, CO Orange NCCP 2014, IRWD 2015

FIGURE 2

Foothill Zone 6 Reservoir Site Vicinity Map

Addendum No. 1 to the RMS and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs
Final Initial Study/Mitigated Negative Declaration

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SOURCE: Google Earth Maps 2015, CO Orange NCCP 2014, IRWD 2015

FIGURE 3

Portola Zone 8 Reservoir Site Vicinity Map

Addendum No. 1 to the RMS and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs
Final Initial Study/Mitigated Negative Declaration

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When the Final Initial Study/MND was adopted by the IRWD Board of Directors, the Chlorine Analyzers and Reservoir Mixer/Samplers were assumed to be the most effective solution for these reservoirs. Based on the effectiveness of the RMS at other reservoirs, IRWD plans to install an RMS at each of the two sites. In the intervening time, code requirements necessitated a change in the size of the chemical storage buildings.

No substantial changes have occurred that warrant preparation of subsequent or supplemental environmental impact reports pursuant to Section 15162 of the CEQA Guidelines.

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2 ENVIRONMENTAL IMPACT ANALYSIS

The four proposed modifications to the original project discussed in Section 1 do not change the conclusions of the impact analysis of the referenced MND (IRWD 2007) and have no new significant adverse environmental impacts.

To ensure that no significant environmental impacts occur, the proposed modifications would adhere to the applicable mitigation measures from the previously adopted MND, as described in the following sections. Only the mitigation measures stated in the adopted MND that apply to the modifications are restated below. Some mitigation measures were revised to make them specific to the proposed modifications or to reflect changes in regulatory requirements that have occurred since preparation of the MND. In the mitigation measures below, underline indicates added text and ~~strikeout~~ indicates deleted text.

2.1 Aesthetics

As discussed in the MND, installation of RMS components would consist of building new facilities, which would be located at existing reservoir sites. No scenic vistas were identified in the City of Lake Forest's General Plan (City of Lake Forest 1994), the Portola Hills Planned Community Development Plan (City of Lake Forest 2008), or the Foothill Ranch Planned Community Development Plan (City of Lake Forest 2012).

Foothill Zone 6 Reservoir is surrounded by residences on the north, west, and south. Multiple hiking and biking trails associated with the Whiting Ranch Wilderness Park are located east of the Foothill Zone 6 Reservoir site. These same trails are located north and west of the Portola Zone 8 Reservoir site. Residences are located east and south of the Zone 8 Reservoir site, and Concourse Park is located to the east. Views from Glenn Ranch Road and Portola Parkway include the Foothill Zone 6 and Portola Zone 8 Reservoirs, hills, ridgelines, terraced slopes, and natural vegetation. The Foothill Zone 6 and Portola Zone 8 Reservoirs are existing facilities and are part of the visual character of the area. The proposed RMS facilities would be consistent with existing uses. Additionally, the proposed RMS facilities would be smaller in height, scale, and mass compared to the existing reservoirs. Construction equipment would be removed upon completion of construction.

The proposed modifications would not result in any permanent visual impacts, and would remain consistent with the aesthetics analyzed within the MND. Therefore, any potential aesthetic impacts associated with the proposed modifications would be less than significant, and no mitigation measures would be required.

2.2 Agricultural Resources

According to the California Department of Conservation Farmland Mapping and Monitoring Program (California Department of Conservation 2015), the sites are designated as "Urban and Built-Up Land" and are not areas identified as Prime Farmland or Farmland of Statewide Importance. No agricultural activities are practiced on the sites, and no Williamson Act contract is in force on any of these properties (California Department of Conservation 2004). The Foothill Zone 6 and Portola Zone 8 Reservoir sites are surrounded by areas zoned for residential and single-family residential (City of Lake Forest 1991). There is no change in impacts related to agricultural resources associated with the proposed modifications. Therefore, no impacts related to agricultural resources would occur, and no mitigation measures are required.

2.3 Air Quality

The proposed modifications would involve limited use of construction equipment and activities, which would result in construction emissions from heavy equipment exhaust, construction-related trips by workers, material-hauling trucks, and fugitive dust generation from trenching and grading activities. Operation of the modified project would include periodic maintenance trips. Pollutants associated with the construction and operation of the modified project would include carbon monoxide (CO), volatile organic compounds (VOCs), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10}), and particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$). VOC and NO_x are precursors of ozone.

The proposed modifications would occur within a slightly revised construction schedule and parameters compared to those outlined and analyzed in the MND. Table 1 lists where these modifications would occur in terms of construction and operations assumptions, and criteria pollutant emissions.

Table 1
Project Modifications Comparison Table

Area of Change	Original Project	Modified Project
Project type	Mixer and analyzer installation	Reservoir Management System installation
Construction period	2 weeks for each site	24 weeks for each site
Construction equipment/schedule	See Table 2	See Table 3
Length of chemical storage building	24 feet	37 feet

Table 1
Project Modifications Comparison Table

Area of Change	Original Project	Modified Project
Amount of chemicals to be stored on each site	1,000 gallons of 12% sodium hypochlorite 100 gallons of 29% aqueous ammonia	500 gallons of 12% sodium hypochlorite 100 gallons of 29% aqueous ammonia
Facility maintenance trips and chemical delivery trips	Periodic site visit by Irvine Ranch Water District operator and subcontractors to inspect/repair equipment as needed	12 maintenance trips per year per site 52 annual chemical delivery trips per chemical

Construction

Tables 2 and 3 show the construction equipment and schedule for the original project and the modified project. The original project construction scenario assumed that construction would occur within one phase, and the modified project would occur over several phases. Emissions associated with the modified project were calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, (available at www.caleemod.com). Emissions associated with the original project were calculated using EMFAC 2002 (v2.2).[1]

Table 2
Original Project Construction Equipment and Schedule

Equipment	Number of Units	Duration of Work (days)	Operating Hours per Day
Off-Road Equipment			
Backhoe	1	5	4
Crane	1	1	4
Generator	1	10	4
Trencher	1	1	6
Welder	1	2	4
Paver	1	1	4
Equipment	**Number of Units**	**Duration of Work (days)**	**Miles per Trip**
On-Road Vehicles/Equipment			
Concrete mixer	1	2	30
Dump truck	1	2	20
Delivery truck	1	10	40

[1] The South Coast Air Quality Management District (SCAQMD) recommends using CalEEMod to quantify criteria air pollutant and greenhouse gas (GHG) emissions for CEQA projects. CalEEMod uses emissions factors and fleet mixes based on EMFAC2011 for vehicular emissions. CalEEMod also uses horsepower and load factors based on OFFROAD2011 for off-road emissions. Because CalEEMod is recommended by the SCAQMD, and because CalEEMod calculates emissions associated with off-road equipment and on-road vehicles, CalEEMod was chosen to calculate criteria pollutant and GHG emissions.

Table 2
Original Project Construction Equipment and Schedule

Equipment	Number of Units	Duration of Work (days)	Operating Hours per Day
Commuting	10	10	22

Note: Original project criteria air pollutant emissions were modeled using EMFAC 2002.

Table 3
Modified Project Construction Equipment and Schedule

Phase	Weeks per Activity	Number of Worker Trips[a]	Daily Vendor Trips[a]	Total Haul Trips[a]	Equipment[b]	Number of Units	Hours per Day
Demolition	1.5	12	0	18	Concrete/Industrial Saw, Tractors/Loaders/Backhoes	1 of each	8 per each
Grading[c]	4	12	0	14	Tractors/Loaders/Backhoes, Water truck	1 of each	8 per each
Trenching[d]	4	12	0	8	Tractors/Loaders/Backhoes, Water truck	1 of each	8 per each
Building Construction	16	12	0	32	Forklifts, Concrete pump, Concrete mixer	1 of each	8 per each
Paving	2	12	0	4	Pavers, Rollers	1 of each	8 per each

Notes: Modified project criteria air pollutant emissions were modeled using CalEEMod. This table represents construction activities that would occur for each site.

[a] Worker trips, vendor trips, and haul trips were modeled as on-road equipment. The maximum number of demolition haul trips are shown above. Foothill Zone 6 would require 13 haul trips for demolition, while Portola Zone 8 would require 18 haul trips.

[b] Construction equipment was modeled as off-road equipment.

[c] Grading would only occur within the Portola Zone 8 Reservoir site.

[d] The trenching phase would experience a schedule overlap with the building construction phase.

The criteria air pollutant emissions associated with construction of the RMS facilities at Foothill Zone 6 and Portola Zone 8 Reservoir sites were modeled separately, assuming that construction of these RMS facilities might not overlap. The Portola Zone 8 Reservoir site would require 0.08 acre of area to be graded. The Foothill Zone 6 Reservoir site would not require grading. It was estimated in the MND that the most significant grading would disturb less than 0.08 acre per site where RMS installation would occur; therefore, RMS installation for the modified project would be consistent with the MND. It was also assumed that RMS installation would generate 50 to 300 cubic yards of excess soil export per site. The Portola Zone 8 Reservoir site would generate approximately110 cubic yards of export soil under the modified project. Since grading would not occur within the Foothill Zone 6 Reservoir site, no soil would be exported from the site. This would be consistent with the RMS installation assumptions in the MND. For the Foothill Zone 6

RMS installation, it was assumed that 1,800 square feet of pavement area (or 135 tons of debris[2]) would be removed from the site, and the same area would be re-paved. For the Portola Zone 8 RMS installation, it was assumed that 2,385 square feet of pavement area (or 179 tons of debris[3]) would be removed from the site, and 3,575 square feet would be re-paved. Table 4 presents the estimated maximum daily construction emissions generated during construction of the modified project for the Foothill Zone 6 and Portola Zone 8 Reservoir sites.

The South Coast Air Quality Management District (SCAQMD) is the local agency responsible for administration and enforcement of air quality regulations for the South Coast Air Basin, where the modification sites are located. The SCAQMD *CEQA Air Quality Handbook* (SCAQMD 1993), as supplemented in March 2012, sets forth quantitative emissions significance thresholds, below which a project would not have a significant impact on ambient air quality (SCAQMD 2012). Air quality impacts associated with construction of the proposed modifications would be considered significant if any of the pollutant thresholds presented in Table 4 are exceeded.

Table 4
Project Modifications Estimated Daily Maximum Construction Emissions (pounds per day mitigated)

	VOCs	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Foothill Zone 6 RMS Installation	1.15	9.04	7.23	0.01	0.93	0.70
Portola Zone 8 RMS Installation	1.79	14.53	11.15	0.02	1.30	1.04
Maximum Daily	1.79	14.53	11.15	0.02	1.30	1.04
Pollutant Threshold[a]	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Source: [a] SCAQMD 1993

Notes: See Appendix A for complete results. These estimates reflect control of fugitive dust required by Rule 403.
VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

Construction of RMS facilities at the Foothill Zone 6 and Portola Zone 8 Reservoir sites would not exceed the SCAQMD criteria air pollutant construction thresholds, nor would construction emissions exceed the criteria air pollutant emissions estimated in the MND.

[2] Assuming 1,800 square feet of pavement area, with pavement 1 foot deep with a density of 150 pounds per cubic foot.

[3] Assuming 2,385 square feet of pavement area, with pavement 1 foot deep and a density of 150 pounds per cubic foot.

Operation

Once constructed, operation of the project would produce VOC, NO_x, CO, SO_x PM_{10}, and $PM_{2.5}$ emissions from vehicle sources. Truck traffic on paved roads would also generate PM_{10} and $PM_{2.5}$ emissions from fugitive dust and brake and tire wear.

Operation of the modified project would require 12 maintenance trips per year per site, and 52 annual chemical delivery trips per chemical. Emissions associated with operational maintenance and chemical delivery trips were modeled in CalEEMod and are shown in Table 5. The criteria air emissions associated with operation of the RMS facilities at Foothill Zone 6 and Portola Zone 8 Reservoir sites were modeled together, considering that maintenance trips and chemical delivery trips could overlap.

The project-related operational emissions presented in Table 5 are compared against pollutant thresholds established by the SCAQMD, as outlined in the SCAQMD *CEQA Air Quality Handbook* (SCAQMD 1993). Air quality impacts associated with operation of the proposed project modifications would be considered significant if any of the pollutant thresholds presented in Table 5 were exceeded.

Table 5
Project Modifications Estimated Daily
Maximum Operational Emissions (pounds per day)

	VOCs	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Maintenance and Chemical Delivery Trips	0.04	0.44	0.56	<0.01	0.04	0.01
Pollutant Threshold[a]	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Source: [a] SCAQMD 1993
Notes: See Appendix A for complete results.
VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

Construction of RMS facilities at the Foothill Zone 6 and Portola Zone 8 Reservoir sites would not exceed the SCAQMD criteria air pollutant operational thresholds; therefore, impacts would be less than significant.

Although no significant construction or operational impacts were identified, the following mitigation measure is recommended to reduce air quality impacts during construction of the proposed project and to ensure that significant impacts would not occur:

MM-AQ-1 The following fugitive dust control measures are recommended to reduce PM_{10} emissions:[4]

- Water all active construction areas as needed to minimize dust.
- During clearing, grading, earthmoving, excavating, or transporting cut or fill materials, use water trucks or sprinkler systems to prevent dust from leaving the site and to create a crust after each day's activities cease.
- During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this shall include wetting down such areas later in the morning, after work is completed for the day, and whenever winds exceed 15 miles per hour.
- Cover, keep moist, or treat with soil binders all soil stockpiled for more than 2 days to prevent dust generation.
- Maintain speeds on unpaved roads at less than 15 miles per hour.
- Sweep, vacuum, and/or wash all dirt and debris spilled onto paved surfaces at the project site and onto adjacent roadways at the end of each workday.
- At a minimum, at each vehicle egress from the project site to a paved public road, install a rumble strip at the exit of IRWD's property adjacent to the areas which will be excavated to reduce trackout and carryout onto public roads.
- Cover all off-site haul trucks or maintain at least 2 ~~two~~ feet of freeboard.
- Cover or water any on-site stockpiles of debris, dirt, or other dusty material to minimize dust.
- Suspend all grading and trenching operations if winds exceed 25 ~~mph~~ miles per hour.

[4] This mitigation measure as presented in the MND for this project was modified to reflect the SCAQMD Rule 403, Fugitive Dust.

2.4 Biological Resources

The Foothill Zone 6 and Portola Zone 8 Reservoirs are located in the Orange County Central and Coastal Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) area. Installation of the RMS generally would occur within paved or developed areas. However, for the Portola Zone 8 Reservoir site, grading would occur within a sloped area. Approximately 110 cubic yards of soil would be removed from sloped areas within the Portola Zone 8 Reservoir site. According to the Orange County Central and Coastal NCCP/HCP vegetation maps, the project areas are designated as developed land (see Figures 4 and 5). Vegetation within the project impact areas are ornamental and do not contribute to the Orange County Central and Coastal NCCP/HCP. Impacts to biological resources would be less than significant, and no mitigation measures are required.

2.5 Cultural Resources

As discussed in the MND, the project sites are located at existing reservoirs where the site has been previously disturbed by construction of the reservoirs, access roads, slopes, drainage improvements, and other work. No impacts to paleontological or archaeological resources are expected during construction of the modifications. Project modifications would impact a slightly larger footprint than was analyzed in the MND because code requirements necessitated the change in size of the chemical storage buildings, but this would not affect anticipated impacts. IRWD's standard construction manual requires workers to halt construction if any cultural resources are exposed, and to contact IRWD for direction by a qualified archeological, historical, or paleontological professional. The proposed project modifications would not result in adverse impacts to cultural resources, and no mitigation measures are required.

2.6 Geology and Soils

As discussed in the MND, a geotechnical review was conducted for each project site. The review did not identify any potential to encounter groundwater at the relatively shallow depths expected to be excavated for the building footings and for conduit installation. The geotechnical review found no evidence of active faulting within the project sites analyzed in the MND. Project modifications would be designed in accordance with the 2013 California Building Code and IRWD standards. All project modification construction activities would be in compliance with IRWD's construction standards, established to minimize erosion. As such, impacts related to geology and soils would be less than significant, and no mitigation measures are required.

SOURCE: Google Earth Maps 2015, County of Orange NCCP/HCP EIR and EIS 1996, IRWD 2015

FIGURE 4

Foothill Zone 6 Reservoir Site Vicinity Map, Vegetation and Land Cover

Addendum No. 1 to the RMS and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs
Final Initial Study/Mitigated Negative Declaration

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SOURCE: Google Earth Maps 2015, County of Orange NCCP/HCP EIR and EIS 1996, IRWD 2015

FIGURE 5

Portola Zone 8 Reservoir Site Vicinity Map, Vegetation and Land Cover

Addendum No. 1 to the RMS and Chlorine Analyzers and Reservoir Mixers/Samplers at Domestic Water Reservoirs
Final Initial Study/Mitigated Negative Declaration

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2.7 Greenhouse Gases

Greenhouse gas (GHG) emissions were not analyzed in the previous MND because Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) did not include GHG significance criteria at the time the original MND was published. According to Appendix G of the CEQA Guidelines, a significant impact related to GHG emissions would occur if the project would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Global climate change is a cumulative impact; a project contributes to this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project occurring within the SCAQMD are significant. Although the proposed project modifications would result in emissions of GHGs during construction and operation, no guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate. However, it is generally believed that an individual project is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory, as scientific uncertainty regarding the significance of a project's individual and cumulative effects on global climate change remains.

Thus, GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emissions impacts from a climate change perspective (CAPCOA 2008). This approach is consistent with that recommended by the California Natural Resources Agency, which noted in its Public Notice for the proposed CEQA amendments that the evidence indicates that, in most cases, the impact of GHG emissions should be considered in the context of a cumulative impact, rather than a project-level impact (CNRA 2009a). Similarly, the Final Statement of Reasons for Regulatory Action on the CEQA Amendments confirm that an environmental impact report or other environmental document must analyze the incremental contribution of a project to GHG levels, and determine whether those emissions are cumulatively considerable (CNRA 2009b).

Construction Greenhouse Gas Emissions

Construction of the project modifications would result in GHG emissions primarily associated with the use of off-road construction equipment, on-road hauling and vendor trucks, and worker

vehicles. The SCAQMD has not proposed or adopted relevant quantitative GHG thresholds for construction-generated emissions. Nonetheless, GHG emissions generated during construction of the project modifications are included in this assessment for disclosure purposes.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 2.3, Air Quality. The GHG emissions are expressed in units of metric tons of carbon dioxide equivalent (MT CO_2E).[5] On-site sources of GHG emissions include off-road equipment, and off-site sources include hauling and vendor trucks and worker vehicles. Table 6 presents construction emissions for the project modifications from on-site and off-site emissions sources.

Table 6
Project Modifications Estimated Construction GHG Emissions

	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Foothill Zone 6 RMS Installation	57.05	0.01	0.00	57.24
Portola Zone 8 RMS Installation	65.31	0.01	0.00	65.53
Total	**122.36**	**0.02**	**0.00**	**122.77**

Notes: See Appendix A for complete results.
GHG = greenhouse gas; MT = metric ton(s); CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2E = carbon dioxide equivalent

As shown in Table 6, the estimated total GHG emissions during construction of the project modifications would be approximately 123 MT CO_2E in 2015. As with project-generated construction air quality pollutant emissions, GHG emissions generated during construction of the proposed project modifications would be short term, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operational Greenhouse Gas Emissions

Operational GHG emissions would be generated through maintenance trips and chemical delivery trips. GHG emissions associated with operation of the project modifications were estimated using CalEEMod (Table 7).

[5] The carbon dioxide equivalent (CO_2E) for a gas is derived by multiplying the mass of the gas by the associated global warming potential (GWP), such that MT CO_2E = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for methane (CH_4) is 21. This means that emissions of 1 MT of CH_4 are equivalent to emissions of 21 MT of CO_2.

Table 7
Project Modifications Estimated Annual Operational GHG Emissions

	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Foothill Zone 6 and Portola Zone 8 Maintenance Trips and Chemical Delivery	0.74	<0.01	0.00	0.74

Notes: See Appendix A for complete results.
GHG = greenhouse gas; MT = metric ton(s); CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2E = carbon dioxide equivalent

As shown in Table 7, annual project-generated GHG emissions in 2016 would be approximately 0.74 MT CO_2E per year as a result of project modifications operations. Project modifications would result in minor generation of GHG emissions, and these reservoir sites would require periodic maintenance trips even without the modifications. Impacts associated with project-generated GHG emissions would be less than significant.

The Climate Change Scoping Plan, approved by the California Air Resources Board on December 12, 2008, provides an outline for actions to reduce California's GHG emissions. The Scoping Plan requires the California Air Resources Board and other state agencies to adopt regulations and other initiatives to reduce GHGs. The SCAQMD and the City of Lake Forest have not adopted any GHG-reduction measures that would apply to the GHG emissions associated with the project modifications. Therefore, project modifications would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and impacts would be less than significant.

2.8 Hazards

Project modifications would include a decrease in the amount of chemicals to be stored at each site from 1,000 gallons of 12% sodium hypochlorite to 500 gallons of 12% sodium hypochlorite. As previously assessed, the 29% of aqueous ammonia remains the same. As discussed in the MND, sodium hypochlorite is not a hazardous material, and aqueous ammonia at volumes less than 100 gallons is not considered a hazardous material. Proposed project modifications would not involve the storage of hazardous materials on site. Standard IRWD construction measures would still be exercised to prevent the spillage or release of chemicals, petroleum, and other products during construction of the project modifications. All process equipment and chemical storage would be compliant with the most recent California Building Code, would be sized based on the chlorine demand and residual, and would be compatible for use with their respective chemicals. The chemical storage tanks would be located in their own respective secondary containment area on opposite ends of the proposed buildings. Each chemical system would have its own eye-wash station. The proposed chemical storage building would be constructed in a fire-

resistant manner that includes a sloped concrete tile roof, closed eaves, and fire resistant doors in accordance with IRWD standards. The chemical storage tanks at both reservoir sites would be equipped with polyethylene secondary containments (required by the California Fire Code) capable of holding at least 110% of the volume of the largest vessel (sodium hypochlorite tank) to capture any potential spills (IRWD 2015). Therefore, impacts related to hazards and hazardous materials would be less than significant, and no mitigation measures are required.

2.9 Hydrology and Water Quality

Project modifications are not anticipated to substantially alter the existing drainage pattern of either site in a manner that would result in substantial erosion or siltation on or off site. Project modifications would impact a slightly larger footprint than was analyzed in the MND, because code requirements necessitated change in the size of the chemical storage buildings. However, the increase in area would be minor, and would not be substantial enough to alter existing draining patterns. As discussed in the MND, an erosion control plan would include provisions to apply hydroseed of a type that is acceptable to regulatory agencies on all disturbed soil not otherwise scheduled for paving. Following the initial 30-day maintenance period for the contractor, IRWD will be responsible for irrigation and maintenance. Impacts related to hydrology and water quality would be less than significant, and no mitigation measures are required.

2.10 Land Use and Planning

The Foothill Zone 6 and Portola Zone 8 Reservoir sites are surrounded by areas zoned for residential and single-family residential (City of Lake Forest 1991), and IRWD has permanent easements to access the reservoirs. As discussed in the MND, IRWD does not have jurisdictional authority over land use decisions, but it is mandated to provide feasible domestic water, recycled water, and sewer services within its service area. Project modifications would not require land use modifications, and would not divide an established community. Project modifications would not conflict with the General Plan or zoning; therefore, impacts associated with land use and planning would be less than significant, and no mitigation measures are required.

2.11 Minerals

Proposed project modifications would occur in the same sites that were previously analyzed in the MND. The Foothill Zone 6 and Portola Zone 8 Reservoir sites have been previously disturbed by construction of the reservoirs, access roads, slopes, drainage improvements, and other work. Project modifications would not require the substantial use of mineral resources, nor

would it affect the availability of any known mineral resource. Impacts related to mineral resources would be less than significant, and no mitigation measures are required.

2.12 Noise

The proposed modifications would occur within a slightly modified construction schedule and parameters than outlined and analyzed in the MND. The installation of chlorine analyzers and reservoir mixer/sampling improvements were anticipated to require 2 weeks of construction per site in the MND; project modifications would require 24 weeks of construction per site. Each phase of construction for the modifications would require use of two to three pieces of equipment. The MND assumed the overlap of nine pieces of equipment over the entire construction period. Refer to Section 2.3, Air Quality, Table 1, for a comparison of the construction assumptions between the MND and the proposed project modifications. Proposed project modifications would involve construction over a longer time period than was previously analyzed; however, construction activities would be of a lesser intensity than was analyzed in the MND.

Construction noise is exempt from compliance with any numerical performance standards if activities are confined to daytime hours, weekdays, and hours of least sensitivity. Construction activity noise is specifically exempt from the numerical ordinance standards as long as it occurs between 7 a.m. and 8 p.m. on Monday through Saturday, as outlined in the Lake Forest Municipal Code (City of Lake Forest 2007). Because project modifications are anticipated to involve construction activities that are of a lesser intensity than was previously analyzed, and because construction would be limited to the hours outlined above, potential noise impacts would be less than significant, and no mitigation measures are required.

2.13 Population and Housing

Project modifications would entail construction of RMS facilities at existing reservoir sites. The project would not include new homes or businesses, or otherwise generate population growth. Therefore, potential impacts related to population and housing would be less than significant, and no mitigation measures are required.

2.14 Public Services

Project modifications would not require additional fire services or police protection; would not result in impacts to schools, libraries, or other public facilities; and would not require construction or expansion of recreational facilities. During construction, ingress and egress to public and private facilities may be temporarily affected. Project modifications would occur within a slightly revised construction schedule than analyzed in the MND; however, extending

the construction period would still result in a temporary rather than permanent impact to the access of public services. Therefore, impacts related to public services would be less than significant, and no mitigation measures are required.

2.15 Recreation

Project modifications would not generate an increase in population; therefore, an increase in the local neighborhood and regional park use would not occur. Therefore, impacts related to recreation would be less than significant, and no mitigation measures are required.

2.16 Transportation and Circulation

There would be no change in the temporary lane or road closures during construction activities related to the proposed modifications. There would be no increase in daily traffic during construction activities related to the project modifications from construction trucks and vehicles associated with construction worker commutes, considering less equipment would be used on a daily basis than was previously analyzed. Traffic during operation of the project modifications would be similar to the traffic that occurs during normal work hours. Therefore, impacts related to transportation and circulation would remain less than significant, and no mitigation measures are required.

2.17 Utilities and Service Systems

Project modifications would not result in the expansion of existing facilities. Therefore, impacts related to utilities and service systems would remain less than significant, and no mitigation measures are required.

3 DETERMINATION

Based on the information and analysis in this addendum, and pursuant to Section 15162 of the CEQA Guidelines, IRWD determined the following:

- There are no substantial changes to the project that would require major revisions to the MND due to new, significant environmental effects or a substantial increase in the severity of impacts identified in the MND.
- Substantial changes have not occurred in the circumstances under which the project is being undertaken that would require major revisions to the MND to disclose new, significant environmental effects or a substantial increase in the severity of the impacts identified in the MND.
- There is no new information of substantial importance not known at the time the MND was certified that shows that the project would have any new significant effects not discussed in the certified MND or any substantial increase in the severity of the impacts identified in the MND. In addition, no mitigation measures or alternatives previously found not feasible, or that are considerably different from those analyzed in the MND, would substantially reduce one or more significant effects.

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APPENDIX A

Air Quality Modeling Runs

Zone 6 Construction Emissions

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.80	1000sqft	0.04	1,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Trips and VMT - modified

Demolition -

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	88.00
tblConstructionPhase	NumDays	5.00	11.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

tblTripsAndVMT	WorkerTripNumber	1.00	12.00
tblTripsAndVMT	WorkerTripNumber	8.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.1447	9.0327	7.2295	0.0120	0.4457	0.6643	1.1100	0.0855	0.6422	0.7277	0.0000	1,158.6978	1,158.6978	0.2360	0.0000	1,163.6542
Total	**1.1447**	**9.0327**	**7.2295**	**0.0120**	**0.4457**	**0.6643**	**1.1100**	**0.0855**	**0.6422**	**0.7277**	**0.0000**	**1,158.6978**	**1,158.6978**	**0.2360**	**0.0000**	**1,163.6542**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.1447	9.0327	7.2295	0.0120	0.2694	0.6643	0.9337	0.0588	0.6422	0.7010	0.0000	1,158.6978	1,158.6978	0.2360	0.0000	1,163.6542
Total	**1.1447**	**9.0327**	**7.2295**	**0.0120**	**0.2694**	**0.6643**	**0.9337**	**0.0588**	**0.6422**	**0.7010**	**0.0000**	**1,158.6978**	**1,158.6978**	**0.2360**	**0.0000**	**1,163.6542**

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

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.54**	**0.00**	**15.88**	**31.20**	**0.00**	**3.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	
2	Trenching	Trenching	6/13/2015	7/14/2015	5	22	
3	Building Construction	Building Construction	7/15/2015	11/13/2015	5	88	
4	Paving	Paving	11/14/2015	11/30/2015	5	11	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Other Construction Equipment	1	6.00	175	0.20
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	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
Demolition	2	12.00	0.00	13.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	12.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	12.00	0.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	12.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2889	0.0000	0.2889	0.0437	0.0000	0.0437			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351		920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.2889**	**0.6566**	**0.9455**	**0.0437**	**0.6351**	**0.6788**		**920.1533**	**920.1533**	**0.1614**		**923.5424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0262	0.4059	0.2762	9.6000e-004	0.0226	6.7300e-003	0.0294	6.2000e-003	6.1900e-003	0.0124		97.4453	97.4453	7.6000e-004		97.4613
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0720**	**0.4653**	**1.0005**	**2.5900e-003**	**0.1568**	**7.7000e-003**	**0.1645**	**0.0418**	**7.0900e-003**	**0.0489**		**238.5444**	**238.5444**	**7.6900e-003**		**238.7060**

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					0.1127	0.0000	0.1127	0.0171	0.0000	0.0171			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351	0.0000	920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.1127**	**0.6566**	**0.7693**	**0.0171**	**0.6351**	**0.6522**	**0.0000**	**920.1533**	**920.1533**	**0.1614**		**923.5424**

Mitigated Construction Off-Site

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

Hauling	0.0262	0.4059	0.2762	9.6000e-004	0.0226	6.7300e-003	0.0294	6.2000e-003	6.1900e-003	0.0124		97.4453	97.4453	7.6000e-004		97.4613
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0720**	**0.4653**	**1.0005**	**2.5900e-003**	**0.1568**	**7.7000e-003**	**0.1645**	**0.0418**	**7.0900e-003**	**0.0489**		**238.5444**	**238.5444**	**7.6900e-003**		**238.7060**

3.3 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6168	6.3028	3.9815	5.3500e-003		0.4187	0.4187		0.3852	0.3852		561.9542	561.9542	0.1678		565.4773
Total	**0.6168**	**6.3028**	**3.9815**	**5.3500e-003**		**0.4187**	**0.4187**		**0.3852**	**0.3852**		**561.9542**	**561.9542**	**0.1678**		**565.4773**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6168	6.3028	3.9815	5.3500e-003		0.4187	0.4187		0.3852	0.3852	0.0000	561.9542	561.9542	0.1678		565.4773
Total	**0.6168**	**6.3028**	**3.9815**	**5.3500e-003**		**0.4187**	**0.4187**		**0.3852**	**0.3852**	**0.0000**	**561.9542**	**561.9542**	**0.1678**		**565.4773**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744		833.9188	833.9188	0.1200		836.4387
Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**		**833.9188**	**833.9188**	**0.1200**		**836.4387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744	0.0000	833.9188	833.9188	0.1200		836.4387

Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**	**0.0000**	**833.9188**	**833.9188**	**0.1200**		**836.4387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8785	8.8597	5.2353	7.8400e-003		0.5226	0.5226		0.4820	0.4820		799.5935	799.5935	0.2289		804.3998
Paving	9.5300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8880**	**8.8597**	**5.2353**	**7.8400e-003**		**0.5226**	**0.5226**		**0.4820**	**0.4820**		**799.5935**	**799.5935**	**0.2289**		**804.3998**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8785	8.8597	5.2353	7.8400e-003		0.5226	0.5226		0.4820	0.4820	0.0000	799.5935	799.5935	0.2289		804.3998
Paving	9.5300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8880**	**8.8597**	**5.2353**	**7.8400e-003**		**0.5226**	**0.5226**		**0.4820**	**0.4820**	**0.0000**	**799.5935**	**799.5935**	**0.2289**		**804.3998**

Mitigated Construction Off-Site

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

Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Zone 6 Construction Emissions

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.80	1000sqft	0.04	1,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Trips and VMT - modified

Demolition -

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	88.00
tblConstructionPhase	NumDays	5.00	11.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

tblTripsAndVMT	WorkerTripNumber	1.00	12.00
tblTripsAndVMT	WorkerTripNumber	8.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.1490	9.0426	7.2281	0.0119	0.4457	0.6643	1.1100	0.0855	0.6422	0.7277	0.0000	1,151.0034	1,151.0034	0.2360	0.0000	1,155.9599
Total	**1.1490**	**9.0426**	**7.2281**	**0.0119**	**0.4457**	**0.6643**	**1.1100**	**0.0855**	**0.6422**	**0.7277**	**0.0000**	**1,151.0034**	**1,151.0034**	**0.2360**	**0.0000**	**1,155.9599**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.1490	9.0426	7.2281	0.0119	0.2694	0.6643	0.9338	0.0588	0.6422	0.7010	0.0000	1,151.0034	1,151.0034	0.2360	0.0000	1,155.9599
Total	**1.1490**	**9.0426**	**7.2281**	**0.0119**	**0.2694**	**0.6643**	**0.9338**	**0.0588**	**0.6422**	**0.7010**	**0.0000**	**1,151.0034**	**1,151.0034**	**0.2360**	**0.0000**	**1,155.9599**

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

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.54**	**0.00**	**15.88**	**31.20**	**0.00**	**3.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	
2	Trenching	Trenching	6/13/2015	7/14/2015	5	22	
3	Building Construction	Building Construction	7/15/2015	11/13/2015	5	88	
4	Paving	Paving	11/14/2015	11/30/2015	5	11	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Other Construction Equipment	1	6.00	175	0.20
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	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
Demolition	2	12.00	0.00	13.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	12.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	12.00	0.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	12.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2889	0.0000	0.2889	0.0437	0.0000	0.0437			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351		920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.2889**	**0.6566**	**0.9455**	**0.0437**	**0.6351**	**0.6788**		**920.1533**	**920.1533**	**0.1614**		**923.5424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0281	0.4198	0.3150	9.6000e-004	0.0226	6.7500e-003	0.0294	6.2000e-003	6.2100e-003	0.0124		97.2137	97.2137	7.7000e-004		97.2299
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0763**	**0.4852**	**0.9991**	**2.5000e-003**	**0.1568**	**7.7200e-003**	**0.1645**	**0.0418**	**7.1100e-003**	**0.0489**		**230.8501**	**230.8501**	**7.7000e-003**		**231.0118**

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					0.1127	0.0000	0.1127	0.0171	0.0000	0.0171			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351	0.0000	920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.1127**	**0.6566**	**0.7693**	**0.0171**	**0.6351**	**0.6522**	**0.0000**	**920.1533**	**920.1533**	**0.1614**		**923.5424**

Mitigated Construction Off-Site

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

Hauling	0.0281	0.4198	0.3150	9.6000e-004	0.0226	6.7500e-003	0.0294	6.2000e-003	6.2100e-003	0.0124		97.2137	97.2137	7.7000e-004		97.2299
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0763**	**0.4852**	**0.9991**	**2.5000e-003**	**0.1568**	**7.7200e-003**	**0.1645**	**0.0418**	**7.1100e-003**	**0.0489**		**230.8501**	**230.8501**	**7.7000e-003**		**231.0118**

3.3 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6168	6.3028	3.9815	5.3500e-003		0.4187	0.4187		0.3852	0.3852		561.9542	561.9542	0.1678		565.4773
Total	**0.6168**	**6.3028**	**3.9815**	**5.3500e-003**		**0.4187**	**0.4187**		**0.3852**	**0.3852**		**561.9542**	**561.9542**	**0.1678**		**565.4773**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6168	6.3028	3.9815	5.3500e-003		0.4187	0.4187		0.3852	0.3852	0.0000	561.9542	561.9542	0.1678		565.4773
Total	**0.6168**	**6.3028**	**3.9815**	**5.3500e-003**		**0.4187**	**0.4187**		**0.3852**	**0.3852**	**0.0000**	**561.9542**	**561.9542**	**0.1678**		**565.4773**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744		833.9188	833.9188	0.1200		836.4387
Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**		**833.9188**	**833.9188**	**0.1200**		**836.4387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744	0.0000	833.9188	833.9188	0.1200		836.4387

Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**	**0.0000**	**833.9188**	**833.9188**	**0.1200**		**836.4387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8785	8.8597	5.2353	7.8400e-003		0.5226	0.5226		0.4820	0.4820		799.5935	799.5935	0.2289		804.3998
Paving	9.5300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8880**	**8.8597**	**5.2353**	**7.8400e-003**		**0.5226**	**0.5226**		**0.4820**	**0.4820**		**799.5935**	**799.5935**	**0.2289**		**804.3998**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8785	8.8597	5.2353	7.8400e-003		0.5226	0.5226		0.4820	0.4820	0.0000	799.5935	799.5935	0.2289		804.3998
Paving	9.5300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8880**	**8.8597**	**5.2353**	**7.8400e-003**		**0.5226**	**0.5226**		**0.4820**	**0.4820**	**0.0000**	**799.5935**	**799.5935**	**0.2289**		**804.3998**

Mitigated Construction Off-Site

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

Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Zone 6 Construction Emissions

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.80	1000sqft	0.04	1,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Trips and VMT - modified

Demolition -

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	88.00
tblConstructionPhase	NumDays	5.00	11.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

tblTripsAndVMT	WorkerTripNumber	1.00	12.00
tblTripsAndVMT	WorkerTripNumber	8.00	12.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0666	0.5150	0.3973	6.6000e-004	0.0106	0.0369	0.0474	2.6400e-003	0.0355	0.0382	0.0000	57.0543	57.0543	8.7700e-003	0.0000	57.2384
Total	**0.0666**	**0.5150**	**0.3973**	**6.6000e-004**	**0.0106**	**0.0369**	**0.0474**	**2.6400e-003**	**0.0355**	**0.0382**	**0.0000**	**57.0543**	**57.0543**	**8.7700e-003**	**0.0000**	**57.2384**

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					
2015	0.0666	0.5150	0.3973	6.6000e-004	9.6800e-003	0.0369	0.0465	2.5100e-003	0.0355	0.0380	0.0000	57.0542	57.0542	8.7700e-003	0.0000	57.2383
Total	**0.0666**	**0.5150**	**0.3973**	**6.6000e-004**	**9.6800e-003**	**0.0369**	**0.0465**	**2.5100e-003**	**0.0355**	**0.0380**	**0.0000**	**57.0542**	**57.0542**	**8.7700e-003**	**0.0000**	**57.2383**

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

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**8.33**	**0.00**	**1.86**	**4.92**	**0.00**	**0.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	
2	Trenching	Trenching	6/13/2015	7/14/2015	5	22	
3	Building Construction	Building Construction	7/15/2015	11/13/2015	5	88	
4	Paving	Paving	11/14/2015	11/30/2015	5	11	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Other Construction Equipment	1	6.00	175	0.20
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	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
Demolition	2	12.00	0.00	13.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	12.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	12.00	0.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	12.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4400e-003	0.0000	1.4400e-003	2.2000e-004	0.0000	2.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3600e-003	0.0421	0.0311	5.0000e-005		3.2800e-003	3.2800e-003		3.1800e-003	3.1800e-003	0.0000	4.1738	4.1738	7.3000e-004	0.0000	4.1891
Total	**5.3600e-003**	**0.0421**	**0.0311**	**5.0000e-005**	**1.4400e-003**	**3.2800e-003**	**4.7200e-003**	**2.2000e-004**	**3.1800e-003**	**3.4000e-003**	**0.0000**	**4.1738**	**4.1738**	**7.3000e-004**	**0.0000**	**4.1891**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4000e-004	2.1400e-003	1.5300e-003	0.0000	1.1000e-004	3.0000e-005	1.5000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.4416	0.4416	0.0000	0.0000	0.4416
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	3.4000e-004	3.4900e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.6153	0.6153	3.0000e-005	0.0000	0.6160
Total	**3.7000e-004**	**2.4800e-003**	**5.0200e-003**	**1.0000e-005**	**7.7000e-004**	**3.0000e-005**	**8.1000e-004**	**2.0000e-004**	**3.0000e-005**	**2.4000e-004**	**0.0000**	**1.0569**	**1.0569**	**3.0000e-005**	**0.0000**	**1.0576**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.6000e-004	0.0000	5.6000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3600e-003	0.0421	0.0311	5.0000e-005		3.2800e-003	3.2800e-003		3.1800e-003	3.1800e-003	0.0000	4.1737	4.1737	7.3000e-004	0.0000	4.1891
Total	**5.3600e-003**	**0.0421**	**0.0311**	**5.0000e-005**	**5.6000e-004**	**3.2800e-003**	**3.8400e-003**	**9.0000e-005**	**3.1800e-003**	**3.2700e-003**	**0.0000**	**4.1737**	**4.1737**	**7.3000e-004**	**0.0000**	**4.1891**

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	1.4000e-004	2.1400e-003	1.5300e-003	0.0000	1.1000e-004	3.0000e-005	1.5000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.4416	0.4416	0.0000	0.0000	0.4416
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	3.4000e-004	3.4900e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.6153	0.6153	3.0000e-005	0.0000	0.6160
Total	**3.7000e-004**	**2.4800e-003**	**5.0200e-003**	**1.0000e-005**	**7.7000e-004**	**3.0000e-005**	**8.1000e-004**	**2.0000e-004**	**3.0000e-005**	**2.4000e-004**	**0.0000**	**1.0569**	**1.0569**	**3.0000e-005**	**0.0000**	**1.0576**

3.3 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7900e-003	0.0693	0.0438	6.0000e-005		4.6100e-003	4.6100e-003		4.2400e-003	4.2400e-003	0.0000	5.6078	5.6078	1.6700e-003	0.0000	5.6429
Total	**6.7900e-003**	**0.0693**	**0.0438**	**6.0000e-005**		**4.6100e-003**	**4.6100e-003**		**4.2400e-003**	**4.2400e-003**	**0.0000**	**5.6078**	**5.6078**	**1.6700e-003**	**0.0000**	**5.6429**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	1.3100e-003	9.4000e-004	0.0000	7.0000e-005	2.0000e-005	9.0000e-005	2.0000e-005	2.0000e-005	4.0000e-005	0.0000	0.2717	0.2717	0.0000	0.0000	0.2718
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	5.0000e-004	7.4000e-004	7.6800e-003	2.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3536	1.3536	7.0000e-005	0.0000	1.3551
Total	**5.8000e-004**	**2.0500e-003**	**8.6200e-003**	**2.0000e-005**	**1.5200e-003**	**3.0000e-005**	**1.5500e-003**	**4.0000e-004**	**3.0000e-005**	**4.3000e-004**	**0.0000**	**1.6254**	**1.6254**	**7.0000e-005**	**0.0000**	**1.6269**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7900e-003	0.0693	0.0438	6.0000e-005		4.6100e-003	4.6100e-003		4.2400e-003	4.2400e-003	0.0000	5.6078	5.6078	1.6700e-003	0.0000	5.6429
Total	**6.7900e-003**	**0.0693**	**0.0438**	**6.0000e-005**		**4.6100e-003**	**4.6100e-003**		**4.2400e-003**	**4.2400e-003**	**0.0000**	**5.6078**	**5.6078**	**1.6700e-003**	**0.0000**	**5.6429**

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	8.0000e-005	1.3100e-003	9.4000e-004	0.0000	7.0000e-005	2.0000e-005	9.0000e-005	2.0000e-005	2.0000e-005	4.0000e-005	0.0000	0.2717	0.2717	0.0000	0.0000	0.2718
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	5.0000e-004	7.4000e-004	7.6800e-003	2.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3536	1.3536	7.0000e-005	0.0000	1.3551
Total	**5.8000e-004**	**2.0500e-003**	**8.6200e-003**	**2.0000e-005**	**1.5200e-003**	**3.0000e-005**	**1.5500e-003**	**4.0000e-004**	**3.0000e-005**	**4.3000e-004**	**0.0000**	**1.6254**	**1.6254**	**7.0000e-005**	**0.0000**	**1.6269**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0460	0.3411	0.2411	3.9000e-004		0.0259	0.0259		0.0253	0.0253	0.0000	33.2868	33.2868	4.7900e-003	0.0000	33.3874
Total	**0.0460**	**0.3411**	**0.2411**	**3.9000e-004**		**0.0259**	**0.0259**		**0.0253**	**0.0253**	**0.0000**	**33.2868**	**33.2868**	**4.7900e-003**	**0.0000**	**33.3874**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4000e-004	5.2600e-003	3.7700e-003	1.0000e-005	2.7000e-004	8.0000e-005	3.6000e-004	8.0000e-005	8.0000e-005	1.5000e-004	0.0000	1.0869	1.0869	1.0000e-005	0.0000	1.0871
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9900e-003	2.9500e-003	0.0307	7.0000e-005	5.8000e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.4146	5.4146	2.8000e-004	0.0000	5.4204
Total	**2.3300e-003**	**8.2100e-003**	**0.0345**	**8.0000e-005**	**6.0700e-003**	**1.2000e-004**	**6.2000e-003**	**1.6200e-003**	**1.2000e-004**	**1.7300e-003**	**0.0000**	**6.5015**	**6.5015**	**2.9000e-004**	**0.0000**	**6.5075**

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	0.0460	0.3411	0.2411	3.9000e-004		0.0259	0.0259		0.0253	0.0253	0.0000	33.2868	33.2868	4.7900e-003	0.0000	33.3874

Total	**0.0460**	**0.3411**	**0.2411**	**3.9000e-004**		**0.0259**	**0.0259**		**0.0253**	**0.0253**	**0.0000**	**33.2868**	**33.2868**	**4.7900e-003**	**0.0000**	**33.3874**

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	3.4000e-004	5.2600e-003	3.7700e-003	1.0000e-005	2.7000e-004	8.0000e-005	3.6000e-004	8.0000e-005	8.0000e-005	1.5000e-004	0.0000	1.0869	1.0869	1.0000e-005	0.0000	1.0871
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9900e-003	2.9500e-003	0.0307	7.0000e-005	5.8000e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.4146	5.4146	2.8000e-004	0.0000	5.4204
Total	**2.3300e-003**	**8.2100e-003**	**0.0345**	**8.0000e-005**	**6.0700e-003**	**1.2000e-004**	**6.2000e-003**	**1.6200e-003**	**1.2000e-004**	**1.7300e-003**	**0.0000**	**6.5015**	**6.5015**	**2.9000e-004**	**0.0000**	**6.5075**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8300e-003	0.0487	0.0288	4.0000e-005		2.8700e-003	2.8700e-003		2.6500e-003	2.6500e-003	0.0000	3.9896	3.9896	1.1400e-003	0.0000	4.0136
Paving	5.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.8800e-003**	**0.0487**	**0.0288**	**4.0000e-005**		**2.8700e-003**	**2.8700e-003**		**2.6500e-003**	**2.6500e-003**	**0.0000**	**3.9896**	**3.9896**	**1.1400e-003**	**0.0000**	**4.0136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	6.6000e-004	4.7000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1359	0.1359	0.0000	0.0000	0.1359
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	3.7000e-004	3.8400e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6768	0.6768	3.0000e-005	0.0000	0.6776
Total	**2.9000e-004**	**1.0300e-003**	**4.3100e-003**	**1.0000e-005**	**7.5000e-004**	**2.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.8127**	**0.8127**	**3.0000e-005**	**0.0000**	**0.8134**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8300e-003	0.0487	0.0288	4.0000e-005		2.8700e-003	2.8700e-003		2.6500e-003	2.6500e-003	0.0000	3.9896	3.9896	1.1400e-003	0.0000	4.0136
Paving	5.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.8800e-003**	**0.0487**	**0.0288**	**4.0000e-005**		**2.8700e-003**	**2.8700e-003**		**2.6500e-003**	**2.6500e-003**	**0.0000**	**3.9896**	**3.9896**	**1.1400e-003**	**0.0000**	**4.0136**

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	4.0000e-005	6.6000e-004	4.7000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1359	0.1359	0.0000	0.0000	0.1359
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	3.7000e-004	3.8400e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6768	0.6768	3.0000e-005	0.0000	0.6776
Total	**2.9000e-004**	**1.0300e-003**	**4.3100e-003**	**1.0000e-005**	**7.5000e-004**	**2.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.8127**	**0.8127**	**3.0000e-005**	**0.0000**	**0.8134**

Zone 8 Construction Emissions

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	3.58	1000sqft	0.08	3,580.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - Other Construction Equipment = Water Truck, HP and Load Factor from OFFROAD2007

Off-road Equipment - modified

Off-road Equipment - modified

Trips and VMT - modified

Demolition -

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	88.00
tblConstructionPhase	NumDays	2.00	22.00
tblConstructionPhase	NumDays	5.00	11.00
tblConstructionPhase	PhaseEndDate	12/15/2015	11/13/2015
tblConstructionPhase	PhaseStartDate	8/14/2015	7/15/2015
tblGrading	AcresOfGrading	0.00	0.10
tblGrading	MaterialExported	0.00	110.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	2.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.7787	14.5117	11.1837	0.0182	0.5485	1.0155	1.3026	0.1022	0.9674	1.0438	0.0000	1,755.8393	1,755.8393	0.3026	0.0000	1,762.1944
Total	**1.7787**	**14.5117**	**11.1837**	**0.0182**	**0.5485**	**1.0155**	**1.3026**	**0.1022**	**0.9674**	**1.0438**	**0.0000**	**1,755.8393**	**1,755.8393**	**0.3026**	**0.0000**	**1,762.1944**

Mitigated Construction

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

2015	1.7787	14.5117	11.1837	0.0182	0.3149	1.0155	1.3026	0.0764	0.9674	1.0438	0.0000	1,755.8393	1,755.8393	0.3026	0.0000	1,762.1944
Total	**1.7787**	**14.5117**	**11.1837**	**0.0182**	**0.3149**	**1.0155**	**1.3026**	**0.0764**	**0.9674**	**1.0438**	**0.0000**	**1,755.8393**	**1,755.8393**	**0.3026**	**0.0000**	**1,762.1944**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**42.60**	**0.00**	**0.00**	**25.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	
2	Grading	Grading	6/13/2015	7/14/2015	5	22	
3	Trenching	Trenching	7/15/2015	8/13/2015	5	22	
4	Building Construction	Building Construction	7/15/2015	11/13/2015	5	88	
5	Paving	Paving	11/14/2015	11/30/2015	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.1

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Other Construction Equipment	1	6.00	175	0.20
Grading	Rubber Tired Dozers	0	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Other Construction Equipment	1	6.00	175	0.20
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	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
Demolition	2	12.00	0.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	12.00	0.00	14.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	12.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	12.00	1.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	12.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3830	0.0000	0.3830	0.0580	0.0000	0.0580			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351		920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.3830**	**0.6566**	**1.0396**	**0.0580**	**0.6351**	**0.6931**		**920.1533**	**920.1533**	**0.1614**		**923.5424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0363	0.5620	0.3824	1.3300e-003	0.0314	9.3200e-003	0.0407	8.5800e-003	8.5700e-003	0.0172		134.9243	134.9243	1.0500e-003		134.9464
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0821**	**0.6214**	**1.1067**	**2.9600e-003**	**0.1655**	**0.0103**	**0.1758**	**0.0442**	**9.4700e-003**	**0.0536**		**276.0234**	**276.0234**	**7.9800e-003**		**276.1911**

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					0.1494	0.0000	0.1494	0.0226	0.0000	0.0226			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351	0.0000	920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.1494**	**0.6566**	**0.8060**	**0.0226**	**0.6351**	**0.6577**	**0.0000**	**920.1533**	**920.1533**	**0.1614**		**923.5424**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0363	0.5620	0.3824	1.3300e-003	0.0314	9.3200e-003	0.0407	8.5800e-003	8.5700e-003	0.0172		134.9243	134.9243	1.0500e-003		134.9464
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0821**	**0.6214**	**1.1067**	**2.9600e-003**	**0.1655**	**0.0103**	**0.1758**	**0.0442**	**9.4700e-003**	**0.0536**		**276.0234**	**276.0234**	**7.9800e-003**		**276.1911**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.3900e-003	0.0000	5.3900e-003	6.1000e-004	0.0000	6.1000e-004			0.0000			0.0000
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862		563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**	**5.3900e-003**	**0.4198**	**0.4252**	**6.1000e-004**	**0.3862**	**0.3868**		**563.2818**	**563.2818**	**0.1682**		**566.8133**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0129	0.1987	0.1352	4.7000e-004	0.0111	3.2900e-003	0.0144	3.0300e-003	3.0300e-003	6.0700e-003		47.7005	47.7005	3.7000e-004		47.7083
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0586**	**0.2581**	**0.8595**	**2.1000e-003**	**0.1452**	**4.2600e-003**	**0.1495**	**0.0386**	**3.9300e-003**	**0.0425**		**188.7996**	**188.7996**	**7.3000e-003**		**188.9530**

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					2.1000e-003	0.0000	2.1000e-003	2.4000e-004	0.0000	2.4000e-004			0.0000			0.0000
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862	0.0000	563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**	**2.1000e-003**	**0.4198**	**0.4219**	**2.4000e-004**	**0.3862**	**0.3864**	**0.0000**	**563.2818**	**563.2818**	**0.1682**		**566.8133**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0129	0.1987	0.1352	4.7000e-004	0.0111	3.2900e-003	0.0144	3.0300e-003	3.0300e-003	6.0700e-003		47.7005	47.7005	3.7000e-004		47.7083
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0586**	**0.2581**	**0.8595**	**2.1000e-003**	**0.1452**	**4.2600e-003**	**0.1495**	**0.0386**	**3.9300e-003**	**0.0425**		**188.7996**	**188.7996**	**7.3000e-003**		**188.9530**

3.4 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862		563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**		**0.4198**	**0.4198**		**0.3862**	**0.3862**		**563.2818**	**563.2818**	**0.1682**		**566.8133**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447

Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862	0.0000	563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**		**0.4198**	**0.4198**		**0.3862**	**0.3862**	**0.0000**	**563.2818**	**563.2818**	**0.1682**		**566.8133**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744		833.9188	833.9188	0.1200		836.4387
Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**		**833.9188**	**833.9188**	**0.1200**		**836.4387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
Vendor	9.6200e-003	0.0979	0.1090	2.2000e-004	6.2500e-003	1.6500e-003	7.9000e-003	1.7800e-003	1.5200e-003	3.3000e-003		21.9257	21.9257	1.7000e-004		21.9292
Worker	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0627**	**0.2709**	**0.9105**	**2.1200e-003**	**0.1467**	**4.5000e-003**	**0.1512**	**0.0391**	**4.1500e-003**	**0.0432**		**190.2822**	**190.2822**	**7.3100e-003**		**190.4358**

Mitigated Construction On-Site

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

Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744	0.0000	833.9188	833.9188	0.1200		836.4387
Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**	**0.0000**	**833.9188**	**833.9188**	**0.1200**		**836.4387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
Vendor	9.6200e-003	0.0979	0.1090	2.2000e-004	6.2500e-003	1.6500e-003	7.9000e-003	1.7800e-003	1.5200e-003	3.3000e-003		21.9257	21.9257	1.7000e-004		21.9292
Worker	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0627**	**0.2709**	**0.9105**	**2.1200e-003**	**0.1467**	**4.5000e-003**	**0.1512**	**0.0391**	**4.1500e-003**	**0.0432**		**190.2822**	**190.2822**	**7.3100e-003**		**190.4358**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8195	8.4893	4.9269	7.1300e-003		0.5074	0.5074		0.4668	0.4668		749.0770	749.0770	0.2236		753.7733
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8386**	**8.4893**	**4.9269**	**7.1300e-003**		**0.5074**	**0.5074**		**0.4668**	**0.4668**		**749.0770**	**749.0770**	**0.2236**		**753.7733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8195	8.4893	4.9269	7.1300e-003		0.5074	0.5074		0.4668	0.4668	0.0000	749.0770	749.0770	0.2236		753.7733
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8386**	**8.4893**	**4.9269**	**7.1300e-003**		**0.5074**	**0.5074**		**0.4668**	**0.4668**	**0.0000**	**749.0770**	**749.0770**	**0.2236**		**753.7733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	7.3400e-003	0.1135	0.0773	2.7000e-004	6.3300e-003	1.8800e-003	8.2200e-003	1.7300e-003	1.7300e-003	3.4700e-003		27.2574	27.2574	2.1000e-004		27.2619
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	0.0458	0.0595	0.7243	1.6300e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		141.0991	141.0991	6.9300e-003		141.2447
Total	**0.0531**	**0.1730**	**0.8016**	**1.9000e-003**	**0.1405**	**2.8500e-003**	**0.1433**	**0.0373**	**2.6300e-003**	**0.0399**		**168.3565**	**168.3565**	**7.1400e-003**		**168.5066**

Zone 8 Construction Emissions

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	3.58	1000sqft	0.08	3,580.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - Other Construction Equipment = Water Truck, HP and Load Factor from OFFROAD2007

Off-road Equipment - modified

Off-road Equipment - modified

Trips and VMT - modified

Demolition -

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	88.00
tblConstructionPhase	NumDays	2.00	22.00
tblConstructionPhase	NumDays	5.00	11.00
tblConstructionPhase	PhaseEndDate	12/15/2015	11/13/2015
tblConstructionPhase	PhaseStartDate	8/14/2015	7/15/2015
tblGrading	AcresOfGrading	0.00	0.10
tblGrading	MaterialExported	0.00	110.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	2.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.7858	14.5337	11.1462	0.0180	0.5485	1.0155	1.3027	0.1022	0.9674	1.0438	0.0000	1,740.6003	1,740.6003	0.3026	0.0000	1,746.9555
Total	**1.7858**	**14.5337**	**11.1462**	**0.0180**	**0.5485**	**1.0155**	**1.3027**	**0.1022**	**0.9674**	**1.0438**	**0.0000**	**1,740.6003**	**1,740.6003**	**0.3026**	**0.0000**	**1,746.9555**

Mitigated Construction

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

2015	1.7858	14.5337	11.1462	0.0180	0.3149	1.0155	1.3027	0.0764	0.9674	1.0438	0.0000	1,740.6003	1,740.6003	0.3026	0.0000	1,746.9555
Total	**1.7858**	**14.5337**	**11.1462**	**0.0180**	**0.3149**	**1.0155**	**1.3027**	**0.0764**	**0.9674**	**1.0438**	**0.0000**	**1,740.6003**	**1,740.6003**	**0.3026**	**0.0000**	**1,746.9555**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**42.60**	**0.00**	**0.00**	**25.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	
2	Grading	Grading	6/13/2015	7/14/2015	5	22	
3	Trenching	Trenching	7/15/2015	8/13/2015	5	22	
4	Building Construction	Building Construction	7/15/2015	11/13/2015	5	88	
5	Paving	Paving	11/14/2015	11/30/2015	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.1

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Other Construction Equipment	1	6.00	175	0.20
Grading	Rubber Tired Dozers	0	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Other Construction Equipment	1	6.00	175	0.20
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	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
Demolition	2	12.00	0.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	12.00	0.00	14.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	12.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	12.00	1.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	12.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3830	0.0000	0.3830	0.0580	0.0000	0.0580			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351		920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.3830**	**0.6566**	**1.0396**	**0.0580**	**0.6351**	**0.6931**		**920.1533**	**920.1533**	**0.1614**		**923.5424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0389	0.5813	0.4361	1.3200e-003	0.0314	9.3500e-003	0.0407	8.5800e-003	8.6000e-003	0.0172		134.6036	134.6036	1.0700e-003		134.6260
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0871**	**0.6467**	**1.1203**	**2.8600e-003**	**0.1655**	**0.0103**	**0.1758**	**0.0442**	**9.5000e-003**	**0.0537**		**268.2400**	**268.2400**	**8.0000e-003**		**268.4079**

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					0.1494	0.0000	0.1494	0.0226	0.0000	0.0226			0.0000			0.0000
Off-Road	1.0727	8.4265	6.2290	9.3700e-003		0.6566	0.6566		0.6351	0.6351	0.0000	920.1533	920.1533	0.1614		923.5424
Total	**1.0727**	**8.4265**	**6.2290**	**9.3700e-003**	**0.1494**	**0.6566**	**0.8060**	**0.0226**	**0.6351**	**0.6577**	**0.0000**	**920.1533**	**920.1533**	**0.1614**		**923.5424**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0389	0.5813	0.4361	1.3200e-003	0.0314	9.3500e-003	0.0407	8.5800e-003	8.6000e-003	0.0172		134.6036	134.6036	1.0700e-003		134.6260
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0871**	**0.6467**	**1.1203**	**2.8600e-003**	**0.1655**	**0.0103**	**0.1758**	**0.0442**	**9.5000e-003**	**0.0537**		**268.2400**	**268.2400**	**8.0000e-003**		**268.4079**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.3900e-003	0.0000	5.3900e-003	6.1000e-004	0.0000	6.1000e-004			0.0000			0.0000
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862		563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**	**5.3900e-003**	**0.4198**	**0.4252**	**6.1000e-004**	**0.3862**	**0.3868**		**563.2818**	**563.2818**	**0.1682**		**566.8133**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0137	0.2055	0.1542	4.7000e-004	0.0111	3.3100e-003	0.0144	3.0300e-003	3.0400e-003	6.0800e-003		47.5871	47.5871	3.8000e-004		47.5951
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0620**	**0.2709**	**0.8384**	**2.0100e-003**	**0.1452**	**4.2800e-003**	**0.1495**	**0.0386**	**3.9400e-003**	**0.0426**		**181.2235**	**181.2235**	**7.3100e-003**		**181.3770**

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					2.1000e-003	0.0000	2.1000e-003	2.4000e-004	0.0000	2.4000e-004			0.0000			0.0000
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862	0.0000	563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**	**2.1000e-003**	**0.4198**	**0.4219**	**2.4000e-004**	**0.3862**	**0.3864**	**0.0000**	**563.2818**	**563.2818**	**0.1682**		**566.8133**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0137	0.2055	0.1542	4.7000e-004	0.0111	3.3100e-003	0.0144	3.0300e-003	3.0400e-003	6.0800e-003		47.5871	47.5871	3.8000e-004		47.5951
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0620**	**0.2709**	**0.8384**	**2.0100e-003**	**0.1452**	**4.2800e-003**	**0.1495**	**0.0386**	**3.9400e-003**	**0.0426**		**181.2235**	**181.2235**	**7.3100e-003**		**181.3770**

3.4 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862		563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**		**0.4198**	**0.4198**		**0.3862**	**0.3862**		**563.2818**	**563.2818**	**0.1682**		**566.8133**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820

Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6183	6.3167	3.9913	5.3600e-003		0.4198	0.4198		0.3862	0.3862	0.0000	563.2818	563.2818	0.1682		566.8133
Total	**0.6183**	**6.3167**	**3.9913**	**5.3600e-003**		**0.4198**	**0.4198**		**0.3862**	**0.3862**	**0.0000**	**563.2818**	**563.2818**	**0.1682**		**566.8133**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744		833.9188	833.9188	0.1200		836.4387
Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**		**833.9188**	**833.9188**	**0.1200**		**836.4387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
Vendor	0.0107	0.1003	0.1300	2.2000e-004	6.2500e-003	1.6700e-003	7.9200e-003	1.7800e-003	1.5400e-003	3.3100e-003		21.7416	21.7416	1.7000e-004		21.7453
Worker	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0668**	**0.2831**	**0.9023**	**2.0300e-003**	**0.1467**	**4.5300e-003**	**0.1513**	**0.0391**	**4.1800e-003**	**0.0433**		**182.5707**	**182.5707**	**7.3200e-003**		**182.7244**

Mitigated Construction On-Site

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

Off-Road	1.0446	7.7511	5.4803	8.8100e-003		0.5883	0.5883		0.5744	0.5744	0.0000	833.9188	833.9188	0.1200		836.4387
Total	**1.0446**	**7.7511**	**5.4803**	**8.8100e-003**		**0.5883**	**0.5883**		**0.5744**	**0.5744**	**0.0000**	**833.9188**	**833.9188**	**0.1200**		**836.4387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
Vendor	0.0107	0.1003	0.1300	2.2000e-004	6.2500e-003	1.6700e-003	7.9200e-003	1.7800e-003	1.5400e-003	3.3100e-003		21.7416	21.7416	1.7000e-004		21.7453
Worker	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0668**	**0.2831**	**0.9023**	**2.0300e-003**	**0.1467**	**4.5300e-003**	**0.1513**	**0.0391**	**4.1800e-003**	**0.0433**		**182.5707**	**182.5707**	**7.3200e-003**		**182.7244**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8195	8.4893	4.9269	7.1300e-003		0.5074	0.5074		0.4668	0.4668		749.0770	749.0770	0.2236		753.7733
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8386**	**8.4893**	**4.9269**	**7.1300e-003**		**0.5074**	**0.5074**		**0.4668**	**0.4668**		**749.0770**	**749.0770**	**0.2236**		**753.7733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8195	8.4893	4.9269	7.1300e-003		0.5074	0.5074		0.4668	0.4668	0.0000	749.0770	749.0770	0.2236		753.7733
Paving	0.0191					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8386**	**8.4893**	**4.9269**	**7.1300e-003**		**0.5074**	**0.5074**		**0.4668**	**0.4668**	**0.0000**	**749.0770**	**749.0770**	**0.2236**		**753.7733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	7.8500e-003	0.1174	0.0881	2.7000e-004	6.3300e-003	1.8900e-003	8.2200e-003	1.7300e-003	1.7400e-003	3.4700e-003		27.1927	27.1927	2.2000e-004		27.1972
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	0.0483	0.0654	0.6842	1.5400e-003	0.1341	9.7000e-004	0.1351	0.0356	9.0000e-004	0.0365		133.6364	133.6364	6.9300e-003		133.7820
Total	**0.0561**	**0.1828**	**0.7723**	**1.8100e-003**	**0.1405**	**2.8600e-003**	**0.1433**	**0.0373**	**2.6400e-003**	**0.0399**		**160.8290**	**160.8290**	**7.1500e-003**		**160.9791**

Zone 8 Construction Emissions

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	3.58	1000sqft	0.08	3,580.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - modified

Off-road Equipment - Other Construction Equipment = Water Truck, HP and Load Factor from OFFROAD2007

Off-road Equipment - modified

Off-road Equipment - modified

Trips and VMT - modified

Demolition -

Grading - modified

Architectural Coating - modified

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	88.00
tblConstructionPhase	NumDays	2.00	22.00
tblConstructionPhase	NumDays	5.00	11.00
tblConstructionPhase	PhaseEndDate	12/15/2015	11/13/2015
tblConstructionPhase	PhaseStartDate	8/14/2015	7/15/2015
tblGrading	AcresOfGrading	0.00	0.10
tblGrading	MaterialExported	0.00	110.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	HorsePower	171.00	175.00
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	LoadFactor	0.42	0.20
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	32.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00
tblTripsAndVMT	WorkerTripNumber	2.00	12.00
tblTripsAndVMT	WorkerTripNumber	5.00	12.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.0743	0.5910	0.4550	7.5000e-004	0.0130	0.0415	0.0545	3.2300e-003	0.0398	0.0431	0.0000	65.3076	65.3076	0.0105	0.0000	65.5281
Total	**0.0743**	**0.5910**	**0.4550**	**7.5000e-004**	**0.0130**	**0.0415**	**0.0545**	**3.2300e-003**	**0.0398**	**0.0431**	**0.0000**	**65.3076**	**65.3076**	**0.0105**	**0.0000**	**65.5281**

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					

2015	0.0743	0.5910	0.4550	7.5000e-004	0.0118	0.0415	0.0533	3.0500e-003	0.0398	0.0429	0.0000	65.3075	65.3075	0.0105	0.0000	65.5281
Total	**0.0743**	**0.5910**	**0.4550**	**7.5000e-004**	**0.0118**	**0.0415**	**0.0533**	**3.0500e-003**	**0.0398**	**0.0429**	**0.0000**	**65.3075**	**65.3075**	**0.0105**	**0.0000**	**65.5281**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**9.25**	**0.00**	**2.20**	**5.57**	**0.00**	**0.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2015	6/12/2015	5	10	
2	Grading	Grading	6/13/2015	7/14/2015	5	22	
3	Trenching	Trenching	7/15/2015	8/13/2015	5	22	
4	Building Construction	Building Construction	7/15/2015	11/13/2015	5	88	
5	Paving	Paving	11/14/2015	11/30/2015	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.1

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Other Construction Equipment	1	6.00	175	0.20
Grading	Rubber Tired Dozers	0	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Other Construction Equipment	1	6.00	175	0.20
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	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
Demolition	2	12.00	0.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	12.00	0.00	14.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	12.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	12.00	1.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	12.00	0.00	4.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.9200e-003	0.0000	1.9200e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3600e-003	0.0421	0.0311	5.0000e-005		3.2800e-003	3.2800e-003		3.1800e-003	3.1800e-003	0.0000	4.1738	4.1738	7.3000e-004	0.0000	4.1891
Total	**5.3600e-003**	**0.0421**	**0.0311**	**5.0000e-005**	**1.9200e-003**	**3.2800e-003**	**5.2000e-003**	**2.9000e-004**	**3.1800e-003**	**3.4700e-003**	**0.0000**	**4.1738**	**4.1738**	**7.3000e-004**	**0.0000**	**4.1891**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	2.9600e-003	2.1200e-003	1.0000e-005	1.5000e-004	5.0000e-005	2.0000e-004	4.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.6114	0.6114	0.0000	0.0000	0.6115
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	3.4000e-004	3.4900e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.6153	0.6153	3.0000e-005	0.0000	0.6160
Total	**4.2000e-004**	**3.3000e-003**	**5.6100e-003**	**2.0000e-005**	**8.1000e-004**	**5.0000e-005**	**8.6000e-004**	**2.1000e-004**	**4.0000e-005**	**2.7000e-004**	**0.0000**	**1.2267**	**1.2267**	**3.0000e-005**	**0.0000**	**1.2275**

Mitigated Construction On-Site

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

Fugitive Dust					7.5000e-004	0.0000	7.5000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3600e-003	0.0421	0.0311	5.0000e-005		3.2800e-003	3.2800e-003		3.1800e-003	3.1800e-003	0.0000	4.1737	4.1737	7.3000e-004	0.0000	4.1891
Total	**5.3600e-003**	**0.0421**	**0.0311**	**5.0000e-005**	**7.5000e-004**	**3.2800e-003**	**4.0300e-003**	**1.1000e-004**	**3.1800e-003**	**3.2900e-003**	**0.0000**	**4.1737**	**4.1737**	**7.3000e-004**	**0.0000**	**4.1891**

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	1.9000e-004	2.9600e-003	2.1200e-003	1.0000e-005	1.5000e-004	5.0000e-005	2.0000e-004	4.0000e-005	4.0000e-005	9.0000e-005	0.0000	0.6114	0.6114	0.0000	0.0000	0.6115
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	3.4000e-004	3.4900e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.6153	0.6153	3.0000e-005	0.0000	0.6160
Total	**4.2000e-004**	**3.3000e-003**	**5.6100e-003**	**2.0000e-005**	**8.1000e-004**	**5.0000e-005**	**8.6000e-004**	**2.1000e-004**	**4.0000e-005**	**2.7000e-004**	**0.0000**	**1.2267**	**1.2267**	**3.0000e-005**	**0.0000**	**1.2275**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8000e-003	0.0695	0.0439	6.0000e-005		4.6200e-003	4.6200e-003		4.2500e-003	4.2500e-003	0.0000	5.6210	5.6210	1.6800e-003	0.0000	5.6563
Total	**6.8000e-003**	**0.0695**	**0.0439**	**6.0000e-005**	**6.0000e-005**	**4.6200e-003**	**4.6800e-003**	**1.0000e-005**	**4.2500e-003**	**4.2600e-003**	**0.0000**	**5.6210**	**5.6210**	**1.6800e-003**	**0.0000**	**5.6563**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-004	2.3000e-003	1.6500e-003	1.0000e-005	1.2000e-004	4.0000e-005	1.6000e-004	3.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.4755	0.4755	0.0000	0.0000	0.4756
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	5.0000e-004	7.4000e-004	7.6800e-003	2.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3536	1.3536	7.0000e-005	0.0000	1.3551
Total	**6.5000e-004**	**3.0400e-003**	**9.3300e-003**	**3.0000e-005**	**1.5700e-003**	**5.0000e-005**	**1.6200e-003**	**4.1000e-004**	**4.0000e-005**	**4.6000e-004**	**0.0000**	**1.8292**	**1.8292**	**7.0000e-005**	**0.0000**	**1.8307**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8000e-003	0.0695	0.0439	6.0000e-005		4.6200e-003	4.6200e-003		4.2500e-003	4.2500e-003	0.0000	5.6210	5.6210	1.6800e-003	0.0000	5.6562
Total	**6.8000e-003**	**0.0695**	**0.0439**	**6.0000e-005**	**2.0000e-005**	**4.6200e-003**	**4.6400e-003**	**0.0000**	**4.2500e-003**	**4.2500e-003**	**0.0000**	**5.6210**	**5.6210**	**1.6800e-003**	**0.0000**	**5.6562**

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	1.5000e-004	2.3000e-003	1.6500e-003	1.0000e-005	1.2000e-004	4.0000e-005	1.6000e-004	3.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.4755	0.4755	0.0000	0.0000	0.4756
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	5.0000e-004	7.4000e-004	7.6800e-003	2.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3536	1.3536	7.0000e-005	0.0000	1.3551
Total	**6.5000e-004**	**3.0400e-003**	**9.3300e-003**	**3.0000e-005**	**1.5700e-003**	**5.0000e-005**	**1.6200e-003**	**4.1000e-004**	**4.0000e-005**	**4.6000e-004**	**0.0000**	**1.8292**	**1.8292**	**7.0000e-005**	**0.0000**	**1.8307**

3.4 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.8000e-003	0.0695	0.0439	6.0000e-005		4.6200e-003	4.6200e-003		4.2500e-003	4.2500e-003	0.0000	5.6210	5.6210	1.6800e-003	0.0000	5.6563
Total	**6.8000e-003**	**0.0695**	**0.0439**	**6.0000e-005**		**4.6200e-003**	**4.6200e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**5.6210**	**5.6210**	**1.6800e-003**	**0.0000**	**5.6563**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	1.3100e-003	9.4000e-004	0.0000	7.0000e-005	2.0000e-005	9.0000e-005	2.0000e-005	2.0000e-005	4.0000e-005	0.0000	0.2717	0.2717	0.0000	0.0000	0.2718
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	5.0000e-004	7.4000e-004	7.6800e-003	2.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3536	1.3536	7.0000e-005	0.0000	1.3551

Total	**5.8000e-004**	**2.0500e-003**	**8.6200e-003**	**2.0000e-005**	**1.5200e-003**	**3.0000e-005**	**1.5500e-003**	**4.0000e-004**	**3.0000e-005**	**4.3000e-004**	**0.0000**	**1.6254**	**1.6254**	**7.0000e-005**	**0.0000**	**1.6269**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.8000e-003	0.0695	0.0439	6.0000e-005		4.6200e-003	4.6200e-003		4.2500e-003	4.2500e-003	0.0000	5.6210	5.6210	1.6800e-003	0.0000	5.6562
Total	**6.8000e-003**	**0.0695**	**0.0439**	**6.0000e-005**		**4.6200e-003**	**4.6200e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**5.6210**	**5.6210**	**1.6800e-003**	**0.0000**	**5.6562**

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	8.0000e-005	1.3100e-003	9.4000e-004	0.0000	7.0000e-005	2.0000e-005	9.0000e-005	2.0000e-005	2.0000e-005	4.0000e-005	0.0000	0.2717	0.2717	0.0000	0.0000	0.2718
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	5.0000e-004	7.4000e-004	7.6800e-003	2.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3536	1.3536	7.0000e-005	0.0000	1.3551
Total	**5.8000e-004**	**2.0500e-003**	**8.6200e-003**	**2.0000e-005**	**1.5200e-003**	**3.0000e-005**	**1.5500e-003**	**4.0000e-004**	**3.0000e-005**	**4.3000e-004**	**0.0000**	**1.6254**	**1.6254**	**7.0000e-005**	**0.0000**	**1.6269**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0460	0.3411	0.2411	3.9000e-004		0.0259	0.0259		0.0253	0.0253	0.0000	33.2868	33.2868	4.7900e-003	0.0000	33.3874
Total	**0.0460**	**0.3411**	**0.2411**	**3.9000e-004**		**0.0259**	**0.0259**		**0.0253**	**0.0253**	**0.0000**	**33.2868**	**33.2868**	**4.7900e-003**	**0.0000**	**33.3874**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4000e-004	5.2600e-003	3.7700e-003	1.0000e-005	2.7000e-004	8.0000e-005	3.6000e-004	8.0000e-005	8.0000e-005	1.5000e-004	0.0000	1.0869	1.0869	1.0000e-005	0.0000	1.0871
Vendor	4.5000e-004	4.5000e-003	5.5000e-003	1.0000e-005	2.7000e-004	7.0000e-005	3.4000e-004	8.0000e-005	7.0000e-005	1.4000e-004	0.0000	0.8721	0.8721	1.0000e-005	0.0000	0.8723
Worker	1.9900e-003	2.9500e-003	0.0307	7.0000e-005	5.8000e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.4146	5.4146	2.8000e-004	0.0000	5.4204
Total	**2.7800e-003**	**0.0127**	**0.0400**	**9.0000e-005**	**6.3400e-003**	**1.9000e-004**	**6.5400e-003**	**1.7000e-003**	**1.9000e-004**	**1.8700e-003**	**0.0000**	**7.3736**	**7.3736**	**3.0000e-004**	**0.0000**	**7.3797**

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	0.0460	0.3411	0.2411	3.9000e-004		0.0259	0.0259		0.0253	0.0253	0.0000	33.2868	33.2868	4.7900e-003	0.0000	33.3874
Total	**0.0460**	**0.3411**	**0.2411**	**3.9000e-004**		**0.0259**	**0.0259**		**0.0253**	**0.0253**	**0.0000**	**33.2868**	**33.2868**	**4.7900e-003**	**0.0000**	**33.3874**

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	3.4000e-004	5.2600e-003	3.7700e-003	1.0000e-005	2.7000e-004	8.0000e-005	3.6000e-004	8.0000e-005	8.0000e-005	1.5000e-004	0.0000	1.0869	1.0869	1.0000e-005	0.0000	1.0871
Vendor	4.5000e-004	4.5000e-003	5.5000e-003	1.0000e-005	2.7000e-004	7.0000e-005	3.4000e-004	8.0000e-005	7.0000e-005	1.4000e-004	0.0000	0.8721	0.8721	1.0000e-005	0.0000	0.8723
Worker	1.9900e-003	2.9500e-003	0.0307	7.0000e-005	5.8000e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.4146	5.4146	2.8000e-004	0.0000	5.4204
Total	**2.7800e-003**	**0.0127**	**0.0400**	**9.0000e-005**	**6.3400e-003**	**1.9000e-004**	**6.5400e-003**	**1.7000e-003**	**1.9000e-004**	**1.8700e-003**	**0.0000**	**7.3736**	**7.3736**	**3.0000e-004**	**0.0000**	**7.3797**

3.6 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5100e-003	0.0467	0.0271	4.0000e-005		2.7900e-003	2.7900e-003		2.5700e-003	2.5700e-003	0.0000	3.7375	3.7375	1.1200e-003	0.0000	3.7610
Paving	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.6100e-003**	**0.0467**	**0.0271**	**4.0000e-005**		**2.7900e-003**	**2.7900e-003**		**2.5700e-003**	**2.5700e-003**	**0.0000**	**3.7375**	**3.7375**	**1.1200e-003**	**0.0000**	**3.7610**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	6.6000e-004	4.7000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1359	0.1359	0.0000	0.0000	0.1359
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	3.7000e-004	3.8400e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6768	0.6768	3.0000e-005	0.0000	0.6776
Total	**2.9000e-004**	**1.0300e-003**	**4.3100e-003**	**1.0000e-005**	**7.5000e-004**	**2.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.8127**	**0.8127**	**3.0000e-005**	**0.0000**	**0.8134**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5100e-003	0.0467	0.0271	4.0000e-005		2.7900e-003	2.7900e-003		2.5700e-003	2.5700e-003	0.0000	3.7375	3.7375	1.1200e-003	0.0000	3.7610
Paving	1.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.6100e-003**	**0.0467**	**0.0271**	**4.0000e-005**		**2.7900e-003**	**2.7900e-003**		**2.5700e-003**	**2.5700e-003**	**0.0000**	**3.7375**	**3.7375**	**1.1200e-003**	**0.0000**	**3.7610**

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	4.0000e-005	6.6000e-004	4.7000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1359	0.1359	0.0000	0.0000	0.1359
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	3.7000e-004	3.8400e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6768	0.6768	3.0000e-005	0.0000	0.6776
Total	**2.9000e-004**	**1.0300e-003**	**4.3100e-003**	**1.0000e-005**	**7.5000e-004**	**2.0000e-005**	**7.7000e-004**	**2.0000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.8127**	**0.8127**	**3.0000e-005**	**0.0000**	**0.8134**

IRWD Zone 6 and Zone 8 Operational Emissions

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.91	1000sqft	0.14	5,905.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Trips and VMT - Modified

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	12.00
tblConstructionPhase	NumDays	100.00	26.00
tblConstructionPhase	PhaseEndDate	2/23/2016	2/5/2016
tblConstructionPhase	PhaseStartDate	1/19/2016	1/1/2016

tblLandUse	LandUseSquareFeet	5,910.00	5,905.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	1.00	4.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00

2.0 Emissions Summary

2.1 Overall Operation (Maximum Daily Emission)

Unmitigated Operation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	0.0406	0.4308	0.4704	1.0900e-003	0.0304	6.7600e-003	0.0371	8.5900e-003	6.2100e-003	0.0148	0.0000	109.5540	109.5540	7.8000e-004	0.0000	109.5703
Total	**0.0406**	**0.4308**	**0.4704**	**1.0900e-003**	**0.0304**	**6.7600e-003**	**0.0371**	**8.5900e-003**	**6.2100e-003**	**0.0148**	**0.0000**	**109.5540**	**109.5540**	**7.8000e-004**	**0.0000**	**109.5703**

Mitigated Operation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	0.0406	0.4308	0.4704	1.0900e-003	0.0304	6.7600e-003	0.0371	8.5900e-003	6.2100e-003	0.0148	0.0000	109.5540	109.5540	7.8000e-004	0.0000	109.5703
Total	**0.0406**	**0.4308**	**0.4704**	**1.0900e-003**	**0.0304**	**6.7600e-003**	**0.0371**	**8.5900e-003**	**6.2100e-003**	**0.0148**	**0.0000**	**109.5540**	**109.5540**	**7.8000e-004**	**0.0000**	**109.5703**

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

3.0 Operation Detail

Operation Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Maintenance Trips	Building Construction	1/1/2016	1/18/2016	5	12	
2	Chemical Delivery Trips	Building Construction	1/1/2016	2/5/2016	5	26	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Chemical Delivery Trips	Cranes	0	4.00	226	0.29

Chemical Delivery Trips	Forklifts	0	6.00	89	0.20
Chemical Delivery Trips	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Maintenance Trips	Cranes	0	4.00	226	0.29
Maintenance Trips	Forklifts	0	6.00	89	0.20
Maintenance Trips	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Chemical Delivery Trips	0	0.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Maintenance Trips	0	0.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Operation

3.2 Maintenance Trips - 2016

Unmitigated Operation On-Site

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

Unmitigated Operation Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0350	0.3460	0.4089	8.7000e-004	0.0250	5.4800e-003	0.0305	7.1200e-003	5.0400e-003	0.0122		86.7436	86.7436	6.2000e-004		86.7565
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0350**	**0.3460**	**0.4089**	**8.7000e-004**	**0.0250**	**5.4800e-003**	**0.0305**	**7.1200e-003**	**5.0400e-003**	**0.0122**		**86.7436**	**86.7436**	**6.2000e-004**		**86.7565**

Mitigated Operation On-Site

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

Mitigated Operation Off-Site

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

Vendor	0.0350	0.3460	0.4089	8.7000e-004	0.0250	5.4800e-003	0.0305	7.1200e-003	5.0400e-003	0.0122		86.7436	86.7436	6.2000e-004		86.7565
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0350**	**0.3460**	**0.4089**	**8.7000e-004**	**0.0250**	**5.4800e-003**	**0.0305**	**7.1200e-003**	**5.0400e-003**	**0.0122**		**86.7436**	**86.7436**	**6.2000e-004**		**86.7565**

3.3 Chemical Delivery Trips - 2016

Unmitigated Operation On-Site

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

Unmitigated Operation Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.6200e-003	0.0848	0.0615	2.3000e-004	5.3600e-003	1.2700e-003	6.6400e-003	1.4700e-003	1.1700e-003	2.6400e-003		22.8105	22.8105	1.6000e-004		22.8139
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.6200e-003**	**0.0848**	**0.0615**	**2.3000e-004**	**5.3600e-003**	**1.2700e-003**	**6.6400e-003**	**1.4700e-003**	**1.1700e-003**	**2.6400e-003**		**22.8105**	**22.8105**	**1.6000e-004**		**22.8139**

Mitigated Operation On-Site

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

Mitigated Operation Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.6200e-003	0.0848	0.0615	2.3000e-004	5.3600e-003	1.2700e-003	6.6400e-003	1.4700e-003	1.1700e-003	2.6400e-003		22.8105	22.8105	1.6000e-004		22.8139
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**5.6200e-003**	**0.0848**	**0.0615**	**2.3000e-004**	**5.3600e-003**	**1.2700e-003**	**6.6400e-003**	**1.4700e-003**	**1.1700e-003**	**2.6400e-003**		**22.8105**	**22.8105**	**1.6000e-004**		**22.8139**

IRWD Zone 6 and Zone 8 Operational Emissions

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.91	1000sqft	0.14	5,905.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Trips and VMT - Modified

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	12.00
tblConstructionPhase	NumDays	100.00	26.00
tblConstructionPhase	PhaseEndDate	2/23/2016	2/5/2016
tblConstructionPhase	PhaseStartDate	1/19/2016	1/1/2016

tblLandUse	LandUseSquareFeet	5,910.00	5,905.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	1.00	4.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00

2.0 Emissions Summary

2.1 Overall Operation (Maximum Daily Emission)

Unmitigated Operation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	0.0448	0.4419	0.5620	1.0900e-003	0.0304	6.8200e-003	0.0372	8.5900e-003	6.2700e-003	0.0149	0.0000	108.7682	108.7682	8.0000e-004	0.0000	108.7850
Total	**0.0448**	**0.4419**	**0.5620**	**1.0900e-003**	**0.0304**	**6.8200e-003**	**0.0372**	**8.5900e-003**	**6.2700e-003**	**0.0149**	**0.0000**	**108.7682**	**108.7682**	**8.0000e-004**	**0.0000**	**108.7850**

Mitigated Operation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	0.0448	0.4419	0.5620	1.0900e-003	0.0304	6.8200e-003	0.0372	8.5900e-003	6.2700e-003	0.0149	0.0000	108.7682	108.7682	8.0000e-004	0.0000	108.7850
Total	**0.0448**	**0.4419**	**0.5620**	**1.0900e-003**	**0.0304**	**6.8200e-003**	**0.0372**	**8.5900e-003**	**6.2700e-003**	**0.0149**	**0.0000**	**108.7682**	**108.7682**	**8.0000e-004**	**0.0000**	**108.7850**

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

3.0 Operation Detail

Operation Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Maintenance Trips	Building Construction	1/1/2016	1/18/2016	5	12	
2	Chemical Delivery Trips	Building Construction	1/1/2016	2/5/2016	5	26	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Chemical Delivery Trips	Cranes	0	4.00	226	0.29

Chemical Delivery Trips	Forklifts	0	6.00	89	0.20
Chemical Delivery Trips	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Maintenance Trips	Cranes	0	4.00	226	0.29
Maintenance Trips	Forklifts	0	6.00	89	0.20
Maintenance Trips	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Chemical Delivery Trips	0	0.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Maintenance Trips	0	0.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Maintenance Trips - 2016

Unmitigated Operation On-Site

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

Unmitigated Operation Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0388	0.3542	0.4914	8.6000e-004	0.0250	5.5400e-003	0.0305	7.1200e-003	5.0900e-003	0.0122		86.0122	86.0122	6.3000e-004		86.0255
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0388**	**0.3542**	**0.4914**	**8.6000e-004**	**0.0250**	**5.5400e-003**	**0.0305**	**7.1200e-003**	**5.0900e-003**	**0.0122**		**86.0122**	**86.0122**	**6.3000e-004**		**86.0255**

Mitigated Operation On-Site

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

Mitigated Operation Off-Site

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

Vendor	0.0388	0.3542	0.4914	8.6000e-004	0.0250	5.5400e-003	0.0305	7.1200e-003	5.0900e-003	0.0122		86.0122	86.0122	6.3000e-004		86.0255
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0388**	**0.3542**	**0.4914**	**8.6000e-004**	**0.0250**	**5.5400e-003**	**0.0305**	**7.1200e-003**	**5.0900e-003**	**0.0122**		**86.0122**	**86.0122**	**6.3000e-004**		**86.0255**

3.3 Chemical Delivery Trips - 2016

Unmitigated Operation On-Site

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

Unmitigated Operation Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0100e-003	0.0877	0.0706	2.3000e-004	5.3600e-003	1.2800e-003	6.6400e-003	1.4700e-003	1.1800e-003	2.6400e-003		22.7561	22.7561	1.6000e-004		22.7595
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**6.0100e-003**	**0.0877**	**0.0706**	**2.3000e-004**	**5.3600e-003**	**1.2800e-003**	**6.6400e-003**	**1.4700e-003**	**1.1800e-003**	**2.6400e-003**		**22.7561**	**22.7561**	**1.6000e-004**		**22.7595**

Mitigated Operation On-Site

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

Mitigated Operation Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0100e-003	0.0877	0.0706	2.3000e-004	5.3600e-003	1.2800e-003	6.6400e-003	1.4700e-003	1.1800e-003	2.6400e-003		22.7561	22.7561	1.6000e-004		22.7595
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**6.0100e-003**	**0.0877**	**0.0706**	**2.3000e-004**	**5.3600e-003**	**1.2800e-003**	**6.6400e-003**	**1.4700e-003**	**1.1800e-003**	**2.6400e-003**		**22.7561**	**22.7561**	**1.6000e-004**		**22.7595**

IRWD Zone 6 and Zone 8 Operational Emissions

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.91	1000sqft	0.14	5,905.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**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 - modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Trips and VMT - Modified

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	12.00
tblConstructionPhase	NumDays	100.00	26.00
tblConstructionPhase	PhaseEndDate	2/23/2016	2/5/2016
tblConstructionPhase	PhaseStartDate	1/19/2016	1/1/2016

tblLandUse	LandUseSquareFeet	5,910.00	5,905.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	1.00	4.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00

2.0 Emissions Summary

2.1 Overall Operation

Unmitigated Operation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	3.0000e-004	3.3300e-003	3.7200e-003	1.0000e-005	2.2000e-004	5.0000e-005	2.7000e-004	6.0000e-005	5.0000e-005	1.1000e-004	0.0000	0.7392	0.7392	1.0000e-005	0.0000	0.7393
Total	**3.0000e-004**	**3.3300e-003**	**3.7200e-003**	**1.0000e-005**	**2.2000e-004**	**5.0000e-005**	**2.7000e-004**	**6.0000e-005**	**5.0000e-005**	**1.1000e-004**	**0.0000**	**0.7392**	**0.7392**	**1.0000e-005**	**0.0000**	**0.7393**

Mitigated Operation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	3.0000e-004	3.3300e-003	3.7200e-003	1.0000e-005	2.2000e-004	5.0000e-005	2.7000e-004	6.0000e-005	5.0000e-005	1.1000e-004	0.0000	0.7392	0.7392	1.0000e-005	0.0000	0.7393
Total	**3.0000e-004**	**3.3300e-003**	**3.7200e-003**	**1.0000e-005**	**2.2000e-004**	**5.0000e-005**	**2.7000e-004**	**6.0000e-005**	**5.0000e-005**	**1.1000e-004**	**0.0000**	**0.7392**	**0.7392**	**1.0000e-005**	**0.0000**	**0.7393**

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

3.0 Operation Detail

Operation Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Maintenance Trips	Building Construction	1/1/2016	1/18/2016	5	12	
2	Chemical Delivery Trips	Building Construction	1/1/2016	2/5/2016	5	26	

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 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Chemical Delivery Trips	Cranes	0	4.00	226	0.29

Chemical Delivery Trips	Forklifts	0	6.00	89	0.20
Chemical Delivery Trips	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Maintenance Trips	Cranes	0	4.00	226	0.29
Maintenance Trips	Forklifts	0	6.00	89	0.20
Maintenance Trips	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Chemical Delivery Trips	0	0.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Maintenance Trips	0	0.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Maintenance Trips - 2016

Unmitigated Operation On-Site

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

Unmitigated Operation 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	2.2000e-004	2.1700e-003	2.8300e-003	1.0000e-005	1.5000e-004	3.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.4705	0.4705	0.0000	0.0000	0.4706
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2000e-004**	**2.1700e-003**	**2.8300e-003**	**1.0000e-005**	**1.5000e-004**	**3.0000e-005**	**1.8000e-004**	**4.0000e-005**	**3.0000e-005**	**7.0000e-005**	**0.0000**	**0.4705**	**0.4705**	**0.0000**	**0.0000**	**0.4706**

Mitigated Operation On-Site

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

Mitigated Operation 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	2.2000e-004	2.1700e-003	2.8300e-003	1.0000e-005	1.5000e-004	3.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.4705	0.4705	0.0000	0.0000	0.4706
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2000e-004**	**2.1700e-003**	**2.8300e-003**	**1.0000e-005**	**1.5000e-004**	**3.0000e-005**	**1.8000e-004**	**4.0000e-005**	**3.0000e-005**	**7.0000e-005**	**0.0000**	**0.4705**	**0.4705**	**0.0000**	**0.0000**	**0.4706**

3.3 Chemical Delivery Trips - 2016

Unmitigated Operation On-Site

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

Unmitigated Operation 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	8.0000e-005	1.1600e-003	8.9000e-004	0.0000	7.0000e-005	2.0000e-005	9.0000e-005	2.0000e-005	2.0000e-005	3.0000e-005	0.0000	0.2687	0.2687	0.0000	0.0000	0.2688
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.0000e-005**	**1.1600e-003**	**8.9000e-004**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**9.0000e-005**	**2.0000e-005**	**2.0000e-005**	**3.0000e-005**	**0.0000**	**0.2687**	**0.2687**	**0.0000**	**0.0000**	**0.2688**

Mitigated Operation On-Site

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

Mitigated Operation 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	8.0000e-005	1.1600e-003	8.9000e-004	0.0000	7.0000e-005	2.0000e-005	9.0000e-005	2.0000e-005	2.0000e-005	3.0000e-005	0.0000	0.2687	0.2687	0.0000	0.0000	0.2688
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.0000e-005**	**1.1600e-003**	**8.9000e-004**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**9.0000e-005**	**2.0000e-005**	**2.0000e-005**	**3.0000e-005**	**0.0000**	**0.2687**	**0.2687**	**0.0000**	**0.0000**	**0.2688**

May 11, 2015
Prepared by: M. Hoolihan
Submitted by: K. Burton/C. Clary CC
Approved by: Paul Cook P. Cook.

ACTION CALENDAR

MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF ORANGE AND THE IRVINE RANCH WATER DISTRICT REGARDING THE PROVISION OF SEWER SERVICE IN THE CITY OF ORANGE SPHERE OF INFLUENCE

SUMMARY:

On January 13, 2015, the Orange City Council voted to support IRWD's LAFCO application to provide sewer service to Orange County Sanitation District Service Area 7 (Service Area 7), subject to the following conditions:

- IRWD submitting a formal application; and
- IRWD signing a Memorandum of Understanding (MOU) with the City of Orange (City) to facilitate a future agreement with the City that would allow the City to take over sewer service in areas currently in the City's sphere of influence (SOI) if those areas were ever annexed to the City.

On March 23, 2015, staff submitted an application to LAFCO to provide sewer service to Service Area 7. To facilitate the letter of support from the City, staff recommends that the Board approve an MOU with the City. The proposed MOU is attached as Exhibit "A".

BACKGROUND:

Service Area 7 includes territory located in the City of Tustin and unincorporated county areas within the spheres of influence of Tustin and Orange. A portion of this overlaps IRWD service boundary in the city of Tustin. This area is currently served by Orange County Sanitation District (OCSD) for both regional conveyance and treatment, and local sewer services.

In March 2014, the East Orange County Water District (EOCWD) filed an application with Orange County Local Agency Formation Commission (LAFCO) to provide local retail sewer services to Service Area 7. In order to review EOCWD's application, LAFCO initiated a Municipal Service Review (MSR) for Service Area 7. As part of the MSR process, LAFCO identified Tustin, Orange and IRWD as stakeholders and requested participation in the review process. As part of IRWD's review of the existing sewer service and EOCWD's proposal for future sewer service, IRWD requested to be considered as an alternative sewer service provider for this area.

At the January 13, 2015 Orange City Council meeting, EOCWD requested a letter of support for their application to provide sewer services to Service Area 7. The council voted to support the EOCWD application and to support a future IRWD application when IRWD submitted one. The City requested both IRWD and EOCWD sign separate similar MOUs that would facilitate a future agreement to allow the City to take over sewer service to any area in the City's SOI that are annexed into the City in the future. The MOU states if IRWD becomes the sewer service

provider for Service Area 7, IRWD agrees to negotiate a final agreement with the City which will include the following provisions:

- If any portion of the Orange SOI is annexed to the City, IRWD would not oppose its detachment of that area and that IRWD would not require compensation for transferring the local sanitary sewers to the City;
- IRWD would transfer a proportional share of the reserve balance collected from the parcels within the City's SOI, (estimated to be 5% of the IRWD reserves accrued from SA7) to the City; and
- IRWD agrees to maintain the infrastructure within the Orange SOI Area at or above industry standards and to make any necessary repairs prior to transferring the Orange SOI to the City.

On March 23, 2015, IRWD submitted the LAFCO application, fees, and Plan of Service to LAFCO to expand its service boundary to provide sewer services to Service Area 7. As instructed by the City Council, City staff prepared the attached MOU, and will prepare a letter of support for IRWD's application when the MOU is submitted.

This item was reviewed by IRWD's legal counsel.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

This project is exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15301 and Section 15320. Section 15301 provides exemption for minor alterations of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. Section 15320 provides exemption for changes in the organization of local government agencies that are not changing the geographical area in which previously existing powers are exercised. A Notice of Exemption for the project was filed with the County of Orange Clerk/Recorder on February 24, 2015.

COMMITTEE STATUS:

This item was not reviewed by a Committee.

RECOMMENDATION:

THAT THE BOARD AUTHORIZE THE GENERAL MANAGER TO EXECUTE A MEMORANDUM OF UNDERSTANDING BETWEEN THE IRVINE RANCH WATER DISTRICT AND THE CITY OF ORANGE REGARDING THE PROVISION OF SEWER SERVICE IN THE CITY OF ORANGE SPHERE OF INFLUENCE, SUBJECT TO NON-SUBSTANTIVE CHANGES.

LIST OF EXHIBITS:

Exhibit "A" - MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF ORANGE AND THE IRVINE RANCH WATER DISTRICT REGARDING THE PROVISION OF SEWER SERVICE IN THE CITY OF ORANGE SPHERE OF INFLUENCE

MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF ORANGE AND THE IRVINE RANCH WATER DISTRICT REGARDING THE PROVISION OF SEWER SERVICE IN THE CITY OF ORANGE SPHERE OF INFLUENCE

THIS MEMORANDUM OF UNDERSTANDING ("Agreement") is made and entered into as of _____, 2015 (the "Effective Date"), by and between the City of Orange ("the City") and the Irvine Ranch Water District ("IRWD" or "the District"). The City and the District are referred to collectively as "the Parties."

RECITALS

A. The Orange County Sanitation District ("OCSD") owns and operates regional wastewater collection, conveyance, treatment, and disposal facilities within its service area and also owns and operates local wastewater collection and conveyance systems in certain portions of its service area, including an area encompassing approximately 174 linear miles of sewer within an area that OCSD designates as Service Area 7 ("SA 7"). OCSD is desirous of transferring the ownership of and operating responsibilities for SA 7.

B. 1. IRWD is pursuing a proposal with the Orange County Local Agency Formation Commission ("LAFCO") to take over responsibility for providing "retail" sewer service to the territory that makes up SA 7 by annexing certain territory that is not currently within IRWD's service area boundary and sphere of influence.

2. Some of the territory that IRWD proposes for reorganization is outside of the City but within the City's Sphere of Influence (the "Orange SOI Area," which is depicted in Exhibit A) and, although the territory in question is outside of the City's boundaries, the City provides the property within the territory with water service. These areas are referenced as numbers 1, 2, 3, 4, 5 and 6 on Exhibit A and represent 5% of the total service area of SA7.

3. The City desires to protect its future annexation rights of the Orange SOI Area.

4. The purpose of this agreement is to reduce to writing the terms of the agreement that the Parties would enter into should the proposal be approved and the City's obligation to support the IRWD proposal to LAFCO.

AGREEMENT

Based upon the above recitals and based on the good and valuable consideration set forth herein, it is mutually agreed upon by and between the Parties hereto as follows:

1. *Support of IRWD Proposal.* The City agrees to support, and not oppose, IRWD's pending LAFCO proposal (even if amended in non-material respects by LAFCO) ("the Proposal").

2. *Agreement.* If the Proposal is approved, IRWD shall enter into an agreement on the following general terms:

2.1 In the event that any portion of the Orange SOI Area is annexed to the City, IRWD would not oppose its detachment from that portion of the Orange SOI Area and that IRWD would not require compensation for transferring the local sanitary sewers to the City.

2.2 Upon the events described in 2.1 occurring, IRWD would transfer 5% of the IRWD reserves accrued from SA7 to City.

2.3 IRWD agrees to maintain the infrastructure within the Orange SOI Area at or above industry standards and to make any necessary repairs prior to transferring the Orange SOI to City. City retains the right to video camera the infrastructure within the Orange SOI Area to verify the condition of the infrastructure prior to City's acceptance.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the Effective Date.

CITY OF ORANGE

By:_____
Rick Otto
Its: Interim City Manager

IRVINE RANCH WATER DISTRICT

By:_____
Its: General Manager