4.0 PROJECT IMPACT ANALYSIS

The Project would result in both construction and operational emissions. Construction emissions include short-term emissions associated with mass grading, infrastructure installation and structure development from the Project. Operational emissions include long-term emissions associated with the Project, including energy usage and traffic, at full Project buildout.

4.1 Conformance to the Regional Air Quality Strategy

4.1.1 Issue Background

The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for ozone. In addition, the SDAPCD relies on the SIP, which includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. These plans accommodate emissions from all sources, including natural sources, through implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and the CARB, and the emissions and reduction strategies related to mobile sources are considered in the RAQS and SIP.

The RAQS relies on information from CARB and SANDAG, including projected growth in the County, mobile, area and all other source emissions in order to project future emissions and determine from that the strategies necessary for the reduction of stationary source emissions through regulatory controls. The CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project proposes development which is less dense than anticipated within the General Plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the County General Plan and SANDAG's growth projections upon which the RAQS is based, the project would be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality. This situation would warrant further analysis to determine if the Project and the surrounding projects exceed the growth projections used in the RAQS for the specific subregional area.

4.1.2 Significance of Impacts Prior to Mitigation

The Project involves a Specific Plan and General Plan Amendment, and is proposing more intense residential development than accounted for in the General Plan, and therefore, the 2009 RAQS. The Project is located in the North County East Major Statistical Area, in the San Marcos and Escondido Subregional Areas. The current 2009 RAQS are based on projections for residential, commercial, industrial and recreational land uses contained in the County's previous General Plan (prior to 2011) that was in place at the time the RAQS were adopted in 2009. It should be noted that population and vehicle miles traveled (VMT) growth projections in SANDAG's 2030 Regional Transportation Plan was used in the 2009 RAQS. In relation to the residential developments, the General Plan and 2030 RTP projected lower population (i.e., number of residences) at buildout than the Project. Implementation of the

Project would result in greater residential DUs and in the unincorporated area of the County than assumed in the General Plan and 2030 RTP.

The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for ozone. The RAQS relies on SANDAG growth projections based on population, vehicle trends, and land use plans developed by the cities and by the county as part of the development of their general plans and specific plans.

For the Project, the total number of DUs for residential land uses is proposed to increase from 118 to 334 units. While potential conflicts with the RAQS may occur when a proposed development, such as Valiano, seeks to increase the number of units which were in effect at the time the RAQS were formulated, the effect on anticipated population is also important. With respect to this second factor, it is important to note that the population of San Diego County has not reached the maximum level assumed by the latest version of the RAQS (2009). The 2030 RTP, which was adopted in 2009 (the same year when the RAQS were last updated), predicted a population for the year 2010 of 3,245,279 in San Diego County. However, according to the California Department of Finance, the population of San Diego County as of July 1, 2011 was 3,131,254. The additional 216 residential units proposed by the Project would result in an increase of 594 residents to the County, which could be accommodated within the 114,025-person surplus between projected and actual population growth.

The total cumulative housing projected for the San Marcos and Escondido Subregional Areas for 2030, according to SANDAG projections used for the 2030 RTP, is an additional 38,160 DUs. The Project's projected growth of net increase 216 DUs, when added to the cumulative housing units projected for the San Marcos and Escondido Subregional Areas (based on the cumulative projects identified in the Valiano TIA (LLG 2015), totals 567 DUs, which is below SANDAG's 2030 projected growth for the North County East Major Statistical Area of 54,251 DUs, and less than SANDAG's 2030 projected growth of 38,160 dwelling units for the San Marcos and Escondido Subregional Areas.

The current population and housing in San Diego County are lower than what was projected for the region, and therefore it is unlikely that the additional units from the Project would interfere with the SDAPCD's goals for improving air quality in the SDAB. However, because the Project is proposing an increase in housing units beyond what was included for the site in the 2009 RAQS, impacts associated with conformance to regional air quality plans would be potentially significant.

4.1.3 Mitigation Measures and Design Considerations

The Project would be developed to include smart growth concepts which clusters residential uses around services and jobs such as the nearby Palomar Medical Hospital, Palomar Power Plant, Stone Brewery, and other variety of manufacturing, retail, and office business park at approximately within one mile in travel distance, which in return helps to reduce the average VMT for the average commuter. General Plan, Goal COS-13 regarding land use development implements policies is designed to reduce emissions of criteria pollutants while protecting public health (County 2011a). These policies include the following:

COS-13.1 **Design and Construction of New Development.** Require new development design and construction methods to minimize impacts to air quality.

COS-13.4 **Minimize Air Pollution.** Minimize land use conflicts that expose people to significant amounts of air pollution.

The CalEEMod modeling analysis was conducted using conservative approach and would include features such as a variety of energy-efficient building materials, solar ready roofs, and energy star appliances. Because the Project addresses several RAQS control measures and the General Plan goals that are relevant to the Project site, there are no additional measures available.

4.1.4 Conclusions

The Proposed Project would not conform with the RAQS and SIP and would result in a significant and unavoidable impact.

4.2 Conformance to Federal and State Ambient Air Quality Standards

4.2.1 Construction Impacts

Issue Background

Based on the County Guidelines (2007), construction impacts would be potentially significant if they exceed the quantitative screening-level thresholds for attainment/maintenance pollutants (NO_2, SO_2, and CO), and would result in a significant impact if they exceed the screening-level thresholds for nonattainment pollutants (ozone precursors and particulate matter).

4.2.1.1 *Guidelines for the Determination of Significance*

Would the project construction result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related impacts. However, the SDAPCD does specify AQIA trigger levels for new or modified stationary sources (SDAPCD Rules 20.2 and 20.3). If these incremental levels for stationary sources are exceeded, an AQIA must be performed for the proposed new or modified source. Although these trigger levels do not generally apply to mobile sources or general land development projects, for comparative purposes these levels may be used to evaluate the increased emissions that would be discharged to the SDAB from proposed land development projects.

SDAPCD Rule 20.2, which outlines these significance level thresholds (SLT), states that any project "which results in an emissions increase equal to or greater than any of these levels, must:

demonstrate through an AQIA... that the project will not (A) cause a violation of a State or national ambient air quality standard anywhere that does not already exceed such standard, nor (B) cause additional violations of a national ambient air quality standard anywhere the standard is already being exceeded, nor (C) cause additional violations of a State ambient air quality standard anywhere the standard is already being exceeded, nor (D) prevent or interfere with the attainment or maintenance of any State or national ambient air quality standard."

For projects whose stationary source emissions are below these criteria, no AQIA is typically required, and project-level emissions are presumed to be less than significant.

For CEQA purposes, these SLTs can be used to demonstrate that a project's total emissions (e.g., stationary and fugitive emissions, as well as emissions from mobile sources) would not result in a significant impact to air quality. When project emissions have the potential to approach or exceed the SLTs, additional air quality modeling may need to be prepared to demonstrate that ground-level concentrations resulting from project emissions (with background levels) would be below federal and state ambient air quality standards listed in Table 6.

SDAPCD Rules 20.2 and 20.3 do not have AQIA thresholds for emissions of VOCs and $PM_{2.5}$. The use of the screening level for VOCs specified by the South Coast Air Quality Management District (SCAQMD), which generally has stricter emissions thresholds than SDAPCD's, is recommended for evaluating projects in San Diego County.

In the event that Project emissions exceed these SLTs, specific modeling would be required for NO_2, SO_2, CO, and lead to demonstrate that the project's ground-level concentrations, including appropriate background levels, do not exceed the NAAQS and CAAQS. For ozone precursors, PM_{10} and $PM_{2.5}$, exceedance of the SLTs results in a significant impact. The reason for this is that the SDAB is currently not in attainment for PM_{10}, $PM_{2.5}$, and ground-level ozone. Therefore, unless a project includes design considerations or mitigation measures that would reduce the daily emissions to below the applicable screening levels, the impact for these pollutants (ozone precursors, PM_{10}, and $PM_{2.5}$) would be significant, as discussed below.

Ozone Precursors

- Would the project result in emissions that exceed 250 pounds per day of NO_X, or 75 pounds per day of VOCs?

Carbon Monoxide

- Would the project result in emissions that exceed 550 pounds per day of CO, and when totaled with the ambient concentrations exceed a 1-hour concentration of 20 ppm or an 8-hour average of 9 ppm?

Particulate Matter

- Would the project result in emissions of $PM_{2.5}$ that exceed 55 pounds per day?

- Would the project result in emissions of PM_{10} that exceed 100 pounds per day and increase the ambient PM_{10} concentration by 5.0 µg/m^3 or greater at any sensitive receptor locations (or maximum exposed individual (MEI), a term commonly used by CARB for sensitive receptors)?

The ambient air quality standards reflect actual concentrations for each criteria pollutant. However, it is not economically feasible for individual land use projects to model actual concentrations for ozone based on emissions of its precursors due to the complex regional nature of ozone formation in the atmosphere. Therefore, exceedance of the SLTs for NO_X and VOCs would result in a significant impact unless mitigation is incorporated that would reduce the emissions of these pollutants below the level of the screening thresholds.

4.2.1.2 *Significance of Impacts Prior to Mitigation*

The construction activities associated with the Project would create diesel emissions, and would generate emissions of dust. In general, emissions from diesel-powered equipment contain more NO_X, oxides of sulfur (SO_X), and particulate matter than gasoline-powered engines. However, diesel-powered engines generally produce less CO and less reactive organic gases than do gasoline-powered engines. Standard construction equipment includes dozers, rollers, scrapers, backhoes, loaders, paving equipment, delivery/haul trucks, and so on. Emissions associated with construction of the Project were calculated using the CalEEMod computer program assuming that construction duration period would begin in January 2016 and last until mid-2019.

Construction Phasing

For the purpose of the analysis, Project construction is broken down into three main construction phases, with five individual neighborhoods to be constructed separately (with the exception of Neighborhoods 1 and 5, which would be constructed together). The first phase focuses on overall site grading and rock blasting, which would begin in 2016 and last approximately two years. The second phase would be the infrastructure installation, which includes the construction of the WTWRF, utility connections, and roadways. The infrastructure phase would last approximately one year. The third phase addresses "vertical" development of the Project, which includes constructing the residential buildings and coating the pavement/architecture, which would take approximately 2.5 years.

Table 6 presents the anticipated construction schedule that was generated by CalEEMod model to calculate the daily emissions. Default values were used for the number of work days per week and total length of days per year based on the size of the development. For the Roadway Construction Model, the duration of construction activity was assumed to occur in three months. CalEEMod construction emission calculations are provided in Appendix A and roadway construction emissions are provided in Appendix B.

Table 6 **ANTICIPATED CONSTRUCTION SCHEDULE**				
Component	**Construction Activity**	**Construction Period**		
		Start	**End**	**Number of Working Days**
Phase 1 – Grading and Blasting				
Neighborhoods 1 & 5	Site Prep	1/5/2016	2/13/2016	30
	Grading	2/16/2016	5/29/2016	75
Neighborhood 2	Site Prep	6/27/2016	7/10/2016	10
	Grading	7/11/2016	8/21/2016	30
	Drilling and Blasting	7/11/2016	8/21/2016	30
Neighborhood 3	Site Prep	1/2/2017	1/15/2017	10
	Grading	1/16/2017	3/4/2017	35
	Drilling and Blasting	1/16/2017	2/26/2017	30
Neighborhood 4	Site Prep	7/4/2017	7/29/2017	20
	Grading	8/1/2017	9/30/2017	45
	Drilling and Blasting	8/1/2017	9/9/2017	30
Phase 2 – Infrastructure, Road Construction and WTWRF Installation				
Neighborhoods 1 & 5	Backbone Infrastructure	7/6/2016	11/2/2016	86
Wastewater	Demolition	7/6/2016	7/19/2016	10
	Site Preparation	7/20/2016	7/20/2016	1
	Grading	7/21/2016	7/22/2016	2
	Building Construction	7/23/2016	12/9/2016	100
	Paving	12/10/2016	12/16/2016	5
	Architectural Painting	12/17/2016	12/23/2016	5
Road Construction	Grubbing/Land Clearing	1/1/2017	1/10/2017	9
	Grading/Excavation	1/12/2017	2/22/2017	41
	Drainage/Utilities	2/22/2017	3/20/2017	27
	Paving	3/21/2017	4/4/2017	14
Neighborhood 2	Backbone Infrastructure	1/1/2017	4/29/2017	86
Neighborhood 3	Backbone Infrastructure	1/1/2017	4/29/2017	86
Neighborhood 4	Backbone Infrastructure	1/2/2018	5/1/2018	86
Phase 3 – Vertical Development				
Neighborhoods 1 & 5	Building Construction	11/2/2016	10/11/2017	247
	Paving	11/2/2016	10/11/2017	247
	Architectural Painting	2/1/2017	10/11/2017	182
Neighborhood 2	Building Construction	10/12/2017	1/24/2018	75
	Paving	10/12/2017	1/24/2018	75
	Architectural Painting	12/12/2017	1/24/2018	32

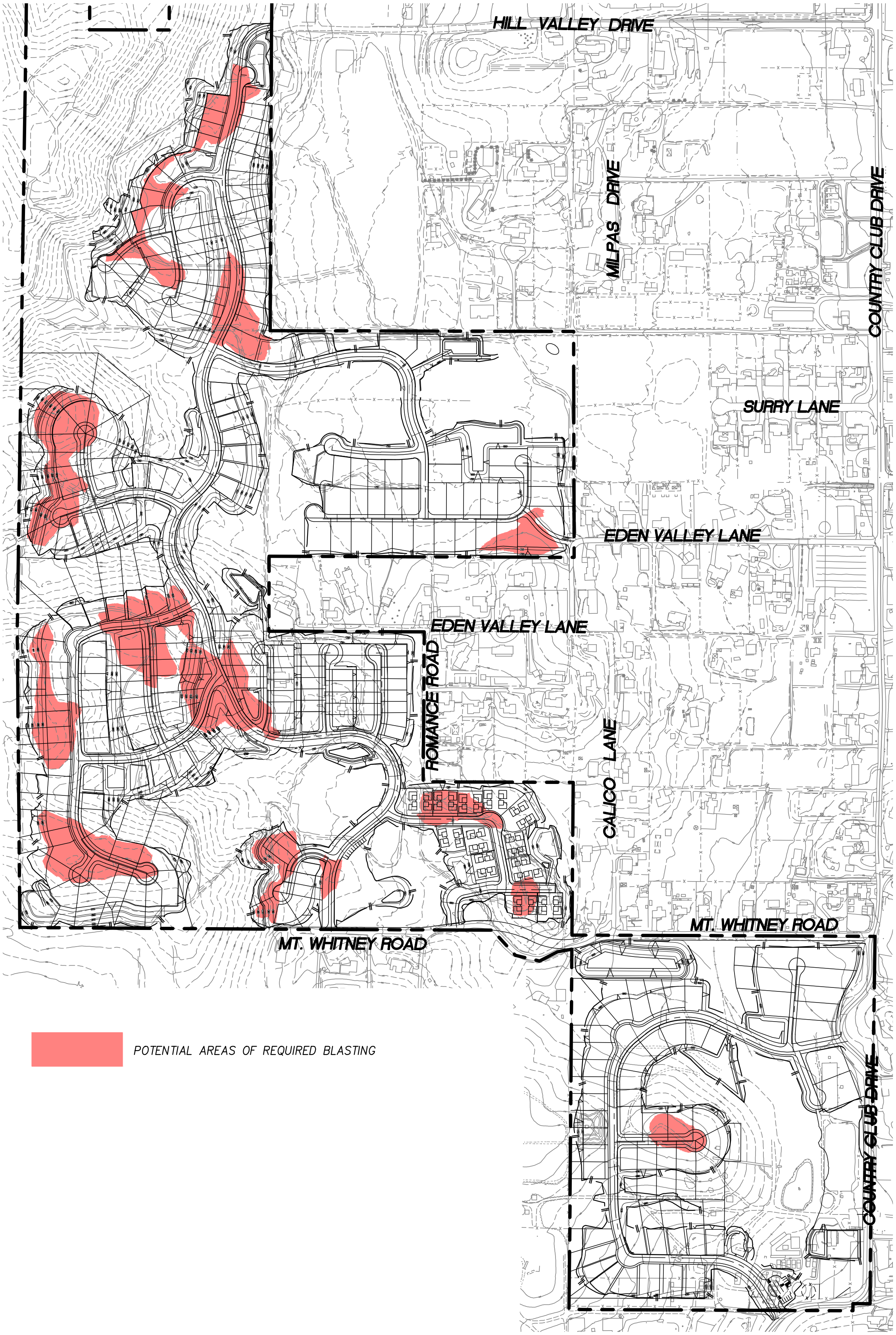
Table 6 (cont.) ANTICIPATED CONSTRUCTION SCHEDULE				
Component	**Construction Activity**	**Construction Period**		
		Start	**End**	**Number of Working Days**
Phase 2 – Infrastructure, Road Construction and WTWRF Installation (cont.)				
Neighborhood 3	Building Construction	1/25/2018	10/10/2018	185
	Paving	1/25/2018	10/10/2018	185
	Architectural Painting	4/24/2018	10/10/2018	122
Neighborhood 4	Building Construction	10/11/2018	5/31/2019	167
	Paving	10/11/2018	5/31/2019	167
	Architectural Painting	1/08/2019	5/31/2019	104

Notes:
Project grading would encompass four distinct subphases requiring six to eight months duration with Neighborhoods 1 and 5 to include 165 DUs, 58 DUs in Neighborhood 2, 35 DUs in Neighborhood 3, and 76 DUs in Neighborhood 4. Construction of Project infrastructure would involve three stages extending over approximately one year, with Stage 1 encompassing Neighborhoods 1 and 5, Stage 2 including Neighborhoods 2 and 3, and Stage 3 encompassing Neighborhood 4. Vertical building for all five neighborhoods would extend up to approximately 2.5 years during Phase 3.
At any given time, the maximum acreage disturbed would be up to 25 acres per day.

Blasting

Blasting may be required at the site during initial site preparation and grading activity. Areas of the Project site that will be subject to rock cut and blasting are shown on Figure 6. Blasting operations would be conducted through the use of drilling and blasting to fracture rocks. At this time the exact amount of blasting has not been determined, however, it is assumed that approximately two to three blasting events may occur each week. Blasting operations would be conducted by a licensed blasting contractor, in strict compliance with pertinent federal, state, and county requirements. All blasting materials would be transported to the site for each blasting sequence and no explosives would be stored at the site. A single drill rig would be used to drill a pattern of bore holes each with a 3- to 6-inch diameter. Several holes are drilled in a 400 square-foot-area. Typically, the pattern is laid out in a 20-by-20-foot grid, with up to approximately 25-foot-deep holes. A contractor then loads the holes with carefully metered explosives. The “shot” is timed to detonate each hole(s) in sequence. This minimizes the ground vibration and noise of the blast, while maximizing fracture of the rock. Some dust is created as a result of the blast. However, the dust would be fully dissipated within 30 to 60 seconds following the shot. The rock would be broken up to sizes less than 18 inches in diameter.

Following blasting, the rock resource would be fractured and can be moved with conventional earthmoving equipment. A front-end loader will be used to spread the fractured rocks around the site for balanced cut/fill grading. A summary of the balanced soil cut/fill for each neighborhood is provided in Table 7 below:



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Source: Fuscoe Engineering 2014

Site Areas with Rock Cut and Blasting

VALIANO

HELIX Environmental Planning

Figure 6

Table 7 **EARTHWORK QUANTITIES BY NEIGHBORHOOD**			
Neighborhood	**Quantity (cubic yards)**		
	Cut	**Fill**	**Net**
Neighborhood 1	146,000	137,00	9,000 Export to N3
Neighborhood 2	288,000	244,000	44,000 Export to N3
Neighborhood 3	62,000	115,000	53,000 Import from N1 and N2
Neighborhood 4	308,000	308,000	0
Neighborhood 5	124,000	124,000	0
TOTAL	**928,000**	**928,000**	**0**

Fugitive dust emissions associated with blasting can be estimated based on the USEPA's emission factor for blasting for coal mining to remove overburden, which is a similar process. According to Section 11.9 of AP-42, emissions from blasting would be calculated as follows:

Pounds (lbs) PM_{10}/blast = $0.000014(A)^{1.5}$ x 0.52 lbs PM_{10}/lbs total suspended particulates (TSP)

Where:

A is the area of blasting, which is approximately 400 square feet.

The Project would utilize ammonium nitrate/fuel oil (ANFO) explosives to conduct blasting on site. Based on the USEPA's AP-42 Section 13.3 emission factors, emissions from use of ANFO are estimated at 67 lbs CO per ton of explosive, and 17 lbs NO_X per ton of explosive. Based on typical construction projects, it was estimated that a maximum of 2,500 lbs/day (or 1.25 tons per day) could be used at the site; thus, the maximum daily emissions due to the use of ANFO would be 83.75 lbs/day of CO and 21 lbs/day of NO_X. The emission calculations for the drilling and blasting activities are provided in Appendix C.

Infrastructure Installation (Utilities, Roads, and WTWRF)

Following the mass grading and rock blasting, backbone infrastructure would be installed. This would consist of all the elements necessary to support developed uses on site, such as construction of roads, off-site connections to a potable water source and sewer lines, the construction of the WTWRF and associated pump stations, and the connection of all utility lines between these facilities and the Project boundary.

Dedication of Project biological open space areas would also occur as a first action during this phase, with concurrent monitoring of construction activities adjacent to any open space set aside. In order to provide a conservative assessment of potential emissions of criteria pollutants, the worst-case (peak) construction day was analyzed for this phase.

The proposed site of the WTWRF is currently occupied by the existing horse equestrian facility. Several horse stalls will be demolished during Phase 2. Because of the lack of specific details for the WTWRF, the default CalEEMod data was used to estimate the construction emissions. It is known that the construction of WTWRF would occur on approximately 0.4-acre lot (i.e., approximately 20,000 square feet for General Light Industrial) with approximately 6 months of construction activity was used in the CalEEMod construction modeling analysis.

The emissions of criteria pollutants from the construction activities for the off-site roadway areas were calculated using the Road Construction Emissions Model Version, 7.1.5.1, developed by Sacramento Metropolitan Air Quality Management District (SMAQMD). This model is typically used instead of (or in addition to) CalEEMod for linear roadway-type construction projects (SMAQMD, 2013). Earthwork for the offsite road improvements would be balanced for Hill Valley Road and would include 6,200 cubic yards (cy) of export for Mt. Whitney Road. Appendix B presents the Roadway Construction emission modeling output data.

Vertical Construction

Vertical construction of buildings is anticipated to take 2.5 years. The plan assumes that the residential neighborhoods would be constructed sequentially; however, the specific order of development would be market driven and cannot be specified at this time. This plan anticipates that Neighborhoods 1 and 5 would be developed first, Neighborhood 2 would be developed second, Neighborhood 3 would be developed third, and Neighborhood 4 would be developed last. As a result, building construction for some neighborhoods may overlap with previously constructed neighborhoods that are occupied and in operation.

Modeling Assumptions

The following options were selected in the CalEEMod model: site preparation, grading, trenching (backbone infrastructure), building construction, paving, and architectural coatings. Grading activity would be substantially balanced, meaning that no significant quantity of soil would be transported off site for disposal nor would soil be transported on site for use in construction activities.

Although it was assumed that all of the dust control measures listed in Section 1.3 of this report would be implemented, to model the most conservative construction estimates, only application of water during grading was taken into consideration when applying a control efficiency on particulate emissions. Based on the CalEEMod, Version 2013.2.2, the control efficiency for watering two times daily is 55 percent. For conservative purposes, the other control measures were not accounted for in the construction emission calculations.

Coatings used for the Project would have to conform to the SDAPCD Rule 67, which prohibits the use of architectural coatings (i.e., paints) that would exceed VOC content limits specified for each coating category in the rule. For modeling the Project's emissions in CalEEMod, conformance with these rules was therefore assumed. According to Rule 67, residential interior and exterior coatings must have a VOC content less than or equal to 100 g/L, and non-residential exterior and interior coatings must have a content less than or equal to 250 g/L. The quantities of coatings that would be applied to the interior and exterior of the new buildings were estimated from the area of the surfaces to be coated and the required thickness of the coating. According to Section 4.7, Architectural Coatings, of Appendix A of the CalEEMod User's Guide, the program assumes the total residential surface area for painting equals 2.7 times the floor square footage. Applying that factor to the 1,800 square feet per single family dwelling unit listed in Table 2.1 of Appendix D of the CalEEMod User's Guide results in a default assumption that each single family residence would require approximately 4,860 square feet of paint coating.

Construction of the Proposed Project would require paving surface streets with asphalt. Asphaltic paving generates VOC emissions when the asphalt cures. VOC emissions from the paving were calculated using the CalEEMod default emission factors. According to the CalEEMod model, emissions from asphalt off-gassing can be estimated by assuming an emission rate of 2.62 lbs/acre of area to be paved. The amount to be paved was estimated to be 1 acre per day during the paving construction phase.

Construction would require heavy equipment during mass grading, utility installations, building construction and paving. Construction equipment estimates are based on project assumptions provided and default values in the CalEEMod, Version 2013.2.2 model. Beginning January 1, 2013, CARB requires all off-road equipment greater than 50 horsepower (hp) to comply with the USEPA Tier 2 through 4 engine emission standards and install PM filter devices. Table 8 presents a summary of the assumed equipment that would be involved in each stage of construction. Appendix A presents the CalEEMod construction emission modeling output data.

The engines of on-site construction equipment produce combustion emissions. Depending on the construction phase, construction equipment may include air compressors, lifts, boom trucks, cranes, graders, excavators, backhoes, loaders, welders, generators, and concrete pumps. The CalEEMod and Road Construction models provided the default list on the types and number of pieces of construction equipment to be used during each construction phase. The equipment was assumed to operate at a typical 8 hours per day schedule. Emission factors based on the CARB OFFROAD 2011 model were used to calculate construction equipment emissions. Because the project applicant currently anticipates that construction would occur in 2016, 2017, 2018, and 2019, emission factors for OFFROAD equipment for scenario years 2016, 2017, 2018, and 2019 were used.

All construction equipment operating on the Project site should meet USEPA-Certified Tier 4 emissions standards. In addition, all construction equipment would be outfitted with best available control technology (BACT) devices certified by the CARB. Any emissions control device used by the contractor would achieve emissions reductions that are no less than what could be achieved by a Level 2 diesel emissions control strategy for a similarly sized engine in accordance with the CARB regulations.

Table 8
CONSTRUCTION STAGES AND EQUIPMENT REQUIREMENTS

Off-road Equipment Type	Horsepower	Site Prep and Grading		Backbone Infrastructure		Building Construction		Paving		Architectural Coatings	
		Pieces	Hours	Pieces	Hours	Pieces	Hours	Pieces	Hours	Pieces	Hours
Aerial Lift	63	-	-	-	-	-	-	-	-	-	-
Air Compressors	78	-	-	-	-	-	-	-	-	1	6
Bore/Drill Rigs	206	-	-	-	-	-	-	-	-	-	-
Cement and Mortar Mixers	9	-	-	-	-	-	-	-	-	-	-
Cranes	226	-	-	-	-	4	7	-	-	-	-
Crawler Tractors	208	-	-	-	-	-	-	-	-	-	-
Dumpers/Tenders	16	-	-	-	-	-	-	-	-	-	-
Excavators	162	2	8	-	-	-	-	-	-	-	-
Forklifts	89	-	-	1	8	12	8	-	-	-	-
Generator Sets	84	-	-	-	-	4	8	-	-	-	-
Graders	174	1	8	-	-	-	-	-	-	-	-
Off-Highway Tractors	123	-	-	-	-	-	-	-	-	-	-
Off-Highway Trucks	400	-	-	2	8	-	-	-	-	-	-
Other Construction Equipment	172	-	-	-	-	-	-	-	-	-	-
Other General Industrial Equipment	88	-	-	-	-	-	-	-	-	-	-
Other Material Handling Equipment	167	-	-	1	8	-	-	-	-	-	-
Pavers	125	-	-	-	-	-	-	2	8	-	-
Paving Equipment	130	-	-	-	-	-	-	2	8	-	-
Plate Compactors	8	-	-	-	-	-	-	-	-	-	-
Pressure Washers	13	-	-	-	-	-	-	-	-	-	-
Pumps	84	-	-	-	-	-	-	-	-	-	-
Rollers	80	-	-	-	-	-	-	-	-	2	8
Rough Terrain Forklifts	100	-	-	-	-	-	-	-	-	-	-
Rubber Tired Dozers	255	4	8	-	-	-	-	-	-	-	-
Rubber Tired Loaders	200	-	-	-	-	-	-	-	-	-	-

Table 8 (cont.) CONSTRUCTION STAGES AND EQUIPMENT REQUIREMENTS												
Off-road Equipment Type	**Horsepower**	**Site Prep and Grading**		**Backbone Infrastructure**		**Building Construction**		**Paving**		**Architectural Coatings**	
		Pieces	**Hours**	**Pieces**	**Hours**	**Pieces**	**Hours**	**Pieces**	**Hours**	**Pieces**	**Hours**
Scrapers	361	2	8	-	-	-	-	-	-	-	-
Signal Boards	6	-	-	-	-	-	-	-	-	-	-
Skid Steer Loaders	65	-	-	-	-	-	-	-	-	-	-
Sweepers/Scrubbers	64	-	-	-	-	-	-	-	-	-	-
Tractors/Loaders/Backhoes	97	6	8	1	8	12	7	-	-	-	-
Trenchers	80	-	-	1	8	-	-	-	-	-	-
Welders	46	-	-	-	-	4	8	-	-	-	-

Note: Neighborhood construction would require different amounts of equipment to complete construction within the scheduled timing. To remain conservative, the component with the highest number of equipment needed was used for this table.

Short-term Construction Emissions

As depicted in Table 6, construction activities are anticipated to overlap occasionally throughout each year of construction, with 2019 being the only exception. Tables 9 through 11 provide summaries of the maximum daily construction emission estimates during each construction activity overlap for construction years 2016 to 2018, respectively. Table 12 provides a summary of the maximum daily construction emission estimates during 2019. As noted above, it was assumed that dust control measures (watering a minimum of two times daily) would be employed to reduce emissions of fugitive dust during site grading. The maximum daily emissions are compared to the daily emission thresholds to determine significance.

Table 9
ESTIMATED 2016 WORST-CASE CONSTRUCTION EMISSIONS – BY OVERLAPPING CONSTRUCTION ACTIVITIES

Overlapping Construction Activities	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	lbs/day					
Overlap 1						
Grading (N 1 & 5)	1	3	36	<1	9	5
Daily Maximum Total	1	3	36	<1	9	5
Overlap 2						
Grading (N 2)	1	3	36	<1	8	5
Drilling and Blasting (N 2)	<1	21	84	3	2	<1
Backbone Infrastructure (N 1 & 5)	1	2	23	<1	<1	<1
WTWRF Construction	25	3	11	<1	1	<1
Daily Maximum Total	26	29	153	3	12	5
Overlap 3						
Backbone Infrastructure (N 1 & 5)	1	2	23	<1	<1	<1
WTWRF Construction	25	3	11	<1	1	<1
Daily Maximum Total	26	5	34	<1	1	<1
Overlap 4						
WTWRF Construction	25	3	11	<1	1	<1
Vertical Building (N 1 & 5)	2	9	77	<1	1	<1
Daily Maximum Total	27	13	87	<1	2	<1
Significant Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Notes:
1. Emissions were calculated for both summer and winter months, and the highest value is shown here.
2. USEPA Tier 4 off-Road equipment and diesel particulate filters were assumed to be utilized.
3. Fugitive dust measures were applied to control PM_{10} and $PM_{2.5}$ dust emissions.
4. N = Neighborhood

Table 10
ESTIMATED 2017 WORST-CASE CONSTRUCTION EMISSIONS –
BY OVERLAPPING CONSTRUCTION ACTIVITIES

Overlapping Construction Activities	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	lbs/day					
Overlap 1						
Grading (N 3)	1	3	36	<1	8	5
Drilling and Blasting (N 3)	<1	21	84	3	2	<1
Backbone Infrastructure (N 2 & 3)	1	2	23	<1	<1	<1
Road Construction	4	44	18	<1	9	3
Vertical Building (N 1 & 5)	27	9	78	<1	1	<1
Daily Maximum Total	32	79	238	3	21	8
Overlap 2						
Backbone Infrastructure (N 2 & 3)	1	2	23	<1	<1	<1
Vertical Building (N 1 & 5)	27	9	78	<1	1	<1
Daily Maximum Total	27	11	101	<1	1	<1
Overlap 3						
Grading (N 4)	1	3	36	<1	8	5
Drilling and Blasting (N 4)	<1	21	84	3	2	<1
Vertical Building (N 1 & 5)	27	9	78	<1	1	<1
Daily Maximum Total	27	33	198	3	12	5
Significant Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Notes:
1. Emissions were calculated for both summer and winter months, and the highest value is shown here.
2. USEPA Tier 4 off-Road equipment and diesel particulate filters were assumed to be utilized.
3. Fugitive dust measures were applied to control PM_{10} and $PM_{2.5}$ dust emissions.
4. N = Neighborhood

Table 11 ESTIMATED 2018 WORST-CASE CONSTRUCTION EMISSIONS – BY OVERLAPPING CONSTRUCTION ACTIVITIES						
Overlapping Construction Activities	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	lbs/day					
Overlap 1						
Backbone Infrastructure (N 4)	1	2	23	<1	<1	<1
Vertical Building (N 2)	26	9	90	<1	<1	<1
Daily Maximum Total	27	11	113	<1	1	<1
Overlap 2						
Backbone Infrastructure (N 4)	1	2	23	<1	<1	<1
Vertical Building (N 3)	15	6	56	<1	1	<1
Daily Maximum Total	16	8	79	<1	1	<1
Significant Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Notes:
1. Emissions were calculated for both summer and winter months, and the highest value is shown here.
2. USEPA Tier 4 off-Road equipment and diesel particulate filters were assumed to be utilized.
3. Fugitive dust measures were applied to control PM_{10} and $PM_{2.5}$ dust emissions.
4. N = Neighborhood

Table 12 ESTIMATED 2019 WORST-CASE CONSTRUCTION EMISSIONS						
Construction Activities (No Overlap)	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	lbs/day					
Vertical Building (N 4)	41	9	77	<1	1	<1
Daily Maximum Total	41	9	77	<1	1	<1
Significant Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Notes:
1. Emissions were calculated for both summer and winter months, and the highest value is shown here.
2. USEPA Tier 4 off-Road equipment and diesel particulate filters were assumed to be utilized.
3. Fugitive dust measures were applied to control PM_{10} and $PM_{2.5}$ dust emissions.
4. N = Neighborhood

As shown in Tables 9 through 12, with the minimum application of USEPA Tier 4 equipment, CARB diesel particulate filter devices, and best management practices to control emissions of fugitive dust, emissions of all criteria pollutants, including PM_{10} and $PM_{2.5}$, would be below the daily thresholds during construction. The off-road diesel vehicle regulation applies to new equipment commonly purchased or leased for construction projects. Out-of-state companies doing business in California are also subject to the regulation. It should be noted that this regulation does not apply to existing equipment with less than 20 years old already purchased or leased by contractors.

Because emissions of all criteria pollutants during construction would be below the daily thresholds, construction of the Project would, therefore, not conflict with the NAAQS or CAAQS, and the construction impact is less than significant.

4.2.1.3 *Control Measures and Design Considerations*

The Project would incorporate BMPs during construction to reduce emissions of fugitive dust. SDAPCD Rule 55 – Fugitive Dust Control states that no dust and/or dirt shall leave the property line. SDAPCD Rule 55 requires the following:

(1) **Airborne Dust Beyond the Property Line:** No person shall engage in construction or demolition activity subject to this rule in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60 minute period.

(2) **Track-Out/Carry-Out:** Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall:

(i) be minimized by the use of any of the following or equally effective trackout/ carry-out and erosion control measures that apply to the Project or operation:

a. track-out grates or gravel beds at each egress point,

b. wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks, and

c. secured tarps or cargo covering, watering, or treating of transported material; and

(ii) be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. If a street sweeper is used to remove any track-out/carry-out, only PM_{10}-efficient street sweepers certified to meet the most current South Coast Air Quality Management District Rule 1186 requirements shall be used. The use of blowers for removal of track-out/carry-out is prohibited under any circumstances.

The control measures listed below are the BMPs that the Project would incorporate for dust control as well as minimizing pollutant emissions from diesel equipment:

- A minimum of two applications of water during grading between dozer/scraper passes.
- Paving, chip sealing or chemical stabilization of internal roadways after completion of grading.
- Use of sweepers or water trucks to remove “track-out” at any point of public street access.
- Termination of grading if winds exceed 25 mph.
- Dirt storage piles will be stabilized by chemical binders, tarps, fencing or other erosion control.

- Disturbed areas shall be hydroseeded, landscaped, or developed as quickly as possible and as directed by the County and/or SDAPCD to reduce dust generation.
- A 15-mph speed limit will be enforced on unpaved surfaces.
- On dry days, dirt and debris spilled onto paved surfaces shall be swept up immediately to reduce resuspension of particulate matter caused by vehicle movement. Approach routes to construction sites shall be cleaned daily of construction-related dirt in dry weather.
- The Project will use building products that have at least a 10 percent recycled content.
- The Project will require the construction fleet to use any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters and utilize CARB/USEPA Engine Certification Tier 4, or other equivalent methods approved by the CARB.
- Use of low-VOC coatings in accordance with SDAPCD Rule 67.
- Any blasting areas would be wet down prior to initiating the blast.

4.2.1.4 *Significance after Mitigation*

With design considerations noted above, the results show that construction-related emissions will be below the level of significance, taking into consideration potential overlapping of neighborhood construction. Therefore, Project criteria pollutants emissions during construction would constitute a less than significant impact on the ambient air quality.

4.2.2 Operational Impacts

Based on the County Guidelines (2007), operational impacts would be potentially significant if they exceed the quantitative screening-level thresholds for attainment/maintenance pollutants (NO_2, SO_2, and CO), and would result in a significant impact if they exceed the screening-level thresholds for nonattainment pollutants (ozone precursors and particulate matter).

4.2.2.1 *Guidelines for the Determination of Significance*

Would the project operations result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Ozone Precursors

- Would the project result in emissions that exceed 250 pounds per day of NO_X, or 75 pounds per day of VOCs?

Carbon Monoxide

- Would the project result in emissions of CO that when totaled with the ambient concentrations would exceed a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm?

Particulate Matter

- Would the project result in emissions of $PM_{2.5}$ that exceed 55 pounds per day?
- Would the project result in emissions of PM_{10} that exceed 100 pounds per day and increase the ambient PM_{10} concentration by 5.0µg/m^3 or greater at any sensitive receptor locations?

The primary operational emissions associated with the Project are CO, PM_{10}, and ozone precursors emitted as vehicle exhaust (NO_X and VOC). In addition, the WTWRF would potentially emit VOCs.

4.2.2.2 *Significance of Impacts Prior to Mitigation*

The main operational emissions sources associated with the Project are associated with traffic; emissions associated with area sources such as energy use, landscaping, and the use of fireplaces at the residences also would be generated.

Project-generated traffic was addressed in the Valiano TIA (LLG 2015). Based on the TIA, at full buildout the Project would generate 3,786 average daily trips (ADT). To estimate emissions associated with Project-generated traffic, the CalEEMod model was used. Motor vehicle emission rates are, therefore, based on CARB's EMFAC state-wide emission factors for the San Diego County region. Emission factors representing the vehicle mix for emission analysis years 2018 through 2020 were used to estimate emissions. Based on the results of the CalEEMod model for subsequent years, emissions would decrease on an annual basis from 2018 onward due to phase-out of higher polluting vehicles and implementation of more stringent emission standards. Default vehicle speeds, trip lengths, trip purpose, and trip type percentages for single family homes were used. Trip rates were based on the TIA, which estimated 10 daily trips per dwelling unit for Neighborhoods 1, 2, 4, and 48 units in 5; 12 daily trips per dwelling unit for Neighborhoods 3 and the remaining units in 5; a total of 324 daily trips from multi-generational Second Dwelling Units in neighborhoods 2, 3, and 5; and 10 total daily trips for the WTWRF. Four additional trips per day were added to the analysis to account for the public Neighborhood Park.

Residential units were assumed to only have natural gas fireplaces. Area source emissions, including emissions from energy use, fireplaces, landscaping, and maintenance use of architectural coatings, were calculated using the CalEEMod model. Operational emission calculations and model outputs are provided in Appendix D. Tables 13 through 15 present the summary of annual operational emissions for neighborhoods, which include operational emissions from off-road equipment (i.e., generators associated with the fire pump station and the WTWRF) and other emissions associated with the WTWRF the embodied electrical energy consumption, and workers and delivery vehicle trips. Biogenic emissions from the WTWRF processes are not considered in the analysis.

As shown in Tables 13 through 15, Project emissions of all criteria pollutants during operation would be below the daily thresholds. Therefore, operation of the Project would not be considered a significant impact on air quality.

Table 13 ESTIMATED 2018 OPERATIONAL EMISSIONS (lbs/day)						
Category	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Neighborhoods 1 & 5						
Area	9	<1	14	<1	<1	<1
Energy	<1	1	<1	<1	<1	<1
Mobile	6	14	66	<1	11	3
Off-road Equipment	1	8	7	<1	1	1
TOTAL	**17**	**24**	**87**	**<1**	**12**	**4**
Screening-Level Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Note:
Emissions were calculated for both summer and winter months, and the highest value is shown here.
Operational emissions associated with the WTWRF are included in the Project emissions. Off-road emissions consist of two generators (one associated with the WTWRF and one associated with the Fire Pump Station).

Table 14 ESTIMATED 2019 OPERATIONAL EMISSIONS (lbs/day)						
Category	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Neighborhoods 1 – 3 & 5						
Area	14	<1	21	<1	<1	<1
Energy	<1	2	1	<1	<1	<1
Mobile	10	22	102	<1	19	5
Off-road Equipment	1	8	7	<1	1	1
TOTAL	**25**	**32**	**132**	**<1**	**20**	**6**
Screening-Level Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Note:
Emissions were calculated for both summer and winter months, and the highest value is shown here.
Operational emissions associated with the WTWRF are included in the Project emissions. Off-road emissions consist of two generators (one associated with the WTWRF and one associated with the Fire Pump Station).

Table 15 ESTIMATED 2020 OPERATIONAL EMISSIONS (lbs/day)						
Category	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Neighborhoods 1 - 5						
Area	20	<1	28	<1	1	1
Energy	<1	2	1	<1	<1	<1
Mobile	12	25	121	<1	23	6
Off-road Equipment	1	8	7	<1	1	1
TOTAL	**33**	**36**	**157**	**<1**	**25**	**8**
Screening-Level Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Note:
Emissions were calculated for both summer and winter months, and the highest value is shown here.
Operational emissions associated with the WTWRF are included in the Project emissions. Off-road emissions consist of two generators (one associated with the WTWRF and one associated with the Fire Pump Station).

Due to the anticipated construction of the neighborhoods, it is possible that occupation of a neighborhood may occur concurrently with construction of another neighborhood. Based on the construction schedule in Table 6, two worst-case scenarios (with concurrent neighborhood operation and construction) were identified. As shown in Table 16, the first scenario assumes that Neighborhoods 1 and 2 would be occupied and operating concurrent with construction activities of Neighborhoods 2 and 4 (vertical building and backbone infrastructure, respectively). Table 17 shows the combined emissions during operation of Neighborhoods 1, 5, 2, and 3 and vertical construction of Neighborhood 4. Operational emissions from the WTWRF and generators are also included in both worst-case scenarios.

The combined construction and operational emissions would be below the significance threshold for all criteria pollutants, and would, therefore, be less than significant. All other pollutants would not exceed the significance thresholds and would, therefore, not be considered significant impacts under CEQA.

The CalEEMod model outputs for operational emissions are presented in Appendix D. As shown in Tables 13 through 17, emissions of criteria pollutants during operation of the Project, including concurrent with construction emissions, would not exceed the daily thresholds for any of the criteria pollutants. Therefore, no significant air quality impact is anticipated and mitigation measures are not required.

Table 16 WORST-CASE 2018 DAILY EMISSIONS - CONCURRENT OPERATION AND CONSTRUCTION							
Neighborhood	Category	VOC	NO_X	CO	SO2	PM_{10}	$PM_{2.5}$
		lbs/day					
1 & 5	Operational	17	24	87	<1	12	4
2	Construction (Vertical Building)	26	9	90	<1	<1	<1
4	Construction (Backbone Infrastructure)	1	2	23	<1	<1	<1
TOTAL		**44**	**35**	**200**	**<1**	**13**	**4**
Screening-Level Thresholds		75	250	550	250	100	55
Exceedance?		No	No	No	No	No	No

Notes:
Peak Daily Emissions were calculated for both summer and winter months, and the highest value is shown here.
Total for Peak Daily Operational Emissions includes Area, Energy, Mobile, and Off-road Equipment sources.

Table 17 WORST-CASE 2019 DAILY EMISSIONS - CONCURRENT OPERATION AND CONSTRUCTION							
Neighborhood	Category	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
		lbs/day					
1, 2, 3 & 5	Operational	25	32	132	<1	20	6
4	Construction (Vertical Building)	41	9	77	<1	1	<1
TOTAL		**66**	**41**	**209**	**<1**	**21**	**7**
Screening-Level Thresholds		75	250	550	250	100	55
Exceedance?		No	No	No	No	No	No

Notes:
Peak Daily Emissions were calculated for both summer and winter months, and the highest value is shown here.
Total for Peak Daily Operational Emissions includes Area, Energy, Mobile, and Off-road Equipment sources.

Wastewater Treatment and Water Reclamation Facility

Criteria pollutant and TAC emissions would be generated during treatment of the influent at the WTWRF. Most air pollutant emissions would be produced during degradation or reaction while in the treatment system. Organic compounds would volatilize from the liquid surface of the reactors during the biological treatment of influent.

Emission factors and speciation for volatile compounds from influent treatment were obtained from the San Joaquin Valley Air Pollution Control District (SJVAPCD) (1993). These are general emission factors expressed in terms of pounds of pollutant emissions per million gallons per day (mgd) of influent. These factors were used to estimate daily emissions of various TACs typically contained in influent waste streams. Emissions of TACs from treatment were estimated for full buildout influent throughput of 0.19 mgd.

A screening-level health risk assessment was performed using the USEPA SCREEN3 model. SCREEN3 uses worst-case meteorological conditions to conservatively estimate ground-level pollutant concentrations downwind of the source. The SCREEN3 results were combined with unit risk factors and reference exposure levels obtained from the OEHHA to evaluate cancer, chronic non-cancer, and acute health risk (OEHHA 2003a). The modeled cancer, chronic non-cancer, and acute non-cancer risks were modeled for each individual compound and the results added to produce a conservative estimate of risk from all compounds. Table 18 summarizes the parameters used in the SCREEN3 modeling.

Table 18
PARAMETERS USED IN SCREEN3 DISPERSION MODELING

Modeling Parameter	Values Used in Model
Emission rate	1 grams per second
1-hour average to annual average persistence factor	0.1
Stack height	12.8 meters (42 feet)
Stack diameter	0.91 meters (3 feet)
Stack exit velocity	3.66 meters per second (10 feet per second)
Stack gas exit temperature	294.3 Kelvin
Land use	Rural

Diesel-powered emergency generators would be used at the WTWRF for backup power during electric power failures. Emission factors for the generator engines (industrial internal combustion engines) were obtained from the USEPA document *Compilation of Air Pollutant Emission Factors*, commonly known as AP-42 (1996). Annual emissions were calculated based on the annual testing frequency and duration and the power output of the engines. For the purposes of this analysis it was assumed that 2 84 hp generators would operate for 8 hours per day, 260 days per year.

Aqueous hypochlorite would be stored on site and used for the chlorination process. There would be potential for accidental release of such a substance. However, the facility staff would follow the administrative and engineering requirements of the California Accidental Release Prevention Program. The California Accidental Release Prevention Program's main objective is to prevent accidental releases of regulated substances determined to potentially pose the greatest risk of immediate harm to the public and the environment. The planning activities required by the program are intended to minimize the possibility of an accidental release by encouraging engineering and administrative controls (USEPA 2014). It is further intended to mitigate the effects of an accidental release, by requiring owners or operators of facilities to develop and implement an accident prevention program. Any accidental release of this substance would be contained on site with no offsite runoff, and handlers would be trained in spill reaction. As such, there would be no impact resulting from the storage of this compound at the facility.

TAC emissions from the WTWRF would be produced during reaction or degradation while in the treatment system. Compounds would volatilize from the liquid surface of the reactors during the biological treatment of influent. Total TAC emissions are summarized in Table 19.

Table 19
ESTIMATED TAC EMISSIONS FROM WTWRF

Compound	Peak Daily Emissions (lbs/day)
Ammonia	4.765E-05
Benzene	9.227E-08
Chloroform	1.289E-06
Ethyl Benzene	3.58E-07
Hydrogen Sulfide	3.102E-06
1,1,1-TCA	4.216E-07
Methylene Chlorine	1.241E-06
1,4-Dichlorobenzene	7.398E-07
Phenol	1.559E-06
Styrene	7.955E-07
Toluene	7.796E-07
TCE	4.136E-07
Xylene	9.323E-07
TOTAL VOC EMISSION	**5.937E-05 (or 0.00005937)**

Specific information about emission controls as part of the facility's design is not currently known. However, it is assumed that sufficient controls would be used to substantially reduce emissions. Tightly covered, well-maintained collection systems can suppress emissions by 95-99% (USEPA 1998). The types of control technology generally used in reducing TAC emissions from wastewater include steam or air stripping, carbon adsorption, chemical oxidation, membrane separation, liquid-liquid extraction, and biotreatment (aerobic or anaerobic) (USEPA 1998). As shown in Table 18, the total TAC emissions of criteria pollutants from operation of the WTWRF are below the SDAPCD thresholds of significance, resulting in a less than significant impact. The mass emissions, when combined with other operational emissions, would also be below the County's screening level thresholds.

Traffic Related CO Concentrations (CO Hot Spot Analysis)

Vehicle exhaust is the primary source of CO. In an urban setting the highest CO concentrations are generally found within close proximity to congested intersections. Under typical meteorological conditions, CO concentrations tend to decrease as distance from the emissions source (i.e., congested intersection) increase. Project-generated traffic has the potential of contributing to localized hot spots of CO off-site. Because CO is a byproduct of incomplete combustion, exhaust emissions are worse when fossil-fueled vehicles are operated inefficiently, such as in stop-and-go traffic or through heavily congested intersections, where the level of service (LOS) is severely degraded.

The CARB also recommends evaluation of the potential for the formation of locally high concentrations of CO, known as CO hot spots. A CO hot spot is a localized concentration of CO that is above the state or national 1-hour or 8-hour CO ambient air standards. To verify that the Project would not cause or contribute to a violation of the 1-hour and 8-hour CO standards, an evaluation of the potential for CO hot spots at nearby intersections was conducted.

The TIA (LLG 2015) evaluated whether or not there would be a decrease in the LOS at the intersections affected by the Proposed Project. The potential for CO hot spots was evaluated based on the results of the TIA. The Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1998) was followed to determine whether a CO hot spot is likely to form due to project-generated traffic. In accordance with the Protocol, CO hot spots are typically evaluated when: (a) the LOS of an intersection or roadway decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and, (c) sensitive receptors such as residences, schools, hospitals, etc. are located in the vicinity of the affected intersection or roadway segment.

According to the TIA, all intersections under the Existing Plus Project scenario are calculated to continue to operate at acceptable level of service (LOS) of LOS D or better (LLG 2015). Therefore, the LOS would not decrease to a rating of LOS E or worse, and as a result, no exceedances of the CO standard are expected. The Existing Plus Project scenario would not cause or contribute to a violation of the air quality standard.

4.2.2.3 *Mitigation Measures and Design Considerations*

Operation emissions of VOCs, NO_X, CO, and PM_{10}, and $PM_{2.5}$ for the Project with design features, and combined construction and operational emissions with design features would be below the significance thresholds. A wide range of current regulatory codes, project design features, and other measures would be incorporated into the Proposed Project. The Project would incorporate energy-efficiency features that would meet the 2013 California Title 24 Energy Efficiency Standards, thereby exceeding 2008 California Title 24 Energy Efficiency Standards by at least 15 percent. The installation of natural gas fireplaces would prevent residences from using wood as fuel for fire and prevent the generation of PM_{10} emissions in the area. The installation of low-flow or high-efficiency water fixtures in residences reduces water demand, and its associated embodied energy demand, and associated indirect air quality emissions. The Project would provide areas for recyclable materials collection and would use building products that have at least a 10-percent recycle content. These Project design features were selected under the mitigation measure menu in the CalEEMod model. Given the result of a less-than-significant impact, no additional mitigation measures would be required.

4.2.2.4 *Significance of Impacts following Mitigation*

Operation emissions of VOCs, CO, and PM_{10}, and $PM_{2.5}$ for the full Project buildout, and combined construction and operational emissions would be below the significance thresholds and would therefore be less than significant under CEQA.

4.3 Cumulatively Considerable Net Increase of Criteria Pollutants

4.3.1 Construction Impacts

Based on the County Guidelines (2007), a project would result in a cumulatively significant impact if the project results in a significant contribution to the cumulative increase in pollutants for which the SDAB is listed as nonattainment for the CAAQS and NAAQS. As discussed in Section 2.0, the SDAB is designated as a nonattainment area for the NAAQS for ozone and the CAAQS for ozone, PM_{10}, and $PM_{2.5}$.

Cumulatively considerable net increases during the construction phase would typically happen if two or more projects near each other are simultaneously constructing projects. A project that has a significant direct impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_X, or VOCs during construction would also have a significant cumulatively considerable net increase. In the event direct impacts from a proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines identified in Section 3.0.

4.3.1.1 *Guidelines for the Determination of Significance*

- Would the project construction result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

- Would the project result in emissions that exceed 250 pounds per day of NO_X, or 75 pounds per day of VOCs?

- Would the project result in emissions of $PM_{2.5}$ that exceed 55 pounds per day?

4.3.1.2 *Significance of Impacts Prior to Mitigation*

Although the environmental effects of an individual project may not be significant when that project is considered independently, the combined effects of several projects may be significant when considered collectively. Section 15130(a) of the State CEQA Guidelines requires that an EIR address significant cumulative impacts. According to this section of CEQA, the discussion of cumulative impacts "...need not provide as great a detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness." The discussion should also focus only on significant effects resulting from the project's incremental effects and the effects of other projects. If the environmental