2.6 Air Quality

This subchapter of the EIR summarizes the Project's Air Quality Analysis Report (AQAR; HELIX 2017b), contained in Appendix H, which was prepared in conformance with the County Report Format and Content Requirements - Air Quality (County 2007a).

2.6.1 Existing Conditions

2.6.1.1 *Regional Meteorology/Climate/Temperature Inversions*

The Project site is located in the San Diego Air Basin (SDAB). The climate of San Diego County is characterized by hot, dry summers and mild, wet winters and is dominated by a semi-permanent, high-pressure cell located over the Pacific Ocean. Wind monitoring data recorded at the Escondido San Pasqual Valley monitoring station (the closest meteorological monitoring station to the Project site) indicates that the predominant wind direction in the vicinity of the Project site is from the west. Wind speeds over the Project region average 4 miles per hour (mph). The annual average temperature in the Project area is approximately 55 degrees Fahrenheit (ºF) during the winter and approximately 74ºF during the summer. Total precipitation in the Project area averages approximately 16.2 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer (Western Regional Climate Center 2012).

The atmospheric conditions of the SDAB contribute to the region's air quality problems. Due to its climate, the SDAB experiences frequent temperature inversions. Typically, temperature decreases with height. Under inversion conditions, however, temperature increases as altitude increases. Temperature inversions prevent air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere, creating a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and nitrogen dioxide (NO_2) react under strong sunlight, creating smog. Light, daytime winds, predominately from the west, further aggravate the condition by driving the air pollutants inland, toward the foothills. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and NO_2 emissions. High NO_2 levels usually occur during autumn or winter, on days with summer-like conditions.

High air pollution levels in coastal communities of San Diego often occur when polluted air from the South Coast Air Basin, particularly Los Angeles, travels southwest over the ocean at night, and is brought onshore into San Diego by the sea breeze during the day. Smog transported from the Los Angeles area is a key factor on more than 50 percent of the days San Diego exceeds clean air standards. Ozone and precursor emissions also are transported to San Diego from the South Coast Air Basin during relatively mild Santa Ana weather conditions, although during strong Santa Ana weather conditions, pollutants are pushed far out to sea and miss San Diego. When the transported smog is blown in to the SDAB at ground level, the highest ozone concentrations are measured at coastal and near-coastal monitoring stations. When the transported smog is elevated, coastal sites may be passed over, and the transported ozone is measured further inland and on the mountain slopes.

2.6.1.2 *Air Pollutants of Concern*

Federal and State laws regulate air pollutants emitted into the ambient air by stationary and mobile sources. These regulated air pollutants are known as "criteria air pollutants" and are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Secondary pollutants form in the air when primary pollutants react or interact. Criteria pollutants are defined by State and federal law as a risk to the health and welfare of the general public. Specific descriptions of health effects for each of the following air pollutants are in Appendix H.

- **Ozone**. Ozone is formed when volatile organic compounds (VOCs) and oxides of nitrogen (NO_X), both by-products of fuel combustion, react in the presence of ultraviolet light.

- **Carbon Monoxide**. CO is a product of fuel combustion; the main source of CO in the SDAB is from motor vehicle exhaust.

- **Nitrogen Dioxide**. NO_2 is also a by-product of fuel combustion and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitric oxide (NO) with oxygen.

- **Respirable Particulate Matter and Fine Particulate Matter**. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, fuel combustion, tire and brake wear, construction operations and windblown dust.

- **Sulfur Dioxide**. Sulfur dioxide (SO_2) is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes.

- **Lead**. Lead (Pb) in the atmosphere occurs as particulate matter. Lead has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions.

- **Sulfates**. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur.

- **Hydrogen Sulfide**. Hydrogen sulfide (H_2S) is a colorless gas formed during bacterial decomposition of sulfur-containing organic substances.

- **Vinyl Chloride**. Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

- **Visibility-Reducing Particles**. Visibility reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. These particles in the atmosphere would obstruct the range of visibility. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze.

The public's exposure to toxic air contaminants (TACs) is another environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code (§39655, subd. [a].) defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the Federal Act (42 United States Code [USC] Section 7412[b]) is a TAC; these substances are controlled under a different regulatory process than criteria pollutants. Under State law, the California Environmental Protection Agency (CalEPA), acting through the California Air Resources Board (CARB), is authorized to identify a substance as a TAC if it determines the substance meets the Health and Safety Code definition above.

2.6.1.3 *Background Air Quality*

Table 2.6-1, *Ambient Air Quality Standards*, presents a summary of the adopted ambient federal and State air quality standards that are used to determine attainment or non-attainment.

The SDAPCD operates a County-wide network of air monitoring stations to measure ambient concentrations of pollutants and determine whether the ambient air quality meets the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). The nearest ambient monitoring station to the Project site is the Escondido East Valley Parkway station.

Because the Escondido East Valley Parkway monitoring station is located in an area where there is substantial traffic congestion, it is likely that pollutant concentrations measured at this monitoring station are higher than concentrations that would be observed or measured in the Project area, and would thus provide a conservative estimate of background ambient air quality. In particular, concentrations of CO at the Escondido monitoring station tend to be among the highest in the SDAB due to the fact that the monitor is located along East Valley Parkway in a congested area in downtown Escondido. The station sees higher concentrations of CO than have historically been measured elsewhere in San Diego County, and the background data are not likely to be representative of background ambient CO concentrations at the Project site due to the site's location in a less developed area.

Ambient concentrations of pollutants over the last three years are presented in Table 2.6-2, *Ambient Background Concentrations – San Diego Monitoring Stations*. A violation of the State one-hour standard for ozone occurred in 2014. Violations of the State eight-hour standards for ozone have occurred multiple times in 2013, 2014, and 2015, but only occurred for the federal standards in 2014. No State or federal violations of the daily PM_{10} standard occurred during 2014 and 2015; however, the State maximum daily standard was exceeded once in 2013. The federal daily $PM_{2.5}$ was exceeded once in both 2013 and 2014. The only annual average exceedances were the State PM_{10} standard in 2013 and 2014. The data from the monitoring stations indicate that air quality is in attainment of all other federal and State NO_2 and CO standards.

2.6.1.4 *Regulatory Setting*

Federal and State

At the federal level, the U.S. Environmental Protection Agency (USEPA) is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish the NAAQS, which identify concentrations of airborne pollutants below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for criteria pollutants (specifically, ozone, PM, CO, NO_2, SO_2, and Pb), and TACS (see Air Pollutants of Concern discussion, above). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The State agency responsible for coordination of State and local air pollution control programs is CARB, which established the more stringent CAAQS for the six criteria pollutants through the California Clean Air Act of 1988 (CCAA), and also has established CAAQS for additional pollutants, including sulfates, H_2S, vinyl chloride and visibility-reducing particles. Adopted NAAQS and CAAQS are shown in Table 2.6-1.

CARB also is responsible for the development, adoption, and enforcement of the State's motor vehicle emissions program and the SIP with input from local agencies. SIPs are comprehensive plans that describe how an area will be consistent with the NAAQS. The SDAPCD has developed its input to the SIP, which includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. SDAPCD submitted an air quality plan to USEPA in 2007; the plan demonstrated how the eight-hour ozone standard would be attained by 2009. Despite best efforts, SDAB did not meet the ozone NAAQS in 2008 and 2009, and the SDAPCD is currently revising their air quality plan. 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 CARB, and the emissions and reduction strategies related to mobile sources are considered in the Regional Air Quality Strategy (RAQS) and SIP.

Areas that do not meet the NAAQS or CAAQS for a particular pollutant are considered to be "non-attainment areas" for that pollutant. CARB reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a non-attainment area to develop its own strategy for achieving the NAAQS and CAAQS.

Local

The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations for San Diego County.

The SDAPCD and SANDAG are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County RAQS was initially adopted in 1991, and was previously updated in 1995, 1998, 2001, 2004 and 2009. The most recent SDAPCD revisions to the RAQS were adopted by the SDAPCD Board in December 2016.

The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for ozone. The local RAQS, in combination with those from all other California non-attainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the SIP. The CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the County as part of the development of the County's General Plan, and by cities within the County. As such, projects that propose development that is consistent with, or less dense than, the growth anticipated by the general plans would be consistent with the RAQS. If a project proposes development greater than that anticipated in a general plan and SANDAG's growth projections, the project may be in conflict with the RAQS and SIP and may have a potentially significant impact on air quality.

In addition, SDAPCD Rule 51 (Public Nuisance) also prohibits emission of any material causing nuisance to a considerable number of persons or endangers the comfort, health or safety of any person. Rule 55 prohibits construction activity that would discharge fugitive dust emissions into the atmosphere beyond the property line. Finally, Rule 67 prohibits the use of architectural coatings (i.e., paints) that would exceed VOC content limits specified for each coating category in the rule.

Air Basin Attainment Status

Federal

On April 30, 2012, the SDAB was classified as a marginal non-attainment area for the eight-hour NAAQS for ozone. The SDAB is an attainment area for the NAAQS for all other criteria pollutants. Although in attainment for CO, the SDAB is currently under a national "maintenance plan" for CO, following a 1998 redesignation as a CO attainment area (SDAPCD 2012).

On December 14, 2012, the federal annual standard for $PM_{2.5}$ was decreased from 15 micrograms per cubic meter ($\mu g/m^3$) to 12 $\mu g/m^3$. The USEPA made no changes to the primary 24-hour $PM_{2.5}$ standard or to the secondary $PM_{2.5}$ standards. At least three years of monitoring data (beginning March 14, 2013) are necessary before the USEPA redesignates San Diego County for the annual $PM_{2.5}$ standard.

State

The SDAB is currently classified as a non-attainment area under the CAAQS for ozone (serious non-attainment), PM_{10}, and $PM_{2.5}$ (CARB 2014a).

Each non-attainment area must submit a clean air plan outlining the combination of local, State, and federal actions and emission control regulations necessary to bring the area into attainment as expeditiously as practicable. Then, even after the non-attainment area attains the air quality standard, it will remain designated a non-attainment area unless and until the State submits a formal request for redesignation to attainment to the USEPA. The request must include a “maintenance” plan demonstrating that the area will maintain compliance with that NAAQS for at least 10 years after USEPA redesignates the area to attainment.

On December 5, 2012, the SDAPCD adopted its *Ozone Redesignation Request and Maintenance Plan*, which calls for the SDAB to attain the 1997 federal eight-hour ozone NAAQS, with a request for redesignation to attainment/maintenance area. On December 6, 2012, CARB approved the *Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County* for submittal to USEPA as a SIP revision. On December 20, 2012, the USEPA initiated its adequacy review of the plan and posted the document for a 30-day public review period that closed January 22, 2013. On March 25, 2013, the USEPA approved the redesignation to the 1997 eight-hour ozone attainment/maintenance plan. Redesignation to attainment of the 1997 standard does not affect the region’s marginal non-attainment status for the 2008 standard (SDAPCD 2012).

A more detailed discussion of the redesignation request and maintenance plan is provided in Appendix H. Table 2.6-3, *Federal and State Air Quality Designations*, summarizes the region’s attainment status for all applicable criteria pollutants.

2.6.2 Analysis of Project Effects and Determination as to Significance

2.6.2.1 *Conformance to the RAQS*

Guideline for the Determination of Significance

The Proposed Project would have a potentially significant environmental impact if it would:

1. Conflict with or obstruct the implementation of the San Diego RAQS and/or applicable portions of the SIP.

Guideline Source

Guideline No. 1 is taken from the County Guidelines for Determining Significance – Air Quality (2007a).

Analysis

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.

Projects that propose development that is consistent with (or less dense than) the growth anticipated by the general plans would 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 with the RAQS is based, the project would be in conflict with the RAQS and SIP, and may have a potentially significant impact on air quality. This situation would warrant further analysis to determine if that project and the surrounding projects exceed the growth projections used in the RAQS for the specific subregional area.

The 2016 RAQS (SDAPCD 2016) include projections for residential, commercial, industrial and recreational land uses contained in the current County General Plan, adopted in 2011. The current Project involves a GPA and is proposing to increase the total number of residential units from 220 dwelling units, as potentially allowed under the current 2011 General Plan Land Use Designation, to 453 dwelling units. Because the Project is proposing a more dense development than was planned in 2011, it is correspondingly also proposing an increase of units over that proposed in the RAQS.

As detailed in to the discussion for Guideline No. 2, below, the Project would not result in a significant air quality impact with regards to construction- and operational-related emissions of ozone precursors or criteria air pollutants. 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. Regardless, because the Project is proposing an increase in housing units beyond what was included for the site in the RAQS, consistent with the County guidelines, **impacts associated with conformance to regional air quality plans would be potentially significant**. **(Impact AQ-1a)**

2.6.2.2 *Conformance to Federal and State Ambient Air Quality Standards*

Guidelines for the Determination of Significance

The Proposed Project would have a potentially significant environmental impact if it would:

2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, as follows:

    a. Ozone Precursors: The Project would result in emissions that exceed 250 pounds per day (lbs/day) of NO_X or 75 lbs/day of VOCs.

    b. CO: The Project would result in emissions of CO of 550 lbs/day, and when totaled with the ambient concentrations exceed a one-hour concentration of 20 parts per million (ppm) or an eight-hour average of 9 ppm.

    c. $PM_{2.5}$: The Project would result in emissions of $PM_{2.5}$ that exceed 55 lbs/day.

    d. PM_{10}: The Project would result in emissions of PM_{10} that exceed 100 lbs/day and increase the ambient PM_{10} concentration by 5 $\mu g/m^3$ or greater at any sensitive receptor locations (or maximum exposed individual [MEI], a term commonly used by CARB for sensitive receptors).

Guideline Source

Guideline No. 2 is taken from the County Guidelines for Determining Significance – Air Quality (2007a).

Analysis

The County recognizes the SDAPCD's established screening level thresholds for air quality emissions (Rules 20.1 et seq.) as screening-level thresholds for land development projects. As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 for the preparation of Air Quality Impact Assessments (AQIAs). The County has also adopted the South Coast Air Quality Management District's (SCAQMD's) screening threshold of 55 pounds per day or 10 tons per year as a screening level threshold for $PM_{2.5}$. The screening thresholds used in the following analysis are included in Table 2.6-4, *Screening-level Thresholds for Air Quality Impact Analysis.*

Construction

The construction activities associated with the Proposed Project would create diesel emissions, as well as dust. In general, emissions from diesel-powered equipment contain more NO_X, oxides of sulfur (SO_X), and particulate matter than gasoline-powered engines. Diesel-powered engines, however, generally produce less CO and less reactive organic gases than do gasoline-powered engines. Emissions associated with construction of the Proposed Project were calculated assuming that the construction duration period would begin in July 2018 and end in 2021.

The California Emission Estimator Model (CalEEMod) and the Road Construction Emissions Model (Roadway Model) were used in combination to calculate construction emissions. The analysis assessed maximum daily emissions from eight construction activities: site preparation and blasting, backbone infrastructure, road construction, grading, bridge construction, building construction, paving and architectural coating. Some construction activities would occur sequentially (site preparation, backbone infrastructure, grading, building construction) and some simultaneously (backbone infrastructure and road construction; grading and bridge construction; bridge construction and building construction; paving, vertical construction and architectural coating). Table 2.6-5, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each stage of construction. Modeling took into account standard construction best management practices such as the application of water twice daily, a 15-mph speed limit on unpaved surfaces, and the use of low-VOC architectural coatings. See Appendix H of this EIR for additional details regarding modeling assumptions.

Blasting may be required at the site during initial site preparation, which would be conducted through the use of drilling and explosives to fracture rocks. As discussed under Section 1.2.2.8, it is assumed that approximately two to three blasting events may occur each week.

Emissions related to the construction of the Project would be temporary. Table 2.6-6, *Estimated Construction Emissions*, provides a summary of the daily construction emission estimates by construction activity. 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. Where construction activities were assumed to occur simultaneously, the resultant emissions from each activity were summed and compared to the daily emission thresholds to determine significance.

As shown in Table 2.6-6, with implementation of construction BMPs and PDFs, emissions of all criteria pollutants, including PM_{10} and $PM_{2.5}$, would be below the daily thresholds during construction. Construction of the Proposed Project would, therefore, not conflict with the NAAQS or CAAQS, and **construction emissions associated with air quality would be less than significant**.

Operation

Project-generated traffic was addressed in the Project Traffic Impact Analysis (TIA; Appendix D of this EIR). Based on the TIA, at full buildout the Proposed Project would generate approximately 4,500 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 Statewide emission factors for the San Diego County region. Emission factors representing the vehicle mix for emission analysis year 2021 were used to estimate emissions. Default vehicle speeds, trip purpose, and trip type percentages for single family homes were used. Average mobile trip lengths of 7.88 miles per trip were obtained from the Traffic Study – Average Trip Length memorandum (LLG 2016).

Wastewater treatment and water reclamation facility (WTWRF) generator emissions were estimated using CalEEMod. Emissions were calculated based on the annual testing frequency and duration and the power output of the engines.

Area source emissions, including emissions from energy use, natural gas fireplaces, landscaping, and maintenance use of architectural coatings were calculated using the CalEEMod model. Operational emission calculations and model outputs are provided in Appendix H of this EIR. Table 2.6-7, *Operational Emissions*, presents the summary of operational emissions for the Project. 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 and impacts would be less than significant.**

Concurrent Construction and Operations

Due to the anticipated phasing, it is possible that occupation of up to half of the dwelling units may occur concurrently with the later construction phases of the remaining units. Table 2.6-8, *Concurrent Operational and Construction Emissions*, shows the worst-case daily emissions from this potential overlap.

The combined construction and operational emissions would be below the significance threshold for all criteria pollutants. The CalEEMod model outputs are presented in Appendix A of the AQAR (HELIX 2017b). As shown in Tables 2.6-7 and 2.6-8, emissions of criteria pollutants during operation of the Project whether or not there is an overlap with construction would not exceed the daily thresholds for any of the criteria pollutants. Therefore, **concurrent**

construction and operation of the Project would result in less than significant air quality impacts.

Wastewater Treatment and Water Reclamation Facility

As described previously, the Project design includes an on-site WTWRF which would result in emissions, and was therefore included in the analysis.

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. Emissions of TACs from treatment were estimated for full buildout influent throughput of 0.18 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 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. The parameters used in the SCREEN3 modeling are summarized in Table 10 of EIR Appendix H.

Total TAC emissions are summarized in Table 2.6-9, *Estimated TAC Emissions from WTWRF*. As shown in the table, total uncontrolled TAC emissions from operation of the WTWRF are below the SDAPCD thresholds of significance; therefore, **impacts would be less than significant.**

In addition, although exact specifications are currently unknown, it is likely that common control technologies would be implemented to substantially reduce emissions. 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). In addition, tightly covered, well-maintained collection systems can suppress emissions by 95 to 99 percent (USEPA 1998).

Aqueous hypochlorite (liquid bleach) would be stored on site and used for the chlorination process. The use and storage of this substance is subject to the requirements of the California Accidental Release Prevention Program, which is intended to minimize the possibility of an accidental release by encouraging engineering and administrative controls (USEPA 2014a). The program also requires owners or operators of facilities to develop and implement an accident prevention program to address accidental release (see additional discussion in Section 3.1.4, *Hazards and Hazardous Materials*, of this EIR). Any accidental release of this substance would be contained on site with no off-site runoff, and handlers would be trained in spill reaction. As such, there would be **no impact from the storage of aqueous hypochlorite at the facility.**

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. A CO hot spot is a localized concentration of CO that is above the State or national one-hour or eight-hour CO ambient air standards.

The County guidelines require a detailed CO hot spot analysis if the Project causes an intersection to operate at LOS E or F, with peak-hour trips exceeding 3,000 vehicles. According to the Project TIA (LLG 2017), three intersections under the Existing Plus Project Plus Cumulative Projects would operate at LOS E or F and experience an increase in delay from the Project:

1. Valley Parkway / I-15 Northbound Ramps
2. Country Club Drive / Harmony Grove Road
3. Harmony Grove Road / Kauana Loa Drive

CO hotspot modeling was conducted using the California Line Source Dispersion Model (CALINE4). The existing maximum one-hour and eight-hour background concentrations of CO of 4.4 and 3.70 ppm, as presented earlier in Table 2-2, were used to represent future maximum background one-hour and eight-hour CO concentrations. This is a conservative assumption as CO concentrations in the future may be lower as more stringent emission controls are placed on vehicles. Additional Protocol and CALINE4 variables are discussed in Appendix H.

Table 2.6-10, *CO Hot Spots Modeling Results*, presents a summary of the predicted CO concentrations for the intersections identified as operating at LOS E or F. The predicted CO concentrations would be substantially below the one-hour and eight-hour NAAQS and CAAQS for CO. Therefore, the Project would not cause or contribute to a violation of the air quality standard and **impacts would be less than significant**. Full CALINE4 model outputs are provided in Appendix H of this EIR.

2.6.2.3 *Impacts to Sensitive Receptors*

<u>Guidelines for the Determination of Significance</u>

The Proposed Project would have a potentially significant environmental impact if it would:

3. Expose sensitive receptors to substantial pollutant concentrations as follows:

   a. The project places sensitive receptors near CO “hot spots” or creates CO “hot spots” near sensitive receptors.

   b. Project implementation would result in exposure to TACs resulting in a maximum incremental cancer risk greater than one in one million without application of Toxics-Best Available Control Technology (T-BACT) or a health hazard index greater than one.

Guideline Source

Guideline No. 4 is taken from the County Guidelines for Determining Significance – Air Quality (2007a). (The County's significance thresholds are consistent with the SDAPCD's Rule 1210 requirements for stationary sources.)

Analysis

CO Concentrations (CO Hot Spot Analysis)

The results of the CO hot spot analysis were previously discussed in the Conformance to Federal and State Ambient Air Quality Standards section. As presented in Table 2.6-10, the Project would not result in any violations of State or federal CO standards. Therefore**, the Project would not result in a significant impact for CO.**

Construction-related Health Risk

Diesel particulate matter (DPM) emissions would be released from Project on-site construction equipment and haul trucks. CARB has declared that DPM from diesel engine exhaust is a TAC. Additionally, the Office of Environmental Health Hazard Assessment (OEHHA) has determined that chronic exposure to DPM can cause carcinogenic and non-carcinogenic health effects.

The USEPA SCREEN3 model was used to estimate concentrations of DPM from the construction of the Project. The on-site DPM construction equipment emissions were estimated to reach a maximum of 6.61 pounds per day of DPM (as PM_{10} exhaust) when the backbone infrastructure and road construction activities overlap. The emissions were represented in the model as an area source equal to the size of the Project's construction area. An emission release height of 10 feet (3 meters) was also assumed. Receptor locations where construction impacts were calculated focused on the residential receptors located west of the Project site because they would be closest to Project-generated emissions.

Exposures to TACs such as DPM can also cause chronic (long-term) and acute (short-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system effects, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of a project's emissions to a concentration considered acceptable to public health professionals, termed the reference exposure level (REL).

Table 2.6-11, *Construction Health Risk Assessment Results*, provides the results of the construction health risk assessment for Proposed Project construction along with the County's thresholds. As shown in the table, construction emissions would not exceed thresholds for cancer risk and chronic non-cancer hazard.

Diesel exhaust particulate matter is known in California to contain carcinogenic compounds. The risks associated with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure (i.e., 24 hours per day, seven days per week, 365 days per year for 70 years). Because the Project-related construction emissions of diesel exhaust would occur for less than four years, the Proposed Project would not result in long-term chronic lifetime exposure to diesel exhaust from heavy duty diesel equipment. Therefore, **air quality impacts related to exposure of sensitive receptors to substantial pollutant concentrations from construction would be less than significant.**

Operation-related Health Risk

Residential development projects do not typically generate any TAC emissions. Therefore**, the operational impacts of the land use in relation to generation of TACs would be less than significant.**

WTWRF treatment of influent would produce emissions of TACs during reaction or degradation. The annual emissions of TACs from the WTWRF are summarized in Table 2.6-12, *WTWRF Health Risk Assessment Results*. A screening health risk assessment was prepared to analyze cancer, chronic non-cancer, and acute non-cancer health risks from the facility. The cancer risk is calculated by multiplying the annual average concentrations calculated using the SCREEN3 model and the inhalation cancer unit risk and cancer potency factors for the six identified TAC compounds (i.e., benzene, chloroform, ethyl benzene, methylene chlorine, 1,4-dichlorobenzene, and TCE) through OEHHA's Technical Support Document (OEHHA 2011). The non-cancer chronic and acute risks are calculated by dividing the REL values to the 24-hour average concentrations for each TAC compound. The screening health risk calculations for the WTWRF are provided in Appendix H of this EIR. The location of maximum impact was modeled at 728 feet from the property boundary of the WTWRF study area. At this location, the modeled cancer risk is 0.007 in 1 million and the chronic non-cancer and acute non-cancer inhalation hazard indexes are less than one. As these results are less than the SDAPCD standards, **the increased health risks from the proposed facility would be less than significant.**

2.6.2.4 *Odor Impacts*

<u>Guidelines for the Determination of Significance</u>

The Proposed Project would have a potentially significant environmental impact if it would:

4. Generate objectionable odors or place sensitive receptors next to existing objectionable odors that would affect a considerable number of persons or the public.

Guideline Source

Guideline No. 5 is taken from the County Guidelines for Determining Significance – Air Quality (2007a).

<u>Analysis</u>

Construction

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. Diesel exhaust and VOCs would be emitted during construction of the Project, which are objectionable to some; however, emissions would disperse rapidly from the

Project site and therefore would not be at a level to affect a substantial number of people. In addition, construction equipment would be operated at various locations throughout the construction site and would occur temporarily in the vicinity of existing receptors. Therefore, **impacts associated with odors during construction are considered less than significant**.

Residential and Commercial Uses

The Project's commercial uses would be required to comply with the County's Zoning Ordinance, Section 6318, preventing the release of unpleasant odors that are perceptible by the average person. According to SCAQMD's *CEQA Air Quality Handbook* (1993), land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations; therefore, the residential uses would not be expected to be a source of odor impacts. **Impacts associated with odor sources from commercial and residential uses are considered less than significant**.

Wastewater Treatment and Water Reclamation Facility

Operation of the WTWRF has the potential to result in odor impacts because of the nature of the activities at the proposed facility. However, the frequency with which the facility would expose the public to objectionable odors would be minimal based on the control measures planned in the design. In addition, the WTWRF would comply with Section 6318 of the County Zoning Ordinance, which states that "All commercial and industrial uses shall be operated so as not to emit matter causing unpleasant odors which are perceptible by the average person at or beyond any lot line of the lot containing said uses" and that odors be required to be diluted by "a ratio of one volume of odorous air to eight or more volumes of clean air." Active odor control units would be located to manage gases from the wet and solids stream treatment processes. All processes and equipment would be housed (or otherwise contained) and ventilation controlled such that no objectionable odors would be discernible at the Project site boundaries.

Odors are typically associated with particular steps in the wastewater treatment process. Initially, raw wastewater is transferred to the primary clarifiers where most solids are separated from the liquid portion of wastewater in the treatment process. A ferrous chloride solution is added to the raw wastewater before it enters the primary clarifiers to reduce odors at that treatment stage.

Wastewater undergoing aerobic digestion (decomposition with free oxygen) in the aeration basins emits a characteristically musty odor due to the particular type of biogases released in the process. A misting system with odor neutralizing liquids breaks down the foul smelling chemical compounds in the biogases. Chlorine gas is used to disinfect the non-potable water, which is used daily to wash down all areas of the plant. Bio filters remove odor by capturing the odor causing compounds in a media bed where they are oxidized by naturally occurring micro-organisms.

Facilities that cause nuisance odors are subject to enforcement action by the SDAPCD. The SDAPCD responds to odor complaints by investigating the complaint determining whether the odor violated SDAPCD Rule 51. The inspector will take enforcement action if the source is not in compliance with SDAPCD rules and regulations and will inform the complainant of investigation results. In the event of enforcement action, odor-causing impacts must be mitigated by appropriate means to reduce the impacts to sensitive receptors. Such means include shutdown of odor sources or requirements to control odors using add-on equipment.

The odor control design for the facility would be such that no objectionable odors would be detected by nearby residences or other sensitive receptors. Additionally, disposal of biosolids at landfill sites could also contribute to odors and increase air emissions at these end-use facilities. However, the County would only allow facilities that have addressed all site-specific impacts. Therefore, **impacts associated with odor sources from the WTWRF are considered less than significant.**

2.6.3 Cumulative Impact Analysis

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations maintained and operated by the SDAPCD, measures the concentrations of pollutants from existing sources. Past and present project impacts are, therefore, included in the background ambient air quality data. The cumulative projects used in the air quality analysis are the same 65 projects presented in Figure 1-23. For the purpose of non-attainment pollutants, the cumulative study area would be the entire air basin; however, contributions from individual projects on basin-wide non-attainment pollutants cannot be determined through modeling analyses. The screening distance for odors is 1 mile (SMAQMD 2009).

As discussed in above under Impacts to Sensitive Receptors, the SDAB has been designated as a federal non-attainment area for ozone, and a State non-attainment area for ozone, PM_{10} and $PM_{2.5}$; therefore, a regional cumulative impact currently exists for ozone precursors (NO_X and VOCs) and PM_{10} and $PM_{2.5}$. In analyzing cumulative impacts for air quality, specific evaluation must occur regarding a project's contribution to the cumulative increase in non-attainment pollutants. A project that has a significant impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_X and/or VOCs, would have a significant cumulative effect. In the event direct impacts from the project are less than significant, a project still may have a cumulatively considerable impact on air quality if the emissions from the project, in combination with the emissions from other proposed, or reasonably foreseeable, future projects are in excess of the County's air pollutant screening levels. The text below addresses each of the thresholds relative to cumulative contribution during the Project's construction and operational phases.

2.6.3.1 *Construction*

Short-term emissions associated with construction generally result in near-field impacts. In particular, with respect to local impacts, the consideration of cumulative construction particulate (PM_{10} and $PM_{2.5}$) impacts is limited to cases when projects constructed simultaneously are within a few hundred yards of each other because of (1) the combination of the short range (distance) of particulate dispersion (especially when compared to gaseous pollutants); and (2) the SDAPCD's required dust-control measures, which further limit particulate dispersion from a project site. Based on the cumulative projects identified in Figure 1-23, there are no known projects within 1,500 feet of the proposed Project where major construction would occur concurrently with the project. As mentioned previously, the HGV project is currently under construction. It is anticipated that all major grading activities would be completed prior to the commencement of HGV South construction. Therefore, there would be no cumulative construction particulate impacts. Further, any cumulative projects would also need to comply with SDAPCD Rules for dust control and construction equipment, which would further reduce emissions of particulates.

The discussion under Conformance to Federal and State Ambient Air Quality Standards concludes that the Project would not result in a direct impact to air quality during construction; and as discussed under Impacts to Sensitive Receptors, the Project would not have significant impacts to sensitive receptors. In consideration of these factors, **construction of the Project would not result in a cumulatively considerable contribution to a significant air quality impact pertaining to NO_X, VOCs, PM_{10}, and $PM_{2.5}$**.

2.6.3.2 *Operation*

Based on the County Guidelines, a project that does not conform to the RAQS and/or has a significant direct impact on air quality with regard to operational emissions of non-attainment pollutants would also have a cumulatively considerable net increase. Also, projects that cause road intersections to operate at or below a LOS E and create a CO hot spot create a cumulatively considerable net increase of CO.

Based on the analysis presented in Section 2.6.2, the Project would be inconsistent with the RAQS and SIP. As a result, **the cumulative impact is considered significant**. **(Impact AQ-1b)**

As described above, the Proposed Project would not exceed the County's screening-level thresholds. As discussed under Impacts to Sensitive Receptors, the Project would not create a CO hotspot that would result in a cumulatively considerable net increase of CO. Therefore, **the Project would not create a cumulatively considerable net increase in criteria pollutants associated with operation and impacts would be less than significant**.

The effects of objectionable odors would be localized to the immediate surrounding area and would not contribute to a cumulatively considerable odor. Odor control design for the WTWRF would be such that no objectionable odors would be detected by nearby residences or other sensitive receptors. Accordingly, **contributions to odor impacts would not be considerable and impacts would be less than significant**.

2.6.4 Significance of Impacts Prior to Mitigation

The following significant impacts related to air quality would occur under Proposed Project implementation:

Impact AQ-1a The Proposed Project is proposing an increase in housing units beyond what was included for the site in the RAQS; therefore, impacts associated with conformance to regional air quality plans would be potentially significant.

Impact AQ-1b Operation of the Proposed Project would not conform to the RAQS. As a result, the Project is considered to have a significant cumulative impact.

2.6.5 Mitigation

Measures to reduce construction dust emissions are required by the SDAPCD Rule 55 – Fugitive Dust Control and are included as PDFs for the Proposed Project, as listed in Table 1-2. With the implementation of the fugitive dust control design measures, Project construction impacts are less than significant.

The following mitigation measure is required for Impacts AQ-1a and AQ-1b.

M-AQ-1 The County shall provide a revised housing forecast to SANDAG to ensure that any revisions to the population and employment projections used by the SDAPCD in updating the RAQS and SIP will accurately reflect anticipated growth due to the Proposed Project.

2.6.6 Conclusion

The Project would be compliant with federal, state and local orders, ordinances, and regulations related to control of criteria pollutants emissions. Project design and regulatory compliance would result in both Project-direct and cumulatively considerable impacts being less than significant with regard to criteria pollutant emissions.

Implementation of the Proposed Project would be inconsistent with the current RAQS and SIP because the density proposed is greater than what was included in the RAQS (Impacts AQ-1a and AQ-1b). These represent significant impacts. M-AQ-1 requires that the County provide a revised housing forecast to SANDAG to ensure that any revisions to the population and employment projects are considered. The provision of housing information would assist SANDAG in revising the housing forecast. Until the anticipated growth is included in the emission estimates of the RAQS and the SIP by the SDAPCD, however, the direct and cumulative impacts (Impacts AQ-1a and AQ-1b) would remain significant and unmitigable.

Table 2.6-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		-		
Fine Particulate Matter ($PM_{2.5}$)[8]	24-Hour	-	-	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3		
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3	-	Non-Dispersive Infrared Photometry (NDIR)
	8-Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	-	
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		-	-	-
Nitrogen Dioxide (NO_2)[9]	1-Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	0.100 ppm (188 µg/m^3)	-	Gas Phase Chemilumi-nescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[10]	1-Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m$^{3)}$	-	Ultraviolet Fluorescence; Spectro-photometry (Pararo-saniline Method
	3-Hour	-		-	0.5 ppm (1300 µg/m^3)	
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3) (for certain areas)[9]	-	
	Annual Arithmetic Mean	-		0.030 ppm (80 µg/m^3) (for certain areas)[9]	-	
Lead[11,12]	30-Day Average	1.5 µg/m^3	Atomic Absorption	-	-	-
	Calendar Quarter	-		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average	-		0.15 µg/m^3		
Visibility Reducing Particles[13]	8-Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Notes for Table 2.6-1:

[1] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current federal policies.

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

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

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the USEPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the USEPA.

[8] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over three years.

[9] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 and 0.100 ppm, respectively.

[10] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-hour average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971standards remain in effect until implementation plans to attain or maintain the 2010 standards have are approved.

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

[12] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[13] In 1989, the CARB converted both the general Statewide 10-mile visibility standards and the Lake Tahoe 20-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the Statewide and Lake Tahoe Air Basin standards, respectively.

Source: CARB 2013
ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter

Table 2.6-2
AMBIENT BACKGROUND CONCENTRATIONS
SAN DIEGO MONITORING STATIONS

Air Pollutant	2013	2014	2015
Ozone			
Max 1-hour (ppm)	0.084	0.099	0.079
Days > CAAQS (0.09 ppm)	0	1	0
Max 8-hour (ppm)	0.075	0.080	0.071
Days > NAAQS (0.075 ppm)	0	5	0
Days > CAAQS (0.070 ppm)	4	8	3
Particulate Matter (PM_{10})			
Max Daily (µg/m3)	82.0	44.0	31.0
Days > NAAQS (150 µg/m3)	0	0	0
Days > CAAQS (50 µg/m3)	1	0	0
Annual Average (µg/m3)	23.2	21.6	17.5
Exceed CAAQS (20 µg/m3)	Yes	Yes	No
Particulate Matter ($PM_{2.5}$)			
Max Daily (µg/m3)	56.3	77.5	29.4
Days > NAAQS (35 µg/m3)	1	1	0
Annual Average (µg/m3)	10.5	9.6	No Data
Exceed NAAQS (15 µg/m3)	No	No	-
Exceed CAAQS (12 µg/m3)	No	No	-
Nitrogen Dioxide (NO_2)			
Max 1-hour (ppm)	0.061	0.063	0.048
Days > NAAQS (0.10 ppm)	0	0	0
Days > CAAQS (0.18 ppm)	0	0	0
Annual Average (ppm)	0.013	0.011	No Data
Exceed NAAQS (0.053 ppm)	No	No	-
Exceed CAAQS (0.030 ppm)	No	No	-
Carbon Monoxide (CO)			
Max 8-hour (ppm)	2.3	1.9	1.9
Days > NAAQS (9.0 ppm)	0	0	0
Days > CAAQS (9.0 ppm)	0	0	0
Max 1-hour (ppm)	3.2	3.5	3.1
Days > NAAQS (35 ppm)	0	0	0
Days > CAAQS (20 ppm)	0	0	0

Sources: CARB 2016 (www.arb.ca.gov [all pollutants except CO]; Escondido East Valley Parkway Monitoring Station
USEPA 2016 (http://www.epa.gov/airdata/ad_rep_con.html [used for CO])

Notes: > = exceeding; ppm = parts per million; µg/m^3 = micrograms per cubic meter;
Standard Mean = Annual Arithmetic Mean; No Data = Insufficient data available to determine the value.

Table 2.6-3
FEDERAL AND STATE AIR QUALITY DESIGNATIONS

Criteria Pollutant	Federal Designation	State Designation
O_3 (1-hour)	(No federal standard)	Non-attainment
O_3 (8-hour)	Non-attainment	Non-attainment
CO	Maintenance	Attainment
PM_{10}	Unclassifiable	Non-attainment
$PM_{2.5}$	Attainment	Non-attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Unclassifiable
Visibility	(No federal standard)	Unclassifiable

Source: CARB 2014a and USEPA 2013

Table 2.6-4
SCREENING-LEVEL THRESHOLDS FOR AIR QUALITY IMPACT ANALYSIS

Construction Emissions			
Pollutant	**Pounds per Day**		
Respirable Particulate Matter (PM_{10})	100		
Fine Particulate Matter ($PM_{2.5}$)	55		
Oxides of Nitrogen (NO_X)	250		
Oxides of Sulfur (SO_X)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOCs)	75		
Operational Emissions			
Pollutant	**Pounds Per Hour**	**Pounds per Day**	**Tons per Year**
Respirable Particulate Matter (PM_{10})	---	100	15
Fine Particulate Matter ($PM_{2.5}$)	---	55	10
Oxides of Nitrogen (NO_X)	25	250	40
Oxides of Sulfur (SO_X)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	---	3.2	0.6
Volatile Organic Compounds (VOCs)	---	75	13.7
Toxic Air Contaminant Emissions			
Excess Cancer Risk	1 in 1 million 10 in 1 million with T-BACT		
Non-cancer Hazard	1.0		

Source: SDACPD Rule 20.2 and Rule 1210
T-BACT = Toxics Best Available Control Technology

Table 2.6-5
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Phase	Equipment	Number
Site Prep and Blasting	Rubber Tired Dozers	3
	Tractors/Loaders/Backhoes	4
	Crushing/Proc. Equipment	1
Backbone Infrastructure	Forklift	1
	Off-Highway Truck	2
	Other Material Handling Equipment	1
	Tractors/Loaders/Backhoes	1
	Trenchers	1
Road Construction	Crawler Tractor	1
	Excavators	3
	Grader	1
	Roller	2
	Rubber Tired Loaders	1
	Scrapers	2
	Signal Boards	4
	Tractors/Loaders/Backhoes	2
Grading	Excavators	2
	Graders	1
	Rubber Tired Dozers	1
	Scrapers	2
	Tractors/Loaders/Backhoes	2
Bridge Construction	Cranes	2
	Forklift	1
	Tractors/Loaders/Backhoes	3
	Pumps	1
	Generators	2
Building Construction	Cranes	1
	Forklifts	3
	Generator sets	1
	Tractors/Loaders/Backhoes	3
	Welders	1
Center House Parking Lot Paving	Pavers	2
	Paving Equipment	2
	Rollers	2
Architectural Coating	Air Compressors	1

Source: CalEEMod and Roadway Model (output data, including equipment horsepower, is provided in Appendix A of EIR Appendix H).
Note: All equipment was assumed to operate 8 hours a day, with the exception of cranes and tractors/ loaders/backhoes (7 hours per day) and air compressors (6 hours per day).

Table 2.6-6
ESTIMATED CONSTRUCTION EMISSIONS

Construction Activity	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	lbs/day					
Site Preparation and Blasting	5	71	125	3	52	11
Backbone Infrastructure	3	29	19	<0.5	2	1
Road Construction	6	72	49	<0.5	13	5
Grading	5	54	41	<0.5	7	4
Bridge Construction	4	35	40	<0.5	5	2
Building Construction	4	26	35	<0.5	4	2
Center House Parking Lot Paving	1	13	15	<0.5	1	1
Architectural Coating	50	2	4	<0.5	1	<0.5
Maximum Daily Emissions	**54**	**100**	**125**	**3**	**52**	**11**
Screening-Level Thresholds	**75**	**250**	**550**	**250**	**100**	**55**
Exceedance?	**No**	**No**	**No**	**No**	**No**	**No**

Source: HELIX 2017b
Notes:
1. Fugitive dust measures (watering twice daily) were applied to control PM_{10} and $PM_{2.5}$ dust emissions.
2. Includes use of low-VOC coatings.
3. Maximum daily VOC emissions occur from May 2021 through September 2021 when Building Construction, Paving, and Architectural Coatings overlap.
4. Maximum daily NO_X emissions occur from October 2018 through March 2019 when Backbone Infrastructure and Road Construction overlap.
5. Maximum daily CO, SO_2, PM_{10}, and $PM_{2.5}$ emissions occur from July 2018 through September 2018 during Site Preparation and Blasting.

Table 2.6-7
OPERATIONAL EMISSIONS

Category	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	lbs/day					
Area	18	<0.5	38	<0.5	1	1
Energy	<0.5	1	1	<0.5	<0.5	<0.5
Mobile	13	24	124	<0.5	24	7
WTWRF Generators	1	7	7	<0.5	<0.5	<0.5
TOTAL	**32**	**32**	**169**	**<0.5**	**25**	**8**
Screening-Level Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Source: HELIX 2017b

Table 2.6-8
CONCURRENT OPERATIONAL AND CONSTRUCTION EMISSIONS

Category	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	lbs/day					
Construction[a]	54	36	51	<0.5	5	3
Operation[b]	16	16	85	<0.5	13	4
TOTAL[c]	**71**	**52**	**135**	**<0.5**	**18**	**6**
Screening-Level Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Source: HELIX 2017b
[a] Maximum daily construction emissions that may overlap with operations occur from May through September 2021 when Building Construction, Paving, and Architectural Coating phases overlap.
[b] Total for Peak Daily Operational Emissions assumes half of the Project is built and is therefore half of the results reported in Table 2.6-7.
[c] Totals may not add due to rounding.

Table 2.6-9
ESTIMATED TAC EMISSIONS FROM WTWRF

Compound	Peak Daily Emissions (lbs/day)
Ammonia	4.498E-05
Benzene	8.712E-08
Chloroform	1.217E-06
Ethyl Benzene	3.379E-07
Hydrogen Sulfide	2.929E-06
1,1,1-TCA	3.980E-07
Methylene Chlorine	1.172E-06
1,4-Dichlorobenzene	6.984E-07
Phenol	1.472E-06
Styrene	7.510E-07
Toluene	7.360E-07
TCE	3.905E-07
Xylene	8.802E-07
TOTAL VOC EMISSION	**5.605E-05 (or 0.00005605)**
Screening-Level Thresholds	75
Exceedance?	No

Source: HELIX 2017b

Table 2.6-10 **CO HOT SPOTS MODELING RESULTS**			
Intersection	**Peak Period**	**Maximum 1-hour with Project Concentration**	**Maximum 8-hour with Project Concentration**
Valley Parkway at I-15 Northbound Ramps	AM	5.9	4.75
	PM	5.9	4.75
Country Club Drive at Harmony Grove Road	AM	4.9	4.05
	PM	5.0	4.12
Harmony Grove Road at Kauana Loa Drive	AM	5.0	4.12
	PM	5.1	4.19
Ambient Air Quality Standard		*20*	*9.0*
Significant Impact?		*No*	*No*

Source: HELIX 2017b
Notes:
1. CALINE4 dispersion model output sheets and EMFAC2011 emission factors are provided at the end of Appendix A in EIR Appendix H.
2. ppm = parts per million.
3. Peak hour traffic volumes are from the Project TIA (LLG 2017).
4. Highest 3 years SDAPCD (2011-2013) 1-hour ambient background concentration (4.4 ppm) + 2020 modeled CO 1-hour contribution.
5. Highest 3 years SDAPCD 8-hour ambient background concentration (3.70 ppm) multiply by 1-hour/8-hour conversion factor of 0.7 and then add the 2020 modeled CO 8-hour contribution.

Table 2.6-11 **CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS**			
Metric	**Dispersion Model Estimate**	**District's Significance Threshold**	**Exceeds Threshold?**
Cancer Risk[1]	0.03 in 1 million	1 in 1 million	No
Chronic Non-Cancer Hazard Index from DPM[2]	0.0005	1.0	No

Source: HELIX 2017b
Notes:
1 Assumes an exposure frequency of 260 days, exposure duration of 4.0 years, and an age sensitivity factor of 1 (Bay Area Air Quality Management District 2012)
2 Assumes a chronic DPM reference exposure level of 5 $\mu g/m^3$ (Office of Environmental Health Hazard Assessment 2012)

Table 2.6-12
WTWRF HEALTH RISK ASSESSMENT RESULTS

Compound	Annual Average Emissions (lbs/year)	Annual Ambient Conc. (μg/m^3)	Cancer Risk	Chronic Non-Cancer Risk	24-hr (Acute) Non-Cancer Risk
Ammonia	6.57E-03	1.41E-08	-	7.06E-11	1.76E-11
Benzene	1.27E-05	2.73E-11	8.25E-10	9.11E-12	4.05E-12
Chloroform	1.78E-04	3.82E-10	2.19E-09	1.27E-12	1.02E-11
Ethyl Benzene	4.93E-05	1.06E-10	2.79E-10	5.30E-14	-
Hydrogen Sulfide	4.28E-04	9.19E-10	-	9.19E-11	8.75E-11
1,1,1-TCA	5.81E-05	1.25E-10	-	1.25E-13	7.35E-15
Methylene Chlorine	1.71E-04	3.68E-10	3.89E-10	9.19E-13	1.05E-13
1,4-Dichlorobenzene	1.02E-04	2.19E-10	2.65E-09	2.74E-13	-
Phenol	2.15E-04	4.62E-10	-	2.31E-12	3.19E-13
Styrene	1.10E-04	2.36E-10	-	2.62E-13	4.49E-14
Toluene	1.07E-04	2.31E-10	-	7.70E-13	2.50E-14
TCE	5.70E-05	1.23E-10	2.59E-10	2.04E-13	-
Xylene	1.29E-04	2.76E-10	-	3.95E-13	5.02E-14
TOTAL	**8.18E-03**	**-**	**6.59E-09**	**<1**	**<1**

Sources: SJVAPCD 1993, OEHHA 2011, OEHHA 2013
Notes:
Assumed hydrogen sulfide would be controlled to 90 percent efficiency with scrubbers or biofilters that are part of the odor control system.
Cancer risk less than 10 in a million (1.00E-05) is considered less than significant.
Chronic and acute non-cancer risks less than 1 are considered less than significant.