4.3 Air Quality

The purpose of this Section is to identify existing air quality conditions within the Project area, analyze potential impacts to air quality associated with the development of the proposed Project, and identify mitigation measures that would avoid or reduce the significance of any identified impacts. Emissions of greenhouse gases resulting from the proposed Project and their potential to affect climate change are presented and discussed in Section 4.7, Greenhouse Gas Emissions. Thresholds of significance for the impact analysis are derived from Appendix G of the 2011 *CEQA Guidelines*.

4.3.1 Air Quality Overview

Criteria Air Pollutants

The Federal Clean Air Act (FCAA) requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter (PM10 and PM2.5), and lead. These pollutants are called "criteria" air pollutants. California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as state ambient air quality standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard. The criteria pollutants are described below:

Ozone. Ozone is produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant, requiring strong sunlight for approximately three hours to be produced. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways that can result in health problems particularly for individuals with existing respiratory diseases.

Carbon Monoxide (CO). Elevated CO concentrations are caused by vehicular traffic and generally occur as a local effect near roadways and intersections, although under inversion conditions, CO concentrations may be distributed more uniformly over a larger area. When inhaled at high concentrations, CO keeps oxygen from reaching the brain and heart causing acute system failure. CO concentrations have declined dramatically in California as a result of cleaner burning vehicle engines.

Respirable Particulate Matter (PM10 and PM2.5). PM10 is particulate matter that is 10 microns or less in diameter. PM2.5 is particulate matter 2.5 microns or less in diameter. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the lungs and can cause adverse health effects. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. The remaining fraction of particles, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on human health than PM10.

Nitrogen Dioxide (NO_2). NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce air visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Sulfur dioxide (SO_2). SO_2 is a combustion product of sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate. SO_2 can contribute to atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Fuels used in California are generally low in sulfur and as a result SO_2 air pollution is generally not significant in the State.

Lead. Lead is emitted into the atmosphere from combustion of lead-containing fuels. Over-exposure to lead has a range of adverse neurotoxin health effects that are most toxic to children. The phase-out of leaded gasoline in California has resulted in dramatically decreased levels of atmospheric lead. Ambient lead concentrations in the Project area meet both the federal and State standards.

Non-Criteria Air Pollutants

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are airborne substances that are capable of causing short-term (acute) or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects. TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaning facilities, industrial operations, and painting operations. The current State of California list of TACs includes over 200 compounds, including particulate emissions from diesel-fueled engines.

Odorous Emissions

Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odorous sources can include wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies.

Air Quality Standards

Table 4.3-1 presents current national and State ambient air quality standards and provides a brief discussion of the related health effects and principal sources for each pollutant.

Pursuant to the 1990 FCAA Amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. **Table 4.3-2** shows the current attainment status of the Mojave Desert Air Basin (MDAB), where the Project is located. Air quality in the MDAB meets all federal ambient air quality standards except for PM10. However, State ozone standards for the entire MDAB are in nonattainment due largely to influences from the adjacent south coast air basin.

TABLE 4.3-1
CALIFORNIA AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time[a]	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.07 ppm[b]	0.075 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	0.100 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030	0.053 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	0.075 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	24 hours	0.04 ppm	---		
Respirable Particulate Matter (PM10)	24 hours	50 μg/m3	150 μg/m3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 μg/m3	---		
Fine Particulate Matter (PM2.5)	24 hours	---	35 $\mu g/m^3$	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	Annual Avg.	12 $\mu g/m^3$	15 $\mu g/m^3$		
Lead	Monthly Avg.	1.5 $\mu g/m^3$	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 $\mu g/m^3$		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations).	Geothermal Power Plants, Petroleum Production and refining.
Sulfates	24 hour	25 $\mu g/m^3$	No National Standard	Breathing difficulties, aggravates asthma, reduced visibility.	Produced when sulfates react with the SO2 in the air.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate values, discourages tourism.	See PM2.5.

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
… = No Standard.

a The averaging time is the interval of time over which the sample results are reported.
b This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.

SOURCE: California Air Resources Board, *Ambient Air Quality Standards*, September 2010, page 1; California Air Resources Board, *ARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, accessed January 2011.

TABLE 4.3-2
MOJAVE DESERT AIR BASIN ATTAINMENT STATUS

	Designation/Classification	
Pollutant	**Federal Standards**	**State Standards**
Ozone – one hour	No Federal Standard[a]	Nonattainment/Moderate
Ozone – eight hour	Attainment/Unclassified[b]	Nonattainment
PM10	Nonattainment	Nonattainment
PM2.5	Attainment/Unclassified	Unclassified
CO	Attainment/Unclassified	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

a The Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005.
b An unclassified designation means that the area is unspecified.

SOURCE: California Air Resources Board, *Area Designation Maps,* http://www.arb.ca.gov/desig/adm/adm.htm, accessed January 2011.

4.3.2 Environmental Setting

The Project site is situated predominantly in undeveloped remote desert lands. The area is located on broad alluvial fans stretched between steep mountain ranges. The area is sparsely developed with some agricultural, residential, and mining developments, but for the most part is remote desert open space. The following sections describe the regional and local setting.

Regional Setting

San Bernardino County is divided into three regions including the western valley, the mountains, and the high desert. The Project would be located in the high desert region within the MDAB. The MDAB is comprised of four air districts: 1) the Kern County Air Pollution Control District (KCAPCD), 2) the Antelope Valley Air Quality Management District (AVAQMD), 3) the Mojave Desert Air Quality Management District (MDAQMD), and 4) the eastern portion of the South Coast Air Quality Management District (SCAQMD). The Project lies entirely within the MDAQMD, which includes the desert valleys in eastern San Bernardino County and the eastern portion of Riverside County.

The MDAB is comprised of sparsely populated desert open space consisting of rugged mountain ranges interspersed with broad alluvial valleys draining to central dry lake beds or ultimately to the Colorado River. Many of the lower mountain ranges rise from 1,000 to 4,000 feet above the valley floor, exceeding elevations of 7,000 feet above mean sea level. Prevailing winds in the MDAB are out of the west and southwest. However, air quality in the Cadiz Valley is affected by winds from the northwest trending southeastward. Periodic high wind events lift sand and dust into the air primarily from the edges of Bristol Dry Lake. Over the years, sand has been

transported southward in the valley forming dunes at the south end of the Cadiz Valley known as the Cadiz Dunes.[1]

Climate and Meteorology

Meteorological conditions such as wind speed, direction, and air temperature gradients interact with physical landscape features to determine the movement and dispersal of criteria air pollutants. During summer months, a Pacific Subtropical High Cell that sits off the coast generally influences the MDAB, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very-hot desert to indicate that at least three months of the year maximum average temperatures reach more than 100.4° Fahrenheit (F).[2] Local meteorological conditions are greatly affected by the topography of the region. Regionally, wind direction is primarily from the west, west-southwest, and southwest due to the proximity of the MDAB to the coast. However, locally within the Cadiz Valley, wind direction is from the northwest to the southeast as evidenced by sand deposits in the Cadiz Dunes.

Local Air Quality

The California Air Resources Board (CARB) and the MDAQMD regional air quality monitoring network provide information on ambient concentrations of non-attainment criteria air pollutants in the MDAB. The MDAQMD monitors air quality conditions at nine locations throughout the MDAB. The Joshua Tree National Monument monitoring station is located approximately 40 miles southwest of the Project site and the Victorville monitoring station is approximately 100 miles to the west. **Table 4.3-3** presents a three-year summary of air quality data collected at the monitoring stations for ozone and particulate matter. Table 4.3-3 also includes a comparison of monitored air pollutant concentrations with the state and national ambient air quality standards. The table shows that ozone concentrations in the area have stayed relatively stable while PM10 has declined in 2009 and 2010 in the Project vicinity.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. CARB has identified the following typical groups who are most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the MDAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, and medical facilities.

1 HydroBio, *Fugitive Dust and Effects from Changing Water Table at Bristol and Cadiz Playas, San Bernardino County, California*, August 2011.
2 Mojave Desert Air Quality Management District, *CEQA and Federal Conformity Guidelines*, February 2009.

TABLE 4.3-3
AMBIENT AIR QUALITY IN PROJECT VICINITY (2008–2010)

		Monitoring Data by Year		
Pollutant	**Standard[a]**	**2008**	**2009**	**2010**
Ozone – Joshua Tree National Monument				
Highest 1 Hour Average (ppm)[b]		**0.140**	**0.121**	**0.119**
Days over State Standard	0.09	36	24	19
Highest 8 Hour Average (ppm)[b]		**0.110**	**0.104**	**0.105**
Days over National Standard	0.075	72	59	53
Days over State Standard	0.070	108	90	90
Particulate Matter (PM10) – Victorville				
Highest 24 Hour Average ($\mu g/m^3$)[b] – State Measurement		**72**	**51**	40
Est. Days over State Standard[c]	50	NA	6.1	0
Highest 24 Hour Average ($\mu g/m^3$)[b] – National Measurement		77	53	44
Est. Days over National Standard[c]	150	0	0	0
State Annual Average ($\mu g/m^3$)[b]	20	NA	**23.9**	18.7

a Generally, state standards and national standards are not to be exceeded more than once per year.
b ppm = parts per million; μg/m3 = micrograms per cubic meter.
c PM10 and PM2.5 are not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.
Values in **bold** are in excess of at least one applicable standard. NA = Not Available.

SOURCE: California Air Resources Board, *Summaries of Air Quality Data, 2008 through 2010*, http://www.arb.ca.gov/adam, accessed January 2011.

Because the Project area is sparsely populated, there are very few sensitive receptors in proximity to the Project. The nearest sensitive receptors to the proposed Project facilities are three or four residences located approximately 3.3 miles north of the Project site near the corner of Cadiz Road and National Trails Highway. The small community of Amboy (population less than 20) is located approximately 10 miles to the west on Highway 66. No other sensitive receptor is located in the Project area for over 10 miles.

4.3.3 Regulatory Framework

Regulation of air pollution is achieved through both national and state ambient air quality standards and through emissions limits on individual sources of air pollutants. Local air quality management districts (AQMDs) and air pollution control districts (APCDs) are responsible for demonstrating attainment with state air quality standards through the adoption and enforcement of Attainment Plans.

Federal

The FCAA, enforced by the EPA, requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The FCAA Amendments require states containing areas that violate the national standards to revise their SIPs to incorporate additional control measures to reduce air pollution. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions. MDAQMD has an approved SIP for PM10 and ozone covering the Project area.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, state and local controls on individual sources. The FCAA Amendments require the EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. These substances include certain volatile organic chemicals (VOCs), pesticides, herbicides, and radionuclides that present a tangible hazard to humans.

State

California Clean Air Act

CARB is the State agency responsible for the coordination and administration of both state and federal air pollution control programs within California. CARB undertakes research, sets CAAQS, provides technical assistance to local AQMDs and APCDs, compiles emission inventories, develops suggested control measures and provides oversight of local programs.

CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county APCDs and regional AQMDs. CARB establishes state ambient air quality standards and vehicle emissions standards. Local AQMDs are responsible for compliance with the California Clean Air Act (CCAA).

California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. These are shown in Table 4.3-1. Under the CCAA, patterned after the FCAA, areas have been designated as attainment or nonattainment with respect to the State standards. Table 4.3-2 summarizes the attainment status with California standards in the Project vicinity.

Toxic Air Contaminants

The State Air Toxics Program of 1983 regulates TACs. A total of 243 substances have been designated TACs under California law which include the 189 (federal) HAPs. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. "High-priority" facilities are required to perform health risk assessments and, if specific thresholds are violated, are required to notify the public.

In August of 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. CARB set a goal of reducing emissions and associated health risks by 75 percent in 2010 and by 85 percent in 2020. The program would require diesel-fueled engines to use catalyzed diesel particulate filters and ultra low sulfur diesel fuel.

CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* in 2005[3] to provide guidelines to help the most vulnerable receptors. The handbook highlights recent studies that show that public exposure to air pollution can be substantially elevated near freeways and certain other facilities (i.e., distribution centers, rail yards, chrome platers, etc.).

[3] California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005, pages 1 – 32.

However, the health risk is greatly reduced with distance, so CARB made recommendations for keeping appropriate distances between sources of air pollution and sensitive land uses, such as residences.

Regional

Mojave Desert Air Quality Management District

The MDAQMD has jurisdiction over the desert portion of San Bernardino County and the far eastern end of Riverside County. The applicable MDAQMD attainment plan to the Project area is the *MDAQMD 2004 Ozone Attainment Plan (State and Federal)*[4]. This *Ozone Attainment Plan* included the latest assumptions regarding population, vehicle activity, and industrial activity and addressed existing and forecast ozone precursor-emitting activities within the MDAQMD through 2007. The MDAQMD's primary means of implementing this air quality plan is by adopting and enforcing rules and regulations.[5]

Activities of the proposed Project would be subject to MDAQMD rules and regulations, including:

- *Rule 403 Fugitive Dust:* A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction, or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source. (Does not apply to emissions emanating from unpaved roadways open to public travel or farm roads. This exclusion shall not apply to industrial or commercial facilities).
- *Rule 402 Nuisance:* A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- *Rule 1103 Cutback and Emulsified Asphalt*: A person shall not manufacture for sale nor use for paving, road construction, or road maintenance any a) rapid cure cutback asphalt; b) medium cure cutback asphalt; or c) slow cure cutback asphalt containing more than 0.5 percent by volume of VOC which evaporates at 260 degrees Celsius. A person shall also not manufacture for sale nor use for paving, road construction, or road maintenance any emulsified asphalt containing more than three (3) percent by volume of VOC which evaporates at 260 degrees Celsius.

The MDAQMD thresholds of significance for construction activities are shown in **Table 4.3-4** on the following page.

4 Mojave Desert Air Quality Management District, *2004 Ozone Attainment Plan (State and Federal), April 2004.*
5 Mojave Desert Air Quality Management District, *Rule Book: Regulation IV –Prohibitions, Regulation XI – Source Specific Standards*, http://www.mdaqmd.ca.gov/index.aspx?page=138, accessed November 2011.

TABLE 4.3-4
MDAQMD AIR EMISSIONS SIGNIFICANCE THRESHOLDS FOR CONSTRUCTION ACTIVITIES

Pollutant	Pounds Per Day	Tons Per Year
NOx	137	25
VOC (ROG)	137	25
PM10	82	15
PM2.5	82	15
CO	548	100

SOURCE: Mojave Desert Air Quality Management District, *CEQA and Federal Conformity Guidelines,* February 2009, page 10.

4.3.4 Impact and Mitigation Analysis

Significance Criteria

Based on the *CEQA Guidelines,* Appendix G, a project may be deemed to have a significant effect on the environment with respect to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

In addition to these thresholds provided in the *CEQA Guidelines*, MDAQMD has established guidance that a project is considered to have a significant impact on sensitive receptors if it proposes to locate any of the following land uses near sensitive receptors:

- Any industrial project within 1,000 feet,
- A distribution center (40 or more trucks per day) within 1,000 feet,
- A major transportation project (50,000 or more vehicles per day) within 1,000 feet,
- A dry cleaning using perchloroethylene within 500 feet, or
- A gasoline dispensing facility within 300 feet.

In addition, MDAQMD has established numeric emissions thresholds of significance for criteria air pollutants as shown in Table 4.3-4. The 2009 MDAQMD CEQA Guidelines conclude that a project would result in a significant operational air quality impact if any of the following occur:

- Direct or indirect emissions that exceed the significance thresholds set forth in Table 4.3-4;
- A project would not be compatible with MDAQMD air quality goals and policies;
- On-site stationary sources emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of ten in one million or an acute or chronic hazard index of 1.0; or
- Hazardous materials associated with on-site stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials posing a threat to public health and safety.

Methodology

The analyses of construction activities include analyses of regional emissions and local emissions of ROG, NOx, CO, PM10, PM2.5, and CO2. CARB-approved URBEMIS 2007 emissions model was utilized to determine emissions from construction equipment and haul trucks. EMFAC 2007 was utilized to determine emissions associated with worker and employee trips during construction and operations. Emissions estimates are compared to the MDAQMD thresholds of significance to determine whether construction or operation of the proposed Project would result in a significant impact to local air quality.

For post-construction operations, the analysis addresses regional emissions of CO, VOC, Nox, PM10 as well as local area concentrations of a specific pollutant, CO, generated by well sources. Emission factors based on SCAQMD BACT standards for natural gas turbines, as well as AP-42 emission factors for stationary gas turbines, were incorporated into the analysis to estimate the operational emissions of the Project.

Lead emissions are not included in the analysis. The Basin is currently in compliance with State and federal lead standards.

Groundwater Conservation and Recovery Component

Consistency with Air Quality Management Plans

Significance Threshold

Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

The 2009 MDAQMD CEQA Guidelines states that a project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable MDAQMD rules and regulations, complies with all proposed control measures of the applicable plan, and is consistent with the growth forecasts in the applicable plan. The MDAQMD has approved attainment plans for PM10 and ozone. The PM10 attainment plan identifies dust control measures to be included in MDAQMD Rules that would reduce construction dust emissions. Both Attainment Plans conclude that compliance with the MDAQMD adopted Rules and Regulations will achieve the desired air quality results.

The proposed Project infrastructure consists of 34 wells, a conveyance pipeline, a CRA tie-in facility, and an intermediate pump station which do not include residential development or large local or regional employment centers normally associated with increases in concentrations of pollutants. Thus, the proposed Project would not result in significant population or employment growth that could increase local concentrations of air pollutants and would be consistent with local growth forecasts. Although the Project would exceed thresholds of significance for NOx during construction as discussed below, these temporary emissions would not conflict with the local air quality plan to control long-term ambient ozone levels. Since the Project would comply with all control measures identified in the plan for construction activities, it would be consistent with the attainment plan (see **AQ-1 through AQ-4** below).

Mitigation Measures

Implement Mitigation Measures **AQ-1 through AQ-4**.

Significance Conclusion

Less than significant with mitigation.

Air Quality Standards

Significance Threshold

Would the proposed Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact Analysis

Construction emissions for the Project are based on both current emission factor data and the magnitude of development for the Project. The total amount of construction, the duration of construction and the intensity of construction activity could have a substantial effect upon the amount of construction emissions, concentrations and the resulting impacts occurring at any one time. As such, the emission forecasts provided reflect a specific set of conservative assumptions based on the expected construction scenario wherein the majority of construction is occurring over a two-year period.

Short Term Construction Emissions

Project construction activities would produce criteria pollutant emissions as a result of using heavy-duty construction equipment. Mobile source emissions would also be produced from construction worker vehicle trips to and from the Project site (see Appendix E). In addition, fugitive dust emissions would be generated from excavation activities and vehicle travel on paved and unpaved surfaces. The Groundwater Conservation and Recovery Component includes construction of approximately 34 wells, a conveyance pipeline, a CRA tie-in facility, and an intermediate pump station. Emissions were modeled in URBEMIS 2007 using the estimated list of construction equipment (see Table 3-4). The results of the analysis are summarized in **Table 4.3-5** (URBEMIS 2007 output sheets are included in Appendix E1).

Construction equipment exhaust would include fugitive dust (PM10 and PM2.5) emissions from construction that would vary from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites and do not represent a significant health hazard.

Fine Particulate Matter (e.g., PM2.5) is mostly derived from combustion sources, such as automobiles, trucks and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gasses such as NOx and SOx combining with ammonia. PM2.5 components from material in the earth's crust, such as dust, are also present with the amount varying in different locations. Fine Particulate Matter is associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture.

The total emissions listed in Table 4.3-5 are for worst case construction activities with mitigation applied to reduce dust and NOx emissions. The emissions estimates include combustion as well as excavation and grading emissions. Grading is assumed to be necessary over the entire construction footprint of the wellfield and conveyance facility to establish final contours.

TABLE 4.3-5
CONSTRUCTION EMISSIONS FROM GROUNDWATER CONSERVATION AND RECOVERY COMPONENT (lbs per day)[a]

Project Component	ROG	NO_x	CO	PM10	PM2.5
Wellfield Construction (including mobilization, site clearing and grading, drilling, site access, and demobilization)	18	**155**	89	6	6
Conveyance Pipeline / CRA Tie-in (including mobilization, site clearing and grading, excavation, backfilling, site access, and demobilization)	20	**145**	273	9	7
Storage Reservoir/ Pump Station (including mobilization, site clearing and grading, excavation, backfilling, site access, and demobilization)	14	115	57	**105**	26
Construction Employee Trips	7	92	63	2	2
Unmitigated Total	59	**507**	482	**122**	41
Mitigated Total	59	**433**	482	38	18
MDAQMD Thresholds of Significance	137	137	548	82	82
Significant after Mitigation (Yes or No)?	No	**Yes**	No	No	No

a Project construction emissions estimates were made using URBEMIS2007, version 9.2. 4. See Appendix E1 for more information.

Values in **bold** are in excess of the applicable MDAQMD significance threshold. NA = Not Available

SOURCE: ESA, 2011.

As depicted in Table 4.3-5, construction of the wellfield and pipeline would emit significant amounts of NOx due to the heavy, diesel-fueled equipment required for construction. PM10 emissions associated with the wellfield and pipeline would be below the MDAQMD thresholds of significance after mitigation as shown in Table 4.3-5. Construction of a forebay (if required) would

result in significant PM10 emissions if unmitigated. Implementation of Mitigation Measures **AQ-1 through AQ-4** would ensure compliance with Rule 403. Table 4.3-5 shows both mitigated and unmitigated emissions estimates. The resulting PM10 emissions after mitigation would be less than significant. However, NOx emissions during construction would remain significant and unavoidable.

Operation – Mobile Sources

Operation of the Project is anticipated to result in minimal vehicular trips, consisting of less than three trucks per day travelling less than 20 miles each on average. These trips account for on-site employees conducting routine maintenance and monitoring of the wellfield and pipeline. Wells and pumps are highly automated requiring infrequent maintenance. The pipelines would be largely underground and serviced on an as-needed basis. Daily emissions from these on-road vehicles would be substantially less than the significance thresholds.

Natural Gas to Power Pumps

Depending on the wellfield configuration, there would be between approximately 22 and 34 wells in operation. For purposes of this analysis, it is assumed that the wells would operate simultaneously 24-hours per day 365 days per year. The electric motors used to operate the wells would range from 1,000 to 1,250 hp using natural gas engines supplied by locally available natural gas. Two configurations may be used including installing engines at each wellhead, or constructing a centralized generator that supplies the entire wellfield with electricity. The MDAQMD requires permits to operate new internal combustion engines. Therefore, each natural gas engine would require a permit from MDAQMD prior to initiation of the Project.

The amount of electrical energy required to operate the wellfield would be approximately 30,800,000 kWh per year, and the amount necessary to power the intermediate pump station (if required) would be approximately 22,000,000 kWh per year, totaling 52,800,000 kWh per year, or 513 billion Btu per year.[6] **Table 4.3-6** shows the estimated emissions from natural gas engine operations. No emissions would exceed MDAQMD thresholds; therefore natural gas engine operational emissions would be less than significant.

If electricity from the grid is used to power the Project, emissions would be generated at offsite power generation facilities, but no additional emissions would be generated on site within the Cadiz Valley. Offsite power would be generated by a wide network of power generating facilities that include fossil-fuel burning and renewable energy sources. Each generator is permitted to generate power under the CAA. If power from the grid is used, the proposed Project would add additional load to the grid, but the emissions associated with the additional power generation

6 RBF Consulting, *Power Requirements Analysis Technical Memorandum, Cadiz Groundwater Conservation and Storage Project, San Bernardino County, California, Phase* 1, November 2010. Natural gas consumption rates were obtained by using a 40% conversion efficiency for natural gas generators (thermal energy to electrical energy) and a 30% conversion efficiency for natural gas engines (thermal energy to mechanical energy). The natural gas engines that are used for the Project would be reciprocating (or internal combustion) natural gas engines, which typically offers energy efficiencies ranging from 25 to 45 percent (California Energy Commission, *California Distributed Energy Resource Guide,* http://www.energy.ca.gov/distgen/equipment/reciprocating_engines/-reciprocating_engines.html, accessed November 2011). Data shown are for 50,000 AFY. Electricity and natural gas use would be 72,700,000 kWh/year and 683 billion BTU/year, respectively, assuming 100,000 AFY.

would be spread throughout the Western U.S., and would not result in significant air quality impacts or violations of the CAA.

TABLE 4.3-6
OPERATIONAL EMISSIONS FROM NATURAL GAS ENGINES
(lbs per day)

Project Component	VOC	NO_x	CO	PM10
Pump Station	1.76	6.31	9.22	4.52
Wellfield at 50,000 AFY	1.84	6.63	9.68	4.75
Wellfield at 75,000 AFY	3.04	10.91	15.94	7.82
Wellfield and Pump Station (50,000 AFY)	3.60	12.94	18.91	9.28
Wellfield and Pump Station (75,000 AFY)	4.79	17.22	25.16	12.34
MDAQMD Thresholds of Significance	137	137	548	82
Significant (Yes or No)?	No	No	No	No

See Appendix E for the modeling outputs.

SOURCE: ESA, 2011.

Conversion of Existing Diesel Engines

Currently, the agricultural operations on the Cadiz Property utilize seven existing wells for irrigation. Each well is powered with diesel engines. As part of the Project, five of the seven Cadiz irrigation wells would be incorporated into the Project wellfield (Wells 21S, 27N, 27S, 28 and 33) and converted to natural gas power. In addition, the two agricultural wells not incorporated into the Project wellfield and the well Test Well-1 (TW-1) would also be converted to natural gas. This would substantially reduce existing NOx emissions associated with the diesel engines. The emissions estimates provided in Table 4.3-6 include five converted agricultural wells.

Operation – Agricultural Dust

The Project would operate in conjunction with existing agricultural operations. If agricultural activities are terminated as a result of the Project, the existing fields would be fallowed. Dust emissions from fallowed fields could increase the overall dust emissions in the valley under current conditions. The agricultural activities are subject to County and MDAQMD management practices to minimize dust emissions. Currently, over one square mile of agricultural land at the Cadiz Ranch is in a fallowed state as a result of normal agricultural operations. The agricultural operator is required by the County and the MDAQMD's Rule 403 to manage fallowed lands in a manner that protects from excessive dust emissions. If the Project increases the amount of fallowed land at the Cadiz Ranch, the agricultural operator would be subject to these same conditions. Compliance with County and MDAQMD requirements to manage dust emissions from fallowed land would minimize emissions and result in a less than significant impact to air quality.

Dry Lake Bed Dust Emissions

During the operation of the Project, water levels would be lowered in the wellfield area. The effect of the drawdown would extend toward the Bristol and Cadiz Dry Lakes. See Section 4.8, Hydrology and Water Quality for details on the groundwater drawdown. An analysis was conducted to evaluate whether the Dry Lake surfaces would be adversely affected from the lowering of groundwater levels.[7] The analysis found that surface soils on Bristol and Cadiz Dry Lakes form crusts when dried and that the crusts resist wind erosion. The analysis concludes that the crusty soil on the surface of the Dry Lakes does not rely on groundwater to maintain its integrity, but rather the dominant salts in the soils form a crust when dried. This crusting mechanism minimizes airborne dust from the Dry Lake surfaces.

The tendency for dust and sand to be lofted into the air during windy weather conditions is regulated by both the surface soil type and the amount of vegetation holding the soil in place. The natural salts in the surface soils at the Bristol and Cadiz Dry Lakes form crusts as they dry out. The dominant salt species on these Dry Lakes are sodium chloride and calcium chloride, which tend to bind into a hard crusty surface material when dry, forming a "self-healing" crust that is generally resistant to wind erosion. By comparison, the salt species in the Owens Dry Lake (a terminal lake that has experienced dust emissions due to reduction of surface water) is comprised mostly of carbonate, bicarbonate, and sulfate that tends to break apart when dried out, forming loose, fluffy soils that are easily lofted into the air by the wind.[8]

Appendix E3 includes a 2011 summary report on the analysis characterizing the soils on the Bristol and Cadiz Dry Lake surfaces. The analysis reports sample results of the chemical composition of the Dry Lakes' surface soil. The analysis notes that the Bristol and Cadiz Dry Lakes have likely been Dry Lakes for most of their existence of thousands of years. Furthermore, groundwater levels across the eastern portion of the Bristol Dry Lake are greater than 10 feet below ground surface. The surface crust is naturally dry and does not rely on moisture from surface water or from capillary action from the groundwater for the prevention of dust emissions. The groundwater becomes shallower (less than 10 feet bgs) on the western portion of Bristol Dry Lake and at the northern edge of Cadiz Dry Lake. In these locations, soil samples indicate that the dominant salt species are chlorides that create crusts when desiccated and exhibit resistance to wind erosion. If groundwater levels decrease in these areas, the surface soils would behave similar to the eastern portion of the Bristol Dry Lake currently, which retains a crusty, wind-resistant surface even when groundwater depths are greater than 60 feet. Based on this analysis, reduction in groundwater levels beneath the Dry Lake would not alter the Dry Lake surface conditions or increase dust emissions in the valley.

The GMMMP prepared for the Project to provide for the adaptive management of the basin includes seven measures to monitor Project operations and potential effects on critical resources. The measures are presented in Chapter 6 of the GMMMP and are referred to as Project Design Features in this EIR. Although no potentially significant impact to air quality from lakebed dust

7 HydroBio, *Fugitive Dust and Effects from Changing Water Table at Bristol and Cadiz Playas, San Bernardino County, California,* August 2011.

8 HydroBio, *Fugitive Dust and Effects from Changing Water Table at Bristol and Cadiz Playas, San Bernardino County, California,* August 2011.

would occur as a result of the Project, as a conservative monitoring protocol, the GMMMP provides for verification monitoring of air quality in the Cadiz Valley. The Project Design Feature from the GMMMP that pertains to verification air quality monitoring is listed below.

- GMMMP Project Design Feature 6.8 – Air Quality

The GMMMP requires that FVMWC install one nephelometer down-wind from Bristol Dry Lake and one down-wind of Cadiz Dry Lake to establish a set of baseline data of visibility in the valley. In addition, the GMMMP requires FVMWC to conduct annual visual observations at four points on the Dry Lakes to record surface soil conditions. The visual observations will note soil texture and record susceptibility to wind erosion. Photographs of the soil will be taken. This data will record conditions over time on the Dry Lake surface.

The Action Criteria and Corrective Measures for this project design feature is summarized in **Tables 4.3-7**.

TABLE 4.3-7
GMMMP PROJECT DESIGN FEATURE 6.8 – AIR QUALITY

Action Criteria	Corrective Measures

1. Changes in air quality that exceed baseline conditions over a five-year moving average	• Modification of Project operations to re-establish baseline level air quality levels. Modifications to Project operations would include one or more of the following:
	  • Reduction in pumping from Project wells;
	  • Revision of pumping locations within the Project wellfield;
	  • Stoppage of groundwater extraction for a duration necessary to correct the predicted impact.

SOURCE: CH2M Hill, *Groundwater Management, Monitoring, and Mitigation Plan*, November 2011.

This Project Design Feature is part of the project description**Mitigation Measure AQ-5** would ensure that the Project Design Feature is implemented and the corrective measure identified in the GMMMP would be implemented if action criteria are exceeded. Impacts to air quality resulting from the proposed Project would be less than significant with mitigation.

Operational Air Emissions Summary

In summary, the Project would not result in operational emissions that would exceed MDAQMD's thresholds of significance. The Project-generated emissions would not be anticipated to result in a substantial contribution to a violation of national standards, state standards, or the nonattainment status. As a result, air emissions impacts would be less than significant.

Mitigation Measures

AQ-1: Construction and operation of the proposed Project shall be conducted in compliance with applicable rules and regulations set forth by the Mojave Desert Air Quality Management District.

AQ-2: The following dust control measures shall be implemented during construction:

- All soil excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas.
- Watering shall take place a minimum of twice daily on unpaved/untreated roads in areas with active operations.
- Areas disturbed by clearing, earth moving, or excavation activities shall be minimized at all times.
- Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method such as non-toxic soil binders to prevent wind-blown fugitive dust.
- On-site vehicle speed on unimproved roads shall be limited to 15 miles per hour.
- Streets adjacent to the Project site shall be kept clean and Project-related accumulated silt shall be removed.

AQ-3: The following measures shall be implemented during construction of the proposed Project:

- All equipment shall be maintained as recommended by manufacturer's manuals.
- Idling engines shall be shut down when not in use for over 30 minutes.
- Electric equipment shall be used whenever possible in lieu of diesel or gasoline powered equipment.
- All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOx emissions.
- On-road and off-road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.
- The Project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction Project (i.e., owned, leased, and subcontractor vehicles) would achieve a Project-wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or repowering off-road engines/equipment with Tier 2 or Tier 3 engines that operate within allowable emission ranges and as a result, would achieve emission reductions.

AQ-4: All trucks hauling dirt, sand, soil, or other loose materials are to be covered.

AQ-5: The Project Design Feature in Chapter 6.8 of the GMMMP shall be implemented to verify air quality. If changes in air quality occur that exceed baseline conditions over a five-year moving average, the following corrective measures shall be implemented:

- Modification of Project operations to re-establish baseline level air quality levels. Modifications to Project operations would include one or more of the following:
  - Reduction in pumping from Project wells;
  - Revision of pumping locations within the Project wellfield;
  - Stoppage of groundwater extraction for a duration necessary to correct the predicted impact.

Significance Conclusion

Even after mitigation, NOx short-term construction emissions would remain significant and unavoidable. Long-term operational emissions would be less than significant.

Sensitive Receptors

Significance Threshold

Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxins and CO are of particular concern. Here, the Project area is sparsely populated. The nearest sensitive receptors to the proposed Project facilities are three or four residences located approximately 3.3 miles north of the Project site near the corner of Cadiz Road and National Trails Highway. The small community of Amboy is located approximately 10 miles to the west on Highway 66, and is populated by less than 20 people. No other sensitive receptor is located in the Project area for over 10 miles.

Carbon Monoxide Hotspots

Carbon Monoxide (CO) emitted from car engines can create localized pockets of high concentrations known as "hot spots." These hot spots are generally associated with slow moving traffic in confined or busy intersections. As shown in Table 4.3-3 above, the MDAB is in attainment for CO. CO hot spots are not generally a concern in the open desert environment. Furthermore, CO concentrations have declined dramatically in California due to the retirement of older polluting vehicles, fewer emissions from new vehicles, and improvements in fuels.

Operational emissions from mobile sources are estimated to be less than three trucks monitoring the wellfield and pipeline at any given time. Due to the small number of daily trips, and the lack of traffic congestion in the area, the effect of Project-related traffic on local CO concentrations along roadways and at intersections would be minimal and would not adversely affect local sensitive receptors. Because of its rural character with large open space, the Project would not generate traffic at volumes that could result in excessively slow speeds in confined areas that would warrant conducting a CO hot spot analysis. Thus, the short-term construction and long-term operational mobile-source impact of the Project on CO concentrations would be less than significant.

Toxic Air Contaminants

Construction of the Project would result in short-term diesel exhaust emissions that include diesel particulate matter (DPM). DPM are designated TACs emitted from heavy-duty diesel-powered equipment. The dose to which sensitive receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher dose level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. While Project construction would generate DPM emissions from the use of off-road diesel equipment required for site grading and excavation and other construction activities because of the large distances between the construction areas and sensitive receptors, exposure levels would be minimized. Also, the temporary nature of the emissions that limit overall dose levels, DPM from construction activities would not be anticipated to result in the exposure of sensitive receptors to levels that exceed applicable standards.

In addition, the long-term operation of the Project would not result in any toxic air emissions. Conversion of the existing diesel-fueled engines to natural gas would reduce the DPM emissions in the Project area. As a result, exposure of sensitive receptors to toxic air emissions from the Project would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant.

Objectionable Odors

Significance Threshold

Would the proposed Project create objectionable odors affecting a substantial number of people?

Impact Analysis

Types of land uses that typically pose potential odor problems include agriculture, wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies. In addition, the occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. No part of the Project would include or generate sources of potential odors for two reasons. First because the Project site is located over three miles from nearest residences and is over 10 miles from foot travel or hiking areas. And second because the Project will be putting and taking water from the groundwater basin, it is not treating the existing waters. Moreover, the well pumps would be powered by

natural gas or electricity, not diesel, and therefore no diesel fumes or odors would be emitted. Therefore, odor emissions resulting from the Project would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant.

Cumulative Impact

Significance Threshold

Would the proposed Project result in a cumulatively considerable air quality impact?

Impact Analysis

A cumulative impact occurs when two or more individual effects, considered together, are considerable or would compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. The geographic area that is considered when evaluating cumulative air quality impacts is the Mojave Desert Air Basin. Notably, any project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.

Short-Term Construction Emissions

Implementation of Mitigation Measures **AQ-1 through AQ-4** for the proposed Project would ensure implementation of the MDAQMD requirements to control fugitive dust at construction sites and limit construction dust and vehicle and equipment emissions. As discussed above, even with implementation of Mitigation Measures **AQ-1 through AQ-4**, the Project would exceed MDAQMD significance thresholds for NOx. This would result in a significant and unavoidable air quality impact during the two-year construction period. Because the Project construction alone would exceed significance thresholds established by the MDAQMD, when considered in conjunction with overlapping construction projects in the MDAQMD, its contribution to cumulative air quality impacts may be "cumulatively considerable" even with implementation of mitigation measures.

Long Term Operational Emissions

Project operations would not create emissions that would exceed the MDAQMD thresholds due to minimal daily operational trips and low emissions from engine operations. Long-term Project operations would not result in significant cumulative impact.

Mitigation Measure

Implement Mitigation Measures **AQ-1 through AQ-4**.

Significance Conclusion

Though operational emissions would not be cumulatively considerable, short term construction activities would exceed MDAQMD standards and would therefore result in a significant and unavoidable cumulative impact even after mitigation.

Imported Water Storage Component

This component is analyzed on a programmatic basis.

Consistency with Air Quality Management Plans

Significance Threshold

Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

The 2009 MDAQMD CEQA Guidelines state that a project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable MDAQMD rules and regulation, complies with all proposed control measures that are not yet adopted from the applicable plan, and is consistent with the growth forecasts in the applicable plan. The Project does not include residential development or large local or regional employment centers in the MDAB and thus, would not result in significant population or employment growth that could increase concentrations of air pollutants in the MDAB. The MDAQMD has approved attainment plans for PM10 and ozone. The PM10 attainment plan identifies dust control measures to be included in MDAQMD Rules that would reduce construction dust emissions. Both Attainment Plans conclude that compliance with the MDAQMD adopted Rules and Regulations will achieve the desired air quality results.

Similar to the Groundwater Conservation and Recovery Component, temporary construction emissions associated with the expanded wellfield, existing natural pipeline appurtenances, and spreading basins would not conflict with the local air quality plan to control long-term ambient ozone and PM10 levels. The Project would comply with control measures identified in the plan for construction activities. As a result, the Project would be consistent with the local air quality plan.

Mitigation Measures

Implement Mitigation Measures **AQ-1 through AQ-4**.

Significance Conclusion

Less than significant with mitigation.

Air Quality Standards

Significance Threshold

Would the proposed Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact Analysis

Short Term Construction Emissions

The Imported Water Storage Component would construct a CRA diversion structure, pump station, spreading basins, existing natural gas pipeline appurtenances, and an expansion of the wellfield (10 to 15 new wells). Due to uncertainty about when and where these additional facilities and pipelines may be constructed, air quality impacts have not been quantified in the same manner as they have for the Groundwater Conservation and Recovery Component. However, construction of the expanded wellfield would likely utilize similar equipment as that used for the Groundwater Conservation and Recovery Component. As summarized in Table 4.3-5, it is anticipated that expansion of the wellfield during construction would emit significant amounts of NOx due to the heavy diesel-fueled equipment required for construction. Therefore NOx emissions during construction of the expanded wellfield would likely also be significant and unavoidable. Construction of the spreading basins for the Imported Water Storage Component would utilize construction equipment similar to the forebay analyzed for the Groundwater Conservation and Recovery Component. As with construction of the forebay, PM10 emissions associated with construction of spreading basins may result in significant PM10 emissions that would be reduced to less than significant levels with Mitigation Measures **AQ-1 through AQ-4**.

Operation

Implementation of the Imported Water Storage Component would not substantially increase mobile source emissions since it would result in minimal new vehicular trips to maintain and operate the expanded system. The operational emissions associated with the well pumps would increase commensurate with the number of new wells, but would not be expected to increase significantly. As is expected for the Groundwater Conservation and Recovery Component, the MDAQMD would require permits to operate internal combustion engines in the Imported Water Storage Component. If electricity from the grid is used in place of natural gas to power wells and pumps, emissions would be generated at distant power plants where the power is created. In addition, as with the Groundwater Conservation and Recovery Component, the Imported Water Storage Component would not result in increased dust emissions off the Dry Lakes. Therefore, air emissions resulting from operation of the Imported Water Storage Component would be less than significant.

Mitigation Measures

Implement Mitigation Measures **AQ-1 through AQ-4**.

Significance Conclusion

Significant and unavoidable for NOx emissions during construction even with mitigation. Operational emissions would be less than significant.

Sensitive Receptors

Significance Threshold

Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

Due to the distance between construction activities and sensitive receptors (over three miles), construction of the Imported Water Storage Component would not emit air pollutants in quantities that could pose health concerns to local sensitive receptors. The potential for adverse health impacts to sensitive receptors to occur is a function of pollutant concentrations and duration of exposure. The distances to local residences and local wind patterns provide substantial dilution opportunities for pollutants emitted during construction. Furthermore, the temporary construction emissions would not result in long-term exposure to pollutants. Therefore, similar to the Groundwater Conservation and Recovery Component, this impact would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant.

Objectionable Odors

Significance Threshold

Would the proposed Project create objectionable odors affecting a substantial number of people?

Impact Analysis

Similar to the Groundwater Conservation and Recovery Component, no part of the Imported Water Storage Component would emit odors that could create nuisance conditions in addition to the fact that the expanded well-field and spreading basins would also be at least three miles away from the nearest population. Therefore, odor emissions resulting from the Project would be less than significant.

Mitigation Measures

None required.

Significance Conclusion

Less than significant.

Cumulative Impact

Significance Threshold

Would the proposed Project result in a cumulatively considerable air quality impact?

Impact Analysis

A cumulative impact occurs when two or more individual effects, considered together, are considerable or would compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. The geographic area that is considered when evaluating cumulative air quality impacts is the Mojave Desert Air Basin. Notably, any project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.

Short Term Construction Impacts

Due to uncertainty about when and where these additional facilities and pipelines may be constructed, air quality impacts have not been quantified in the same manner as they have for the Groundwater Conservation and Recovery Component. However, construction of the expanded wellfield would likely utilize similar equipment as that used for the Groundwater Conservation and Recovery Component. Implementation of Mitigation Measures **AQ-1 through AQ-4** for the proposed Project would ensure implementation of the MDAQMD requirements to control fugitive dust at construction sites and limit construction dust and vehicle and equipment exhaust emissions. As discussed above, even with implementation of Mitigation Measures **AQ-1 through AQ-4**, the Project would exceed MDAQMD significance thresholds for NOx. This would result in a significant and unavoidable air quality impact during the approximately 18-month construction period. Because the Project construction alone would exceed significance thresholds established by the MDAQMD, when considered in conjunction with overlapping construction projects in the MDAQMD, its contribution to cumulative air quality impacts are cumulatively considerable.

Long Term Operational Emissions

Project operations would not create emissions that would exceed the MDAQMD thresholds due to minimal daily operational trips and low emissions from engine operations. Long-term Project operations would result in a less-than-significant cumulative impact.

Mitigation Measure

Implement Mitigation Measures **AQ-1 through AQ-4**.

Significance Conclusion

Though operational emissions would not be cumulatively considerable, short term construction activities would exceed MDAQMD standards and would therefore result in a significant and unavoidable cumulative impact even after mitigation.

Mitigation Measure Summary Table

Table 4.3-8 presents the impacts and mitigation summary for Air Quality.

TABLE 4.3-8
IMPACTS AND MITIGATION SUMMARY

Proposed Project Impact	Mitigation Measure	Significance Conclusion
Groundwater Conservation and Recovery Component		
Consistency with Air Quality Management Plans	**AQ-1 through AQ-5**	Less than significant with mitigation
Air Quality Standards	**AQ-1 through AQ-5**	NOx short-term construction emissions would remain significant and unavoidable. Long-term operational emissions, however, would be less than significant
Sensitive Receptors	None required	Less than significant
Objectionable Odors	None required	Less than significant
Cumulative Impact	**AQ-1 through AQ-5**	Short term construction emissions would be significant and unavoidable
Imported Water Storage Component		
Consistency with Air Quality Management Plans	**AQ-1 through AQ-5**	Less than significant with mitigation
Air Quality Standards	**AQ-1 through AQ-5**	NOx construction emissions would be significant and unavoidable. Operational emissions would be less than significant
Sensitive Receptors	None required	Less than significant
Objectionable Odors	None required	Less than significant
Cumulative Impact	**AQ-1 through AQ-5**	Short term construction emissions would be significant and unavoidable