

## 3.2 Air Quality

This section provides an overview of the existing air quality in the North Los Angeles/Kern County Recycled Water Project area (proposed project), the regulatory framework, a general analysis of potential impacts to air quality that would result from implementation of the proposed project, and identification of mitigation measures.

### 3.2.1 Environmental Setting

The proposed project is located in the Antelope Valley, which is within the Antelope Valley Air Quality Management District (AVAQMD). A portion of the project also is within the jurisdiction of the Kern County Air Pollution Control District (KCAPCD). Both the AVAQMD and KCAPCD maintain monitoring stations within the Valley that monitor air quality and compliance with associated ambient standards. The closest station to the proposed project is Lancaster-43301 Division Street. The following pollutants are monitored at this station: ozone (O<sub>3</sub>) and particulate matter less than 10 and 2.5 microns (PM<sub>10</sub> and PM<sub>2.5</sub>). The most recent published data for the Lancaster-43301 Division Street Monitoring Station is presented in **Table 3.2-1**, which encompasses the years 2004 through 2006. In addition, a discussion of the air pollutants of interest to the regulatory agencies for their potential adverse impacts on the environment and sensitive receptors are described below.

#### Criteria Air Pollutants

##### ***Ozone***

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxides (NO<sub>x</sub>). The time period required for ozone formation allows the reacting compounds to spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once formed, ozone remains in the atmosphere for one or two days. Ozone is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth (“rainout”), and absorption by water molecules in clouds that later fall to earth with rain (“washout”).

**TABLE 3.2-1  
 AIR QUALITY DATA SUMMARY (2004–2006)**

Pollutant	Monitoring Data by Year			
	Standard <sup>a</sup>	2004	2005	2006
Ozone – Lancaster-43301 Division Street				
Highest 1 Hour Average (ppm) <sup>b</sup>	0.09	<b>0.121</b>	<b>0.127</b>	<b>0.123</b>
Days over State Standard		37	42	22
Highest 8 Hour Average (ppm) <sup>b</sup>	0.08	<b>0.101</b>	<b>0.103</b>	<b>0.105</b>
Days over National Standard		<b>0</b>	<b>1</b>	<b>2</b>
Particulate Matter (PM10) – Lancaster-43301 Division Street				
Highest 24 Hour Average (µg/m <sup>3</sup> ) <sup>b</sup>	50	33	47	<b>58</b>
Est. Days over State Standard <sup>c</sup>		NA	NA	25.7
Highest 24 Hour Average (µg/m <sup>3</sup> ) <sup>b</sup> – National Measurement	150	83	55.5	65.8
Est. Days over National Standard <sup>c</sup>		0	0	0
State Annual Average (µg/m <sup>3</sup> ) <sup>b</sup>	20	NA	NA	<b>25.2</b>
Particulate Matter (PM2.5) – Lancaster-43301 Division Street				
Highest 24 Hour Average (µg/m <sup>3</sup> ) <sup>b</sup>	35	18	28	18
Days over National Standard		0	0	0
State Annual Average (µg/m <sup>3</sup> ) <sup>b</sup>	12	NA	8.9	7.4

<sup>a</sup> Generally, state standards and national standards are not to be exceeded more than once per year.

<sup>b</sup> ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter.

<sup>c</sup> PM10 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

NOTES: Values in **bold** are in excess of at least one applicable standard. NA = Not Available.

SOURCE: California Air Resources Board, 2007a. *Summaries of Air Quality Data, 2004, 2005, 2006*; <http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrends.d2w/start>

### **Carbon Monoxide**

Ambient carbon monoxide concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources.

When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Carbon monoxide concentrations have declined dramatically in California due to existing controls and programs. Carbon monoxide concentrations are expected to continue declining due to the ongoing retirement of older, more polluting vehicles from the mix of vehicles on the road network.

### ***Respirable Particulate Matter (PM10 and PM2.5)***

PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. A micron is one-millionth of a meter. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis and respiratory illnesses in children. Recent mortality studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Particulates can also damage materials and reduce visibility. One common source of PM2.5 is diesel particulate emissions.

Traffic generates particulate matter and PM10 emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM10 also is emitted by burning wood in residential wood stoves and fireplaces and open agricultural burning. PM10 can remain in the atmosphere for up to seven days before gravitational settling, rainout and washout remove it.

### ***Nitrogen Dioxide***

NO<sub>2</sub> is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO<sub>2</sub>. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO<sub>2</sub> may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

### ***Greenhouse Gases***

Gases that trap heat in the atmosphere are called greenhouse gases. The major concern is that increases in greenhouse gases are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is tremendous disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a direct link between increased emission of so-called greenhouse gases and long term global temperature. What greenhouse gases have in common is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation and warm up the air. The process is similar to the effect greenhouses have in raising the internal temperature, hence the

name greenhouse gases. Both natural processes and human activities emit greenhouse gases. The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of greenhouse gases in the atmosphere. This accumulation of greenhouse gases has contributed to an increase in the temperature of the earth's atmosphere and contributed to global climate change. The principal greenhouse gases are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and water vapor (H<sub>2</sub>O). Carbon dioxide is the reference gas for climate change and is considered the most important greenhouse gas. To account for the warming potential of greenhouse gases, greenhouse gas emissions are often quantified and reported as CO<sub>2</sub> equivalents (CO<sub>2</sub>E). Large emission sources are reported in million metric tons of CO<sub>2</sub>E (MMT<sub>CO2E</sub>). HFCs are used in refrigeration systems as substitutes for CFCs, which were banned for destroying the ozone layer.

### ***Toxic Air Contaminants (TACs)***

Non-criteria air pollutants or TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Diesel particulate matter (DPM) is the most complex of diesel emissions. Diesel particulates, as defined by most emission standards, are sampled from diluted and cooled exhaust gases. This definition includes both solids and liquid material that condenses during the dilution process. The basic fractions of DPM are elemental carbon, heavy hydrocarbons derived from the fuel and lubricating oil and hydrated sulfuric acid derived from the fuel sulfur. DPM contains a large portion of the polycyclic aromatic hydrocarbons (PAH) found in diesel exhaust. Diesel particulates include small nuclei mode particles of diameters below 0.04µm and their agglomerates of diameters up to 1µm. Ambient exposures to diesel particulates in California are significant fractions of total TAC levels in the State.

### ***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.

### ***Sensitive Receptors***

Some land uses are considered more sensitive to air pollutants than others. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to air emissions than commercial and industrial land uses. Many different types of land uses are located in the communities

throughout the proposed project area. . The proposed pipeline runs near residences, including 30<sup>th</sup> Street West, 25<sup>th</sup> Street West, Elizabeth Lake Road, 40<sup>th</sup> Street East, Avenue S, Avenue R Avenue K and Gaskell Road. Pump stations and reservoirs could be near sensitive receptors around Elizabeth Lake Road, 25<sup>th</sup> Street West, Avenue M, Charlone Drive, 40<sup>th</sup> St East, Pearblossom Highway, and 42<sup>nd</sup> Street East.

## 3.2.2 Regulatory Setting

### Federal Regulations

The federal Clean Air Act (FCAA) requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS or national standards) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM10, PM2.5, and lead. **Table 3.2-2** shows 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 USEPA classifies air basins (or portions thereof) as “attainment” or “nonattainment” for criteria air pollutants, based on whether or not the NAAQS had been achieved. **Table 3.2-3** shows the current attainment status of the proposed project area.

The FCAA requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The FCAA added requirements for states containing areas that violate the NAAQS to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has responsibility to review all state SIPs to determine if they conform to the mandates of the FCAA and will achieve air quality goals when implemented. If the USEPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

### State Regulations

The California Air Resources Board (CARB) manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts and regional Air Quality Management Districts. CARB establishes state ambient air quality standards and vehicle emissions standards.

California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. These are shown in Table 3.2-2. Under the California Clean Air Act

**TABLE 3.2-2  
 STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES**

Pollutant	Averaging Time	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 (NO <sub>x</sub> ) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.070 ppm <sup>a</sup>	0.08 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 Annual Avg.	0.18 ppm 0.030 ppm	---	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide	1 hour	0.25 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.
	3 hours	---	0.5 ppm		
	24 hours	0.04 ppm	0.14 ppm		
	Annual Avg.	---	0.03 ppm		
Respirable Particulate Matter (PM-10)	24 hours	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	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/m <sup>3</sup>	---		
Fine Particulate Matter (PM-2.5)	24 hours	---	35 µg/m <sup>3</sup>	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 NO <sub>x</sub> , sulfur oxides, and organics.
	Annual Avg.	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>		
Lead	Monthly Avg. Quarterly	1.5 µg/m <sup>3</sup>	---	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.
		---	1.5 µg/m <sup>3</sup>		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Geothermal Power Plants, Petroleum Production and refining	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)
Sulfates	24 hour	25 µg/m <sup>3</sup>	No National Standard	Produced by the reaction in the air of SO <sub>2</sub> .	Breathing difficulties, aggravates asthma, reduced visibility
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 value, and discourages tourism.	See PM2.5.

NOTE: ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter.

<sup>a</sup> This concentration was approved by the Air Resources Board on April 28, 2005 and became effective May 17, 2006.

SOURCE: California Air Resources Board, 2007b. *Ambient Air Quality Standards*, available at <http://www.arb.ca.gov/aqs/aaqs2.pdf>, February 22, 2007; California Air Resources Board, 2001. *ARB Fact Sheet: Air Pollution Sources, Effects and Control*, <http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm>, page last updated December 2005.

**TABLE 3.2-3  
COUNTY ATTAINMENT STATUS**

Pollutant	Designation/Classification			
	Federal Standards		State Standards	
	Los Angeles	Kern	Los Angeles	Kern
Ozone – one hour	No Federal Standard <sup>a</sup>	No Federal Standard <sup>a</sup>	Nonattainment	Nonattainment
Ozone – eight hour	Nonattainment; Classified Severe-17	Nonattainment	Unclassified	Unclassified
PM10	Unclassified	Nonattainment	Nonattainment	Nonattainment
PM2.5	Unclassified/attainment	Nonattainment	Nonattainment	Unclassified
CO	Unclassifiable Attainment	Attainment	Attainment	Unclassified
Nitrogen Dioxide	Unclassified/Attainment	Unclassified	Attainment	Attainment
Sulfur Dioxide	Unclassified	Unclassified	Attainment	Attainment
Lead	No Designation	No Designation	Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	No Federal Standard	Unclassified	Unclassified
Sulfates	No Federal Standard	No Federal Standard	Attainment	Unclassified
Visibility-Reducing Particles	No Federal Standard	No Federal Standard	Unclassified	Unclassified

<sup>a</sup> Federal One Hour Ozone National Ambient Air Quality Standard was revoked on June 15, 2005

SOURCES: California Air Resources Board, 2007c. *Area Designation Maps*, <http://www.arb.ca.gov/degis/adm/adm.htm>, page updated February 2006; Federal Ozone 8-hour: <http://www.epa.gov/air/oaqps/greenbk/gncs.html#CALIFORNIA>; Federal PM-10: <http://www.epa.gov/air/oaqps/greenbk/pncs.html#CALIFORNIA>

(CCAA) patterned after the FCAA, areas have been designated as attainment or nonattainment with respect to the state standards. Table 3.2-3 summarizes the attainment status with California standards in the proposed project area.

### Toxic Air Contaminants

California State law defines TACs as air pollutants having carcinogenic effects. A total of 243 substances have been designated as TACs under California law; they include the 189 hazardous air pollutants (HAPs) that have been identified by the federal government. The Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources but AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. Depending on the risk levels, emitting facilities are required to implement varying levels of risk reduction measures. The proposed project does not include developing facilities that may be categorized as “High-priority,” which are required to perform a health risk assessment.

In August of 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document represents a proposal to reduce diesel particulate emissions, with the goal to reduce emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The

program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra low sulfur diesel fuel on diesel-fueled engines.

CARB recently published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB, 2005). The primary goal in developing the handbook was to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. The handbook highlights recent studies that have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. However, the health risk is greatly reduced with distance. For that reason, CARB provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and sensitive land uses, such as residences.

## Greenhouse Gases

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide greenhouse gas emissions are reduced to 1990 levels by 2020 (representing an approximate 25 percent reduction in emissions).

In June 2007 CARB directed staff to pursue 37 early actions for reducing greenhouse gas emissions under the California Global Warming Solutions Act of 2006 (AB 32). The broad spectrum of strategies to be developed – including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate greenhouse gas reductions, and green ports – reflects that the serious threat of climate change requires action as soon as possible (CARB, 2007d).

In addition to approving the 37 greenhouse gas reduction strategies, CARB directed staff to further evaluate early action recommendations made at the June 2007 meeting, and to report back to CARB within six months. The general sentiment of CARB suggested a desire to try to pursue greater greenhouse gas emissions reductions in California in the near-term. Since the June 2007 CARB hearing, CARB staff has evaluated all 48 recommendations submitted by several stakeholders and several internally-generated staff ideas and published the *Draft List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in September 2007 (CARB, 2007d). Based on its additional analysis, CARB staff is recommending the expansion of the early action list to a total of 44 measures, which are shown below in **Table 3.2-4**.



**TABLE 3.2-4  
RECOMMENDED AB32 GREENHOUSE GAS MEASURES TO BE INITIATED BY CARB  
BETWEEN 2007 AND 2012**

<b>ID #</b>	<b>Sector</b>	<b>Strategy Name</b>
1	Fuels	Above Ground Storage Tanks
2	Transportation	Diesel – Offroad equipment (non-agricultural)
3	Forestry	Forestry protocol endorsement
4	Transportation	Diesel – Port trucks
5	Transportation	Diesel – Vessel main engine fuel specifications
6	Transportation	Diesel – Commercial harbor craft
7	Transportation	Green ports
8	Agriculture	Manure management (methane digester protocol)
9	Education	Local gov. Greenhouse Gas (GHG) reduction guidance / protocols
10	Education	Business GHG reduction guidance / protocols
11	Energy Efficiency	Cool communities program
12	Commercial	Reduce high Global Warming Potential (GWP) GHGs in products
13	Commercial	Reduction of PFCs from semiconductor industry
14	Transportation	SmartWay truck efficiency
15	Transportation	Low Carbon Fuel Standard (LCFS)
16	Transportation	Reduction of HFC-134a from DIY Motor Vehicle AC servicing
17	Waste	Improved landfill gas capture
18	Fuels	Gasoline disperser hose replacement
19	Fuels	Portable outboard marine tanks
20	Transportation	Standards for off-cycle driving conditions
21	Transportation	Diesel – Privately owned on-road trucks
22	Transportation	Anti-idling enforcement
23	Commercial	SF <sub>6</sub> reductions from the non-electric sector
24	Transportation	Tire inflation program
25	Transportation	Cool automobile paints
26	Cement	Cement (A): Blended cements
27	Cement	Cement (B): Energy efficiency of California cement facilities
28	Transportation	Ban on HFC release from Motor Vehicle AC service / dismantling
29	Transportation	Diesel – offroad equipment (agricultural)
30	Transportation	Add AC leak tightness test and repair to Smog Check
31	Agriculture	Research on GHG reductions from nitrogen land applications
32	Commercial	Specifications for commercial refrigeration
33	Oil and Gas	Reduction in venting / leaks from oil and gas systems
34	Transportation	Requirement of low-GWP GHGs for new Motor Vehicle ACs
35	Transportation	Hybridization of medium and heavy-duty diesel vehicles
36	Electricity	Reduction of SF <sub>6</sub> in electricity generation
37	Commercial	High GWP refrigerant tracking, reporting and recovery program
38	Commercial	Foam recovery / destruction program
39	Fire Suppression	Alternative suppressants in fire protection systems
40	Transportation	Strengthen light-duty vehicle standards
41	Transportation	Truck stop electrification with incentives for truckers
42	Transportation	Diesel – Vessel speed reductions
43	Transportation	Transportation refrigeration – electric standby
44	Agriculture	Electrification of stationary agricultural engines

SOURCE: CARB, 2007d

The 2020 target reductions are currently estimated to be 174 MMTCO<sub>2</sub>E. In total, the 44 recommended early actions have the potential to reduce greenhouse gas emissions by at least 42 million metric tons of carbon dioxide (CO<sub>2</sub>) equivalent (MMTCO<sub>2</sub>E) emissions by 2020, representing about 25% of the estimated reductions needed by 2020. The 44 measures are in the sectors of fuels, transportation, forestry, agriculture, education, energy efficiency, commercial, solid waste, cement, oil and gas, electricity, and fire suppression.

In addition to identifying early actions to reduce greenhouse gases, CARB will soon require mandatory reporting of greenhouse gases. The regulations are expected to require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. Currently, the draft regulation language identifies major facilities as those that generate more than 25,000 metric tons of CO<sub>2</sub> per year (CO<sub>2</sub>/yr). This reporting limit is consistent with European Union reporting. Cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 MT CO<sub>2</sub>/yr, make up 94 percent of the point source CO<sub>2</sub> emissions in California (CARB, 2007e).

## **Local Regulations**

AVAQMD and KCAPCD have jurisdiction over air quality for the project area. AVAQMD has adopted an AQMP for determination of the significance of a project's contribution to local or regional pollutant concentrations. In addition, the Air Quality Attainment Plan (AQAP) for the AVAB establishes a program of rules and regulations directed at attainment of state and national air quality standards. Accordingly, conformance with the AQAP for development projects is determined by demonstrating compliance with local land use plans. The proposed project will be required to comply with the existing rules of the AVAQMD and KCAPCD as they apply.

### ***City of Lancaster General Plan***

The City of Lancaster General Plan governs Lancaster's air resources. The City of Lancaster General Plan Objective and Policies that are related to air resources and implementation of the proposed project are as follows.

**Objective 3.3:** Preserve acceptable air quality by striving to attain and maintain national and state air quality standards.

**Policy 3.3.1:** Minimize the amount of vehicular travel generated by new development.

**Policy 3.3.2:** Facilitate the development and use of public transportation and travel modes such as bicycle riding and walking.

**Policy 3.3.3:** Minimize air pollutant emissions generated by new and existing development.

**Policy 3.3.4:** Protect sensitive uses, homes, schools and medical facilities, from the impacts of air pollution.

**Policy 3.3.5:** Cooperate with other agencies to protect air quality in the Antelope Valley.

### ***City of Lancaster Municipal Code***

The following sections of the City of Lancaster Municipal Code are relevant to the proposed project.

**Section 8.16.030 Disturbing surface of land or causing wind erosion prohibited.** No person who owns or is in possession or control of land shall disturb or cause to be disturbed the surface or subsurface of said land by excavating, grading, leveling, cultivating, plowing, discing, removing any existing vegetation or by depositing or spreading a quantity of soil on said land, or by any other act likely to cause or contribute to dust emission or wind erosion of said land. No person shall cause or aggravate an existing dust or wind erosion condition without providing sufficient protection so as to prevent the soil on said land from being eroded by wind, creating dust, or blowing into a public road or roads or other public or private property.  
(Prior code § 5-5.3)

**Section 8.16.040 Exceptions.** The provisions of this chapter shall not apply to: A. Activities that are performed by the forester and fire warden, agricultural commission, road department or person acting in compliance with a specific order of that department because of required ordinances, statutes, rules or regulations; B. Unpaved roadways open to public travel or unimproved public rights-of-way.  
(Prior code § 5-5.4)

**Resolution No. 06-16.** A Resolution of the Planning Commission of the City of Lancaster, California, adopting certain standardized conditions of approval for conditional use permits. Per the direction of the Public Works Director, a Dust Control Plan shall be prepared and submitted to the Antelope Valley Air Quality Management District (AVAQMD) in accordance with Rule 403 of the AVAQMD. An approved copy of the Dust Control Plan shall be submitted to Public Works prior to issuance of a grading permit within the City for residential projects of 10 acres or larger and for commercial/industrial projects of 5 acres or larger.

### ***City of Palmdale General Plan***

The City of Palmdale General Plan Environmental Resources Element contains goals and policies associated with regulation of the air quality environment. Goals and policies applicable to the proposed project are provided below.

**Objective ER5.3:** Reduce and/or eliminate unnecessary sources of air pollution.

**Policy ER5.3.1:** Promote the Antelope Valley Air Quality Management District's (AVAQMD) efforts to eliminate emissions from such sources as excessive car dealership cold starts, excessive curb idling, emissions from advertising vehicles, and emissions from leaf blowers, among others, through assisting with implementation and enforcement of district programs once they are adopted. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

**Policy ER5.3.3:** Reduce reactive organic gas (ROG) and particulate emissions from building materials and construction methods, by promoting the use of nonsolvent-based,

high-solid, or water-based coatings, and requiring compliance with all pertinent AVAQMD rules. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

**Objective ER5.4:** Minimize emissions of air toxins and pollutants which contribute to global warming and ozone depletion.

**Policy ER5.4.2:** Through the environmental review process for new development applications, ensure that emissions of air toxins as defined by AVAQMD are minimized. (General Plan Amendment 04-01, adopted by City Council April 14, 2004.)

### 3.2.3 Impacts and Mitigation Measures

#### Significance Criteria

According to *CEQA Guidelines* Appendix G, the proposed project would have a significant effect on 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 nonattainment pollutant (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The proposed project also would have a significant effect on air quality if it would:

- Conflict with the state goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32, California Global Warming Solutions Act of 2006; or
- Generate emissions of criteria air pollutants that exceed the significance thresholds provided in **Table 3.2-5**.

**TABLE 3.2-5  
AIR QUALITY SIGNIFICANCE THRESHOLDS (TONS PER YEAR)**

Pollutant	KCAPCD	AVAQMD
CO	NA	100
ROC	50	25
NO <sub>x</sub>	50	25
SO <sub>2</sub>	NA	25
PM <sub>10</sub>	15	15

NOTE: NA = Not Available  
SOURCE: AVAQMD CEQA Guidelines, May 2005. KPACD New Source Review Rule 210.1

**Construction.** The proposed project would result in a significant construction air quality impact if regional emissions exceed the significance thresholds set forth in Table 3.2-5.

**Operations.** The proposed project would result in a significant operational air quality impact if either of the following occur:

- Regional emissions exceed the significance thresholds set forth in Table 3.2-5.
- The proposed project would not be compatible with AVAQMD or KCAPCD air quality rules and regulations.

Stationary sources that comply, or that would comply, with AVAQMD or KCAPCD Rules and Regulations are generally not considered to have a significant air quality impact.

The operation of any project with the potential to expose sensitive receptors to substantial levels of TACs would be deemed to have a potentially significant impact. More specifically, proposed development projects that have the potential to expose the public to TACs in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual<sup>1</sup> (MEI) exceeds 10 in one million.
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI.

Lastly, any project that would individually have a significant air quality impact could also be considered to have a significant cumulative air quality impact. Impacts of local pollutants are cumulatively significant if modeling shows that the combined emissions from the project and other existing and planned projects in the area will exceed air quality standards.

## Impacts Discussion

### Project-level Impacts

#### **Impact 3.2-1: The proposed project could conflict with or obstruct implementation of the applicable air quality plan. Less than Significant with Mitigation.**

The proposed project would conflict with the AQMP if it would result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emission reductions specified in the AQMP. The AQAP control measures and related emission reduction estimates are based upon emissions projections for future development derived from land use, population, and employment characteristics defined in consultation with local governments. The project may result in emissions that would exceed AVAQMD or KCAPCD significance thresholds during the short-term duration of construction. Although temporary emissions from construction would contribute

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<sup>1</sup> MEI represents the worst-case risk estimate based on a theoretical person continuously exposed for 70 years at the point of highest compound concentration in air.

to air pollution in the basin, these activities would not result in measurably more frequent or more severe air quality violations. The AQMP identifies construction activities as factors contributing to overall emissions sources and provides source control measures to reduce this contribution. The AQMP does not, however, conclude that individual construction projects would delay the attainment of air quality standards for the basin. Compliance with the rules established by AVAQMD or KCAPCD to reduce construction emissions, including fugitive dust control measures and vehicle maintenance measures, would ensure that project construction would not conflict with the current AQMP. The measures required by AVAQMD to reduce construction emissions shall be implemented during construction of the proposed project as described below in Mitigation Measures 3.2-1a through 3.2-1f.

Operation of the project is not expected to exceed AVAQMD or KCAPCD significance thresholds associated with project-related vehicle traffic (see Impact 3.2-3 below). Conformance with the AQAP is determined by demonstrating compliance with local land use plans and/or population projections, meeting the land use designation set forth in the local General Plan, and comparing assumed emissions in the AQAP to proposed emissions. The proposed project is consistent with the current General Plan. As the current AQAP is based on land uses, population estimates, and employment projections set forth in the applicable General Plan, implementation of the proposed project would not conflict with the current AQAP. Therefore, impacts related to conflicts with applicable air quality plans would be less-than-significant.

### ***Mitigation Measures***

**Mitigation Measure 3.2-1a:** The implementing agencies shall include in contractor specifications the implementation of a fugitive dust control program pursuant to the provisions of AVAQMD Rule 403 or KCAPCD Rule 402.

**Mitigation Measure 3.2-1b:** All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications.

**Mitigation Measure 3.2-1c:** General contractors shall maintain and operate construction equipment so as to minimize exhaust emissions. During construction, trucks and vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions. Construction emissions shall be phased and scheduled to avoid emissions peaks and discontinued during second-stage smog alerts.

**Mitigation Measure 3.2-1d:** Electricity from power poles rather than temporary diesel- or gasoline-powered generators shall be used to the extent feasible.

**Mitigation Measure 3.2-1e:** All construction vehicles shall be prohibited from idling in excess of five minutes, both on- and off-site.

**Mitigation Measure 3.2-1f:** The project applicant shall utilize coatings and solvents that are consistent with applicable AVAQMD or KCAPCD rules and regulations.

**Significance after Mitigation:** Less than significant.

**Impact 3.2-2: Construction activities associated with pipeline construction could generate substantial amounts of dust and other criteria pollutant emissions. Less than Significant with Mitigation.**

Construction of individual project components involving development of new facilities and/or disturbance of land would generate substantial amounts of dust (including PM<sub>10</sub>) primarily from “fugitive” sources (i.e., emissions released through means other than through a stack or tailpipe) and lesser amounts of criteria air pollutants primarily from operation of heavy equipment construction machinery (mostly diesel operated) and construction worker commute trips. Construction activities would also generate evaporative emissions of Reactive Organic Gases (ROG) from asphalt paving and the use of architectural coatings on structures.

Construction of surface pipelines would be installed generally within the existing roadway rights-of-way where feasible to minimize land acquisitions or easement requirements. Additionally, in order to avoid highly sensitive areas, and road closures, tunneling, jack and bore, or other methods would be utilized to tunnel under the potentially affected area. These methods would require staging and receiving areas, located on either side of the sensitive feature.

The new pipeline segments would extend for approximately 70 miles and could affect air quality at sensitive receptor locations along the pipeline alignments for the duration of pipeline installation. The anticipated rate of pipeline installation along segments where open trench construction methods are used would be about 50 to 100 feet per day, which is typical for this type of construction in public roadway rights-of-way. At any one location along the pipeline segments, the duration of air quality impacts would be relatively brief, approximately three to five days, from the commencement of trenching to the completion of backfilling and paving, if necessary. Emissions of the following criteria air pollutants were estimated for pipeline construction based on maximum crew, truck trip, and construction activity data: NO<sub>x</sub>, ROG, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, and CO<sub>2</sub>. Emissions calculations are based on criteria pollutant emission factors from URBEMIS 2007. The results of the analysis are included in Appendix D and are summarized in **Table 3.2-6**. While the emissions are less than significant, to avoid unnecessary emissions from construction, it is important that the project comply with local rules related to construction and standard construction mitigation measures identified below.

In regards to TAC emissions, the greatest potential generation would be related to diesel particulate emissions associated with heavy equipment operations during grading and excavation activities. According to AVAQMD and KCAQCD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. The proposed project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, there would be no residual emissions after construction and corresponding individual cancer risk. As such, project-related toxic emission impacts during construction would be less-than-significant.

**TABLE 3.2-6  
 UNMITIGATED EMISSIONS FROM PIPELINE PROJECT CONSTRUCTION  
 (TONS PER YEAR)<sup>a</sup>**

<b>Project Component</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub></b>
Pipeline						
2009	2	8	4	>1	>1	844
AVAQMD Thresholds of Significance	25	25	100	25	NA	NA
KCAPCD Thresholds of Significance	50	50	NA	15	NA	NA
<b>Significant (Yes or No)?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

<sup>a</sup> Project construction emissions estimates for off-road equipment were made using URBEMIS2007, version 9.2. 4. 2. Based on up to 100 feet per day of pipeline construction. See Appendix D for URBEMIS results.

NOTE: Values in **bold** are in excess of the applicable AVAQMD or KCAQCD significance threshold. NA = Not Available

SOURCE: ESA, 2008.

### ***Mitigation Measures***

Implement Mitigation Measures 3.2-1a through 3.2-1f.

**Significance After Mitigation:** Less than significant.

### **Impact 3.2-3: Operation of the pipelines would result in minimal emissions of criteria air pollutants. Less than Significant.**

All pipelines would be located below grade. Operational activities would be limited to periodic inspections of the pipeline alignments to check for signs of leaks. The vehicle trips associated with these maintenance inspections would not generate emissions that would trigger an exceedance of the AVAQMD or KCAQCD significance thresholds. This would be a less-than-significant impact.

### ***Mitigation Measures***

None required.

### **Impact 3.2-4: Operation of the pipeline would not create objectionable odors affecting a substantial number of people. Less than Significant.**

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. Generally, increasing the distance between the receptor and the source will mitigate odor impacts. 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, transfer



stations and dairies. Although the recycled water may be used at such facilities, the recycled water would not be the source of objectionable odors. Therefore, the project would not create objectionable odors that would affect a substantial number of people and odor impacts would be less-than-significant without mitigation.

### **Mitigation Measures**

None required.

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#### **Impact 3.2-5: The proposed project would result in fewer greenhouse gas emissions than would result from importing a similar amount of water. Less than Significant.**

Greenhouse gas (GHG) impacts are considered to be exclusively cumulative impacts. As with other individual relatively small projects (i.e., projects that are not cement plants, oil refineries, electric generating facilities/providers, co-generation facilities, or hydrogen plants or other stationary combustion sources that emit more than 25,000 metric tons CO<sub>2</sub>E/yr), the project specific emissions from this proposed project would not be expected to individually have a cumulative impact on global climate change (AEP, 2007). Rather, the proposed project would be inherently energy efficient since it would produce less CO<sub>2</sub> than is required for importing a similar amount of water.

The proposed project would provide the primary backbone system for distribution of recycled water to local users in the Antelope Valley, which would use less energy in the long term relative to alternative water sources. A recently published resource book on the significance of greenhouse gas emissions in California from various projects presents an example “Green List” of the types of projects that may have a beneficial effect on greenhouse gas emissions and climate change. The draft Green List includes recycled water projects that reduce energy consumption related to water supplies that service existing development, such as the proposed project (CAPCOA, 2008). For the proposed project, the end uses for the recycled water would otherwise be met with imported potable water if the proposed project were not implemented. The imported water would be delivered through the SWP, which consumes a substantial amount of energy to convey water to southern California from the Sacramento-San Joaquin River Delta in northern California. A recent study by West Basin Municipal Water District has shown that the energy required to import SWP water is over six times the energy requirement for Title 22 recycled water when considering kilowatt-hours per acre-foot (West Basin, 2007). In addition, the same study indicates that Title 22 recycled water produces 338 tons of CO<sub>2</sub> for every 1,000 af of water produced, while the SWP produces 2,250 tons of CO<sub>2</sub> for every 1,000 af of water imported (West Basin, 2007; USEPA, 1995).<sup>2</sup> Based on this analysis, the proposed project would be considered to be inherently energy efficient and would have a less than significant impact on greenhouse gases.

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<sup>2</sup> Conversion factor: kWh/1333.333 = tons CO<sub>2</sub>. (USEPA, 1995)

project could be in conflict with the state goals for reducing greenhouse gas emissions. The analyses are reviews of:

- A. The potential conflicts with the CARB 44 early action strategies; and
- B. The basic parameters of the project to determine whether its design is inherently energy efficient.

With regard to Item A, the proposed project does not pose any apparent conflict with the most recent list of the CARB early action strategies (see Table 3.2-4). With regard to Item B, as discussed above, the proposed project design is inherently energy efficient. The proposed project would not conflict with state goals for reducing greenhouse gas emission. There would be no impact.

### ***Mitigation Measures***

None required.

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## **Program-level Impacts**

### **Impact 3.2-6: Construction activities associated with reservoirs and pump stations could generate substantial amounts of dust and other criteria pollutant emissions. Less than Significant with Mitigation.**

Construction of individual project components involving development of new facilities and/or disturbance of land would generate substantial amounts of dust (including PM10) primarily from “fugitive” sources (i.e., emissions released through means other than through a stack or tailpipe) and lesser amounts of criteria air pollutants primarily from operation of heavy equipment construction machinery (mostly diesel operated) and construction worker commute trips. Construction activities would also generate evaporative emissions of ROG from asphalt paving and the use of architectural coatings on structures.

Construction of new above ground storage tanks (reservoir construction) would include site preparation and clearing, excavation, grading and reservoir construction. Typical equipment includes bulldozers, excavators, scrapers, cranes, rollers, dump trucks, concrete trucks, pre-stressing equipment and construction delivery tractor-trailers. Construction would take approximately nine months. NO<sub>x</sub>, ROG, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, and CO<sub>2</sub> construction emissions were estimated based on maximum crew, truck trip, and construction activity data. Emissions are based on criteria pollutant emission factors from URBEMIS 2007. The results of the analysis are included in Appendix D and are summarized in **Table 3.2-7**. While the emissions are less than significant, to avoid unnecessary emissions from construction, it is important that the project comply with local rules related to construction and standard construction mitigation measures (see Mitigation Measures 3.2-1a through 3.2-1f).

**TABLE 3.2-7  
 UNMITIGATED EMISSIONS FROM RESERVOIR AND PUMP STATION CONSTRUCTION  
 (TONS PER YEAR)<sup>a,b</sup>**

<b>Project Component</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO<sub>2</sub></b>
<b>Pump Stations and Reservoirs</b>						
2009	>1	1	1	>1	>1	89
AVAQMD Thresholds of Significance	25	25	100	15	NA	NA
KCAPCD Thresholds of Significance	50	50	NA	15	NA	NA
<b>Significant (Yes or No)?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

<sup>a</sup> Project construction emissions estimates for off-road equipment were made using URBEMIS2007, version 9.2. 4. See Appendix D for URBEMIS results.

<sup>b</sup> Based on concurrent construction of four reservoirs and two pump stations.

NOTE: Values in **bold** are in excess of the applicable AVAQMD or KCAPCD significance threshold. NA = Not Available

SOURCE: ESA, 2008.

Construction of single story pump stations would involve excavation and structural foundation installation, pump house construction, pump installation, and final site restoration. Construction is estimated to take approximately eight months. NO<sub>x</sub>, ROG, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, and CO<sub>2</sub> construction emissions were estimated based on maximum crew, truck trip, and construction activity data provided by the applicant. Emissions are based on criteria pollutant emission factors from URBEMIS 2007. The results of the analysis are included in Appendix D and are summarized in Table 3.2-7. While the emissions are less than significant, to avoid unnecessary emissions from construction, it is important that the project comply with local rules related to construction and standard construction mitigation measures (see Mitigation Measures 3.2-1a through 3.2-1f).

In regards to TAC emissions, the greatest potential generation would be related to diesel particulate emissions associated with heavy equipment operations during grading and excavation activities. According to AVAQMD and KCAPCD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. The proposed project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions. In addition, there would be no residual emissions after construction and corresponding individual cancer risk. As such, project-related toxic emission impacts during construction of reservoirs and pump stations would be less-than-significant.

**Mitigation Measures**

Implement Mitigation Measures 3.2-1a through 3.2-1f.

**Significance after Mitigation:** Less than significant.

**Impact 3.2-7: Operation of the reservoirs and pump stations would result in minimal operational emissions of criteria air pollutants. Less than Significant.**

Reservoir operations, which are limited to water storage, would not generate air quality emissions. Inspection and periodic maintenance operations would generate only a few worker vehicle trips per week and would not generate emissions that would substantially contribute to project emissions that would trigger an exceedance of the AVAQMD or KCAQPD significance thresholds. The operation of reservoirs would be a less-than-significant impact.

The operation impacts associated with pump stations would be limited to those associated with operation of electric-powered pumps and back-up emergency generators (if required). Other operational activities would be limited to periodic inspections of the intake sites. The vehicle trips associated with these maintenance inspections would be minor and would not exceed AVAQMD or KCAPCD significance thresholds. This would be a less-than-significant impact.

***Mitigation Measures***

None required.

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