C. Air Quality

Environmental Setting

Climate and Meteorology

Air quality is affected by both the rate and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality.

The project site is located in Eureka, which lies within the North Coast Air Basin. Cool, wet winters and cool summers with frequent fog and wind characterize the coastal climate of the bay. The average temperature in Eureka is between 48 and 50 degrees Fahrenheit in the winter and between 55 and 57 degrees in the summer. The predominant winds in Eureka are from the north-northwest at an average speed of 8 to 10 miles per hour. Due to the location along the coast and the relatively low temperatures, the potential for the buildup of pollutants in Eureka is low.

Sensitive Receptors

Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because infants and children, the elderly, and people with health afflictions, especially respiratory illnesses, are more susceptible to ailments resulting from poor air quality than the general public. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Industrial and commercial districts are less sensitive to poor air quality because exposure periods are shorter and workers in these districts are, in general, the healthier segment of the public.

The project site is located in an area of high industrial and commercial activity. There are no schools, hospitals or convalescent homes in the vicinity of the project site, the closest residential uses are on upper floors above commercial and light industrial uses. The closest residential neighborhood is the historic Clark District which is across Broadway southeast of the project site beginning about 500 feet away.

Ambient Air Quality

Air quality is a general term used to describe various aspects of the air to which plants and human populations are exposed on a regular basis. Air quality can be degraded by a variety of contaminants including criteria pollutants that consist of gases or suspended particulate matter, and toxic air contaminants. Ambient air quality standards and allowable limit levels are set at both the state and federal level and in most cases the standards are similar. The standards are based on predicated health effects of air pollutants.

The federal Clean Air Act required the US EPA to designate air basins, or portions thereof, as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. The California Clean Air Act, patterned after the federal Clean Air Act, also required that areas be designated as “attainment” or “nonattainment,” but with respect to the state standards rather than the national standards.

Humboldt, Del Norte and Trinity Counties are located in the North Coast Air Basin under the regulation of North Coast Unified Air Quality Management District (NCUAQMD). NCUAQMD’s air quality monitoring stations provide information on ambient concentrations of criteria air pollutants. The North Coast Air Basin is currently designated as “nonattainment” for the state PM10 standard and designated as “attainment” or “unclassified” with respect to the other state and national ambient air quality standards. Humboldt County is listed as attainment (i.e., within allowable limits) for the following criteria pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, hydrogen sulfide, and vinyl chloride. Unclassified is defined by the 1990 Clean Air Act Amendments as any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Within the region, ozone, particulate matter 10 microns or smaller (PM10), and particulate matter 2.5 microns or smaller (PM2.5) are monitored. Table IV.C-1 shows a five-year summary of the highest annual air pollutant concentrations for ozone, PM10, and PM2.5.

Ozone

Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are referred to as precursors to ozone. Significant ozone production generally requires about 3 hours in a stable atmosphere with strong sunlight. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production, and high ozone concentrations can occur miles away from the source of the precursors. Motor vehicles are generally the major source of ozone precursors. Other sources of ROG and NOx include natural gas combustion, hearth emissions, landscaping emissions, and architectural coatings. Hearth emissions occur in winter, and therefore do not generally contribute to the formation of ozone. Short-term exposure to ozone can result in injury and damage to the lung, decreases in pulmonary function, and impairment of immune mechanisms. These changes have been implicated in the development of chronic lung disease as the result of long-term exposure. Symptoms of ozone irritation include shortness of breath, chest pain when inhaling deeply, wheezing, and coughing. In addition, effects on vegetation have been documented at concentrations below the standards. As shown in Table IV.C-1, the state and national ozone standards were not exceeded at the Jacobs station in 2006, which was the first year of monitoring at the station.

TABLE IV.C-1
AIR QUALITY DATA SUMMARY FOR THE PROJECT AREA, 2002-2006

Pollutant	State Std.	National Std.	Pollutant Concentration by Year[a]				
			2002	2003	2004	2005	2006
Ozone							
Highest 1-hour average, ppm	0.09	---	*	*	*	*	0.04
Days over State Std.			*	*	*	*	0
Days over National Std.			*	*	*	*	0
Highest 8-hour average, ppm	0.07 [b]	0.08	*	*	*	*	0.04
Days over National Std.			*	*	*	*	0
Respirable Particulate Matter (PM10)							
Highest 24-hour average (State/National), µg/m^3 [c]	50	150	38/36	**71**/68	**64**/61	**71**/67	**72**/68
Estimated Days over State Std.			0	3	2	1	2
Annual arithmetic mean (National), µg/m^3	20	---	19	18	21	14	20
Fine Particulate Matter (PM2.5)							
Highest 24-hour average, µg/m^3	---	65	24	36	26	32	18
Estimated Days over National Std.			0	0	0	0	0
Annual arithmetic mean (National), µg/m^3	12	15	8	*	8	*	*

NOTE: **Bold** values are in excess of applicable standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter. *There was insufficient (or no) data available to determine the value.

[a] PM10 and PM2.5 data were collected at the monitoring station at the Eureka Health Department located at Sixth and I Streets in Eureka; ozone data were collected at the Jacobs Station in Eureka.

[b] On April 17, 2006, the Office of Administrative Law approved amendments to the regulations for the State Ambient Air Quality Standard for ozone. Those amendments establish a new 8-hour average ozone standard of 0.070 part per million (ppm), not to be exceeded.

[c] State and national statistics may differ for the following reasons: 1) State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods; 2) State statistics are based on local conditions, whereas national statistics are based on standard conditions; and 3) State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

SOURCE: CARB, 2007a and 2007b.

Particulate Matter (PM10 and PM2.5)

Particulate matter (both PM10 and PM2.5) can be inhaled and cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Agricultural activities, such as tilling, disking and field burning, are major sources of particulate matter in rural areas, while vehicle/equipment travel, and demolition and construction activities are major sources of particulate matter in urban areas. Natural sources of particulate matter include wind erosion from exposed surfaces. Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulate matter can also damage materials and reduce visibility. In the city of Eureka, paved road dust, unpaved road dust,

and residential fuel combustion account for roughly 70 percent of the PM10 emitted (NCUAQMD, 1995). Other sources include hearth emissions. As shown in Table IV.C-1, the state 24-hour PM10 standard has been exceeded one to three times each year from 2003 to 2006, but there were no PM2.5 exceedances recorded during the 5-year study period.

Greenhouse Gas Emissions

Some gases in the atmosphere affect the Earth's heat balance by absorbing infrared radiation. These gases can prevent the escape of heat in much the same way as glass in a greenhouse. This is often referred to as the "greenhouse effect," and it is responsible for maintaining a habitable climate.

On Earth the gases believed to be most responsible for global warming are water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Enhancement of the greenhouse effect can occur when concentrations of these gases exceed the natural concentrations in the atmosphere. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills.

There is international scientific agreement that human-caused increases in greenhouse gases (GHGs) have and will continue to contribute to global warming, although there is much uncertainty concerning the magnitude and rate of the warming. The scientific community agrees that the Earth's climate is becoming warmer, and that human activity is playing a role in climate change. Unlike other environmental impacts, climate change is a global phenomenon in that all GHG emissions generated throughout the Earth contribute to it. Consequently, both large and small GHG generators contribute to global warming.

In California, some of the potential resulting effects of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB, 2007c). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2001):

1. Higher maximum temperatures and more hot days over nearly all land areas;
2. Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
3. Reduced diurnal temperature range over most land areas;
4. Increase of heat index over land areas; and
5. More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not

fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

The California Energy Commission (CEC) estimated that in 2004, California produced 492 million gross metric tons of CO_2-equivalent greenhouse gas emissions (CEC, 2006). The CEC found that transportation is the source of 41 percent of the state's GHG emissions; followed by electricity generation at 22 percent and industrial sources at 21 percent.

Environmental Analysis

Significance Criteria

For the purposes of this EIR, implementation of the proposed project would have a significant effect on air quality if, based on Appendix G of the CEQA Guidelines, it would:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. 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);
4. Expose sensitive receptors to substantial pollutant concentrations;
5. Create objectionable odors affecting a substantial number of people; or
6. Conflict with the State goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth in AB 32, the California Global Warming Solutions Act of 2006.

Regulatory Framework

The following standards and regulations govern air quality and are used to measure impacts.

Federal Clean Air Act and California Clean Air Act

Regulation of air quality is achieved through implementation of national and state ambient air quality (concentration) standards and enforcement of emissions limits for individual sources of air pollutants. The federal Clean Air Act required the U.S. Environmental Protection Agency (US 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 oxide, suspended particulate matter (PM10 and PM2.5), and lead. These pollutants are called "criteria" air pollutants because the corresponding ambient standards satisfy criteria specified under the Clean Air Act. The State of California has established its own ambient

air quality standards (state standards) that are generally more stringent, or health-protective, than their national counterparts. Table IV.C-2 presents both sets of ambient air quality standards (i.e., national and state) and provides a brief discussion of the related health effects and principal sources for each pollutant.

TABLE IV.C-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_X) 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[a]	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	0.25 ppm	---	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	---	0.053 ppm		
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 (PM10)	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$	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 $\mu g/m^3$	---		
Fine Particulate Matter (PM2.5)	24 hours	---	65 $\mu g/m^3$	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 NO_X, sulfur oxides, and organics.
	Annual Avg.	12 $\mu g/m^3$	15 $\mu g/m^3$		
Lead	Monthly Ave.	1.5 $\mu g/m^3$	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 $\mu g/m^3$		

NOTE: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

[a] This concentration was approved by the Air Resources Board on April 28, 2005 and became effective on May 17, 2006.

SOURCE: CARB, 2007b

California Air Resources Board Regulatory Activities

The California Air Resources Board (CARB), California's air quality management agency, regulates mobile emissions sources and oversees the activities of air pollution control districts and air quality management districts. CARB indirectly regulates local air quality by having established state ambient air quality standards and vehicle emission standards, by conducting research activities, and by planning and coordinating activities.

North Coast Unified Air Quality Management District Regulations and Programs

The NCUAQMD is the regional agency empowered to regulate air pollution emissions from stationary sources in the Humboldt, Trinity, and Del Norte County portions of the North Coast Air Basin. Each of the 35 air districts in California operates independently and has its own set of regulations and programs to address the emissions from stationary, area and mobile sources, consistent with state and federal laws, regulations, and guidelines. The independence of the districts allows specific air quality problems to be addressed on a local level. In addition, districts may establish local CEQA thresholds of significance for criteria pollutants – also to address the specific air quality problems relative to that particular district.

NCUAQMD regulates air quality through its permit authority over most types of stationary emissions and through its planning and review activities. NCUAQMD operates air quality monitoring stations that provide information on ambient concentrations of criteria air pollutants. The NCUAQMD does not have established CEQA significance criteria to determine the significance of impacts that would result from projects such as the Marina Center project. However, the NCUAQMD does have criteria pollutant significance thresholds for new or modified stationary source projects proposed within the NCUAQMD's jurisdiction (NCUAQMD, 2007b).

NCUAQMD has indicated that it is appropriate for lead agencies to compare proposed project emissions to its stationary source significance thresholds, which are:

1. Nitrogen oxides (NOx) – 40 tons per year.
2. Reactive organic gases (ROG) – 40 tons per year.
3. PM10 – 16 tons per year.
4. Carbon monoxide (CO) – 100 tons per year.

If an individual project's emission of a particular criteria pollutant is within the thresholds outlined above, the project's effects concerning that pollutant are considered to be less-than-significant.

PM_{10} Attainment Plan

To address the North Coast Air Basin's nonattainment status with respect to PM_{10}, the NCUAQMD prepared a draft PM_{10} attainment plan identifying cost-effective control measures that can be implemented to bring ambient PM_{10} levels down to the California standards. The

control strategies include transportation control measures (public transit, ridesharing, vehicle buy-back program, traffic flow improvement, bicycle incentives, etc.), land use measures to reduce reliance on automobiles, and open burning measures (NCUAQMD, 1995). The NCUAQMD is currently reviewing the attainment plan and expects to update the plan in 2008 (NCUAQMD, 2007a).

Naturally Occurring Asbestos

The NCUAQMD is required by State law to implement and enforce all State Airborne Toxic Control Measures (ATCM). The NCUAQMD has instituted a registration program for all construction, grading, quarrying, and surface mining operations within its jurisdiction. An applicant must first register with the NCUAQMD prior to engaging in specific activities covered by the regulation. Registration is also required for existing operations, projects, and facilities. As part of the registration process, the applicant may be required to submit a dust control plan. Notification must be made to the NCUAQMD at least 14 days before any activity begins. However, the Naturally Occurring Asbestos ATCM includes a series of exemptions. One of the exemptions is for projects that are located in an area not designated as an ultramafic rock unit area by the California Department of Conservation Division of Mines and Geology (NCUAQMD, 2007a). The project site is not within an area of mapped ultramafic rock, and there are no mapped ultramafic rock unit areas in the vicinity (DOC, 2000). The proposed project would therefore be exempted from NCUAQMD's registration program.

Rule 430 – Fugitive Dust Emissions

NCUAQMD Rule 430 prohibits the handling, transporting, or open storage of materials in such a manner that allows or may allow unnecessary amounts of particulate matter to become airborne. The rule requires project applicants to take reasonable precautions to prevent particulate matter from becoming airborne, including, but not limited to, the following provisions:

1. Covering open bodied trucks when used for transporting materials likely to give rise to airborne dust.
2. Installing and using hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Containment methods can be employed during sandblasting and other similar operations.
3. Conducting agricultural practices in such a manner as to minimize the creation of airborne dust.
4. Using water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.
5. Applying asphalt, oil, water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts.
6. Paving roadways and maintaining them in a clean condition.
7. Promptly removing earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means.

Assembly Bill 32 – California Global Warming Solutions Act

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 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 its staff to pursue 37 early actions for reducing greenhouse gas emissions under 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 its staff to further evaluate early action recommendations made at the June 2007 meeting, and to report back to CARB within 6 months. The general sentiment of CARB suggested a desire to try to pursue greater GHG reductions in California in the near-term. Since the June 2007 CARB hearing, CARB staff has evaluated all 48 recommendations submitted by several stakeholder and several internally generated staff ideas and published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in October 2007 (CARB, 2007e). Based on its additional analysis, CARB staff is recommending the expansion of the early action list to a total of 44 measures, which are listed in Table IV.C-3.

The 2020 target reductions are currently estimated to be 174 million metric tons/year of CO_2 equivalent (CO_2e). In total, the 44 recommended early actions have the potential to reduce GHG by at least 42 million metric tons/year of CO_2e emissions by 2020, representing about 25 percent of the estimated reductions needed by 2020. CARB staff is working on 1990 and 2020 greenhouse gas emission inventories in order to refine the projected 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 is also developing mandatory greenhouse gas reporting regulations pursuant to requirements of AB 32. The regulations are expected to require reporting for certain types of facilities that make up the bulk of the stationary source emissions in the state. Currently, the draft regulation language identifies major facilities as those that generate more than 25,000 metric tons/year of CO_2e. Cement plants,

TABLE IV.C-3
RECOMMENDED AB32 GREENHOUSE GAS MEASURES TO BE INITIATED BY CARB BETWEEN 2007 AND 2012

ID #	Sector	Strategy Name	ID #	Sector	Strategy Name
1	Fuels	Above Ground Storage Tanks	23	Commercial	SF_6 reductions from the non-electric sector
2	Transportation	Diesel – Offroad equipment (non-agricultural)	24	Transportation	Tire inflation program
3	Forestry	Forestry protocol endorsement	25	Transportation	Cool automobile paints
4	Transportation	Diesel – Port trucks	26	Cement	Cement (A): Blended cements
5	Transportation	Diesel – Vessel main engine fuel specifications	27	Cement	Cement (B): Energy efficiency of California cement facilities
6	Transportation	Diesel – Commercial harbor craft	28	Transportation	Ban on HFC release from Motor Vehicle AC service / dismantling
7	Transportation	Green ports	29	Transportation	Diesel – offroad equipment (agricultural)
8	Agriculture	Manure management (methane digester protocol)	30	Transportation	Add AC leak tightness test and repair to Smog Check
9	Education	Local gov. Greenhouse Gas (GHG) reduction guidance / protocols	31	Agriculture	Research on GHG reductions from nitrogen land applications
10	Education	Business GHG reduction guidance / protocols	32	Commercial	Specifications for commercial refrigeration
11	Energy Efficiency	Cool communities program	33	Oil and Gas	Reduction in venting / leaks from oil and gas systems
12	Commercial	Reduce high Global Warming Potential (GWP) GHGs in products	34	Transportation	Requirement of low-GWP GHGs for new Motor Vehicle ACs
13	Commercial	Reduction of PFCs from semiconductor industry	35	Transportation	Hybridization of medium and heavy-duty diesel vehicles
14	Transportation	SmartWay truck efficiency	36	Electricity	Reduction of SF_6 in electricity generation
15	Transportation	Low Carbon Fuel Standard (LCFS)	37	Commercial	High GWP refrigerant tracking, reporting and recovery program
16	Transportation	Reduction of HFC-134a from DIY Motor Vehicle AC servicing	38	Commercial	Foam recovery / destruction program
17	Waste	Improved landfill gas capture	39	Fire Suppression	Alternative suppressants in fire protection systems
18	Fuels	Gasoline disperser hose replacement	40	Transportation	Strengthen light-duty vehicle standards
19	Fuels	Portable outboard marine tanks	41	Transportation	Truck stop electrification with incentives for truckers
20	Transportation	Standards for off-cycle driving conditions	42	Transportation	Diesel – Vessel speed reductions
21	Transportation	Diesel – Privately owned on-road trucks	43	Transportation	Transportation refrigeration – electric standby
22	Transportation	Anti-idling enforcement	44	Agriculture	Electrification of stationary agricultural engines

SOURCE: CARB, 2007d

oil refineries, electric-generating facilities/providers, cogeneration facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons/year of CO_2e make up 94 percent of the point source CO_2e emissions in California (CARB, 2007f).

AB 32 also requires CARB to prepare a Scoping Plan to achieve GHG reductions in California. On June 26, 2008, CARB released the initial draft of the AB 32 Scoping Plan for public review (CARB, 2008). The Scoping Plan contains the main strategies the State intends to use to reduce GHGs. Key elements of CARB's preliminary recommendation for reducing California's GHG emissions to 1990 levels by 2020 include:

- Expansion and strengthening of existing energy efficiency programs and building and appliance standards;
- Expansion of the Renewables Portfolio Standard to 33 percent;
- Development of a California cap-and-trade program that links with other WCI Partner programs to create a regional market system;
- Implementation of existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Targeted fees to fund the State's long-term commitment to AB 32 administration.

General Plan and Local Coastal Program

The City of Eureka's adopted General Plan and adopted Local Coastal Program together formalize a long-term vision for the physical evolution of Eureka and they outline the policies, standards, and programs that guide day-to-day decisions concerning Eureka's development in the coastal zone. The Policy Consistency Analysis, found in Section IV.I, *Land Use and Planning*, provides an evaluation of the Marina Center project's conformity with the policies of the adopted General Plan and Land Use Plan portion of the adopted Local Coastal Program.

Coastal Zoning Regulations

The Coastal Zoning regulations which implement the policies of the Land Use Plan portion of the adopted Local Coastal Program are codified in Chapter 156 of the Eureka Municipal Code (EMC), and are also referenced as Article 29, Part 1, Section 10-5.29 et. seq. of the zoning regulations of the City for the coastal zone.

Zoning Regulations

The Zoning Regulations of the City of Eureka are found in Chapter 155 of the EMC and are adopted pursuant to the City Charter to protect the public health, safety, peace, comfort, convenience, prosperity and general welfare.

Project Impacts

Methodology

Project-related air quality impacts fall into two categories: short-term construction-related impacts and long-term operations-related impacts. Emissions for the project were calculated using the Urban Emissions model (URBEMIS2007, version 9.2.2). Construction equipment types and numbers specified in the URBEMIS2007 modeling effort are based on the applicant's guidance and the consultant's experience. Construction emissions estimated for the proposed project were modeled over a period of 1 year. This modeling of project-level emissions is considered conservative because it condensed the same level of emissions into a shorter time period, thus inflating the project's average annual emissions estimates. Long-term operational emissions for the proposed project are based on the land uses and trip generation rates described in Section IV.O, *Transportation*.

Impact C-1: Would the Marina Center project conflict with or obstruct implementation of the applicable air quality plan?

The applicable air quality plan for the project area is the NCUAQMD PM10 Attainment Plan. The proposed project is estimated to generate up to 38 tons per year of PM10 during operations (see Table IV.C-5). Therefore, the proposed project would exceed the specified NCUAQMD threshold for PM10, which is 16 tons per year (see discussion for Impact C-3). Because operations of the proposed project would exceed the specified NCUAQMD threshold for PM10, it is anticipated that the project could obstruct the intent of the PM10 Attainment Plan, which is to bring the ambient PM10 levels in the area to below the state standard. This would be considered a significant impact.

Mitigation

See Mitigation Measures C-2a and C-2b (below).

Finding of Significance

The recommended mitigation measures would reduce project emissions. Even with mitigation, however, the Marina Center project would result in a cumulatively considerable net increase of PM 10 for which the project region is in nonattainment. Therefore, in addition to the PM10 project specific impact, emissions associated with the Marina Center project would be cumulatively considerable and would result in a ***significant and unavoidable*** impact.

Impact C-2: Would the Marina Center project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction-related emissions would arise from a variety of activities including:

1. Grading, excavation, road building, and other earth moving activities;

2. Travel by construction equipment and employee vehicles, especially on unpaved surfaces;
3. Exhaust from onsite construction equipment;
4. Architectural coating applications; and
5. Asphalt paving.

Particulate matter emissions from construction would vary greatly 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 represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM10 and PM2.5) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture.

The URBEMIS2007 (version 9.2.2) emissions modeling program was used to estimate construction emissions for the proposed project (see Appendix C for the detailed calculations). URBEMIS2007 is an approved emissions inventory software program that allows the user to estimate criteria pollutant emissions from land use development projects. Predicted unmitigated construction emissions for the worst-case year are presented in Table IV.C-4 and are compared to the NCUAQMD thresholds of significance.

TABLE IV.C-4
PROJECT CONSTRUCTION EMISSIONS ESTIMATES

Pollutant	Significance Threshold (tons/year)	Project Construction Emissions (tons/year)	Significant (Yes or No)?
ROG	40	8	No
NOx	40	13	No
CO	100	12	No
PM10	16	1	No
PM2.5	---	<1	No

NOTES: Project construction emissions estimates were made using URBEMIS 2007 v.9.2.2. Equipment numbers and types are based on the Applicant's guidance and experience of the consultant. See appendices for details.

As depicted in Table IV.C-4, construction would result in emissions below the NCUAQMD thresholds. In addition, construction activities would be short-term in duration and would be required to comply with all applicable NCUAQMD Rules and Regulations, such as Rule 430 (Fugitive Dust Emissions). Therefore, no additional measures would be necessary in order to ensure that emissions generated by project construction would remain less-than-significant.

Once construction is complete and the project site is occupied, the proposed project would result in an increase in emissions by generating approximately 15,700 daily motor vehicle trips and creating on-site stationary sources and area sources (e.g., natural gas emissions from space

heating). URBEMIS2007 was used to quantitatively estimate area source and on-road motor vehicle emissions that would be associated with the proposed project based on the proposed land uses and vehicle trip generation values included in the traffic report. Predicted operational emissions are presented in Table IV.C-5 and are compared to NCUAQMD thresholds of significance.

TABLE IV.C-5
OPERATION EMISSIONS ESTIMATES

Pollutant	Significance Threshold (tons per year [TPY])	Project Operational Emissions (tons per year [TPY]) -Year 2010	Significant (Yes or No)?
ROG	40	40	**Yes**
NOx	40	68	**Yes**
CO	100	446	**Yes**
PM10	16	38	**Yes**
PM2.5	---	8	No

NOTES: Project construction emissions estimates were made using URBEMIS 2007 v.9.2.2. Equipment numbers and types are based on the Applicant's guidance and experience of the consultant. See appendices for details.

As a mixed-use project, the Marina Center already incorporates design measures to reduce air pollutant emissions (e.g., co-locating residential, office, and retail uses). As depicted in Table IV.C-5, however, project operations would still result in emissions that exceed the NCUAQMD thresholds for ROG, NOx, CO, and PM10. Therefore, operational air quality impacts are considered significant. However, the mitigation measures recommended below would help reduce the amount of daily emissions associated with the proposed project.

Even with the mitigation measures recommended below, residual emissions of ozone precursors and PM10 would remain significant. The effectiveness of mitigation measures in reducing mobile and area source emissions would vary by pollutant and are impossible to quantify or control given variables such as consumer preferences, vehicle choices, and employment opportunities. Operational mitigation measures would reduce area source emissions of reactive organic gases, oxides of nitrogen, and emissions of PM10.

Mitigation

Mitigation Measure C-2a: The project applicant shall develop and implement transportation management programs designed to reduce traffic congestion, and automobile use within and adjacent to the project site in order to reduce total mobile-source emissions. Such a program shall include, at a minimum, the following measures:

1. The applicant shall install electrical outlets at parking facilities for electrical or plug-in hybrid vehicles where appropriate and feasible;
2. The project shall include clearly marked pedestrian and bicycle travel zones, as well as bicycle locking areas;

3. The applicant shall install synchronized traffic signals to smooth traffic flows and thereby reduce pollutant emissions;
4. The project shall be designed to accommodate public transit; and
5. The project applicant shall initiate a voluntary ridesharing program for the workforce.

Mitigation Measure C-2b: The project shall implement the following measures for reducing area source emissions:

1. Wood-burning fireplaces or devices shall be prohibited:
2. Where applicable, commercial and residential building shall be fitted with electrical outlets on the exterior walls to promote the use of electric landscape maintenance equipment: and
3. In construction, the project shall use low VOC and low formaldehyde architectural coatings and insulation.

Finding of Significance

The recommended mitigation measures would avoid or minimize potential impacts. Even with mitigation, however, the Marina Center project may conflict with or obstruct implementation of NCUAQMD's PM10 Attainment Plan because project emissions are likely to exceed minimum thresholds established for individual sources under that Plan. Therefore, the potential for the Marina Center project to conflict with or obstruct an air quality plan would be ***significant and unavoidable***.

Impact C-3: Would the Marina Center project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?

Except for PM10, the project area is in attainment status for all criteria pollutants (e.g., ozone, PM2.5, and CO). For PM10, however, the North Coast Air Basin is currently designated as a nonattainment area. Fugitive dust and PM10 exhaust emissions associated with operation of the proposed project are estimated to be above the NCUAQMD's significance thresholds. Therefore, in addition to PM10 project specific impacts, the proposed project would result in a cumulatively considerable net increase in PM10 emissions. A number of measures can be employed to reduce the project's PM10 emissions, including, Mitigation Measures C-2a and C-2b. Because the region is in nonattainment, however, any additional PM10 emissions could hinder the Attainment Plan and would be considered cumulatively significant and unavoidable. Despite the lack of feasible mitigation measures available to reduce this impact to a less-than-significant level, the following mitigation measures would help implement the PM10 Attainment Plan.

Mitigation

See Mitigation Measures C-2a and C-2b (above).

Finding of Significance

The recommended mitigation measures would avoid or minimize potential impacts. Even with mitigation, however, the Marina Center project would contribute to the region's non-attainment for PM10. Therefore, the potential impact of the Marina Center project in relation to air quality standards would be ***significant and unavoidable***.

Impact C-4: Would the Marina Center project expose sensitive receptors to substantial pollutant concentrations?

A Health Risk Assessment (HRA) has been conducted for the proposed project in order to assess potential local impacts to the area with regard to toxic air contaminants (Winzler and Kelly, 2006). A summary of the HRA findings is presented below.

The exposure assessment and dose response for the Marina Center pre and post-project conditions was performed using the CARB HARP software. The CARB HARP software was used to model the long-term exposure from regular deliveries, parking lot traffic, and U.S. Highway 101 traffic for a 70-year period. Using the modeling software and input parameters, the following four health effect conditions were evaluated for both pre-project and post-project conditions:

1. 70-Year Cancer Risk
2. 70-Year Non-Cancer Hazard Index
3. Acute Non-Cancer Hazard Index
4. 9-Year Cancer Risk

The risk levels were calculated over the project site and surrounding areas. Emissions exposure risk can result in cancerous and non-cancerous health effects. Cancerous effects are presented in terms of the cancer risk as the increase in cancer rates per million people under the risk assessment condition. The 70-year cancer risk level is the standard approach used by the regulatory agencies for evaluating health risk and is the most conservative approach. The 9-year cancer risk is also presented along with the 70-year and the acute non-cancer hazard index.

The analysis conducted for the HRA is based on local and state regulator approved input assumptions, modeling software and procedures, and analysis procedures. Based on the risk assessment methodology and assumptions presented in this analysis, the risks that would be associated with the proposed project for the four risk assessment conditions are presented in Table IV.C-6.

The NCUAQMD does not have cancer risk thresholds for regulatory action that apply to non-stationary sources, such as diesel delivery trucks; however, it does have cancer risk thresholds for stationary sources. Truck idling at loading docks, while classified as a mobile source, may have similar emission characteristics to stationary sources. For stationary sources, cancer risk values of

TABLE IV.C-6
SUMMARY OF RISK OR HAZARD INDEX FOR THE FOUR ASSESSMENT CONDITIONS FOR PROPOSED PROJECT OPERATION

Scenario	Risk or Hazard Index
70-Year Cancer Risk	Cancer Risk of a maximum of 4.4 in a million at the emission source.
70-Year Non-Cancer Risk Index	Hazard Index between zero and one (no anticipated adverse non-cancer effects).
Acute Non-Cancer Hazard Index	Hazard Index between zero and one (no anticipated adverse non-cancer effects).
9-Year Cancer Risk	Cancer Risk less than one in a million at the emission source.

SOURCE: Winzler and Kelly, 2006.

greater than 10 in a million require public notification and cancer risk values greater than 100 in a million require an in-depth health risk assessment for specific receptors.

The cancer risk and hazard index values estimated for the proposed project presented in Table IV.C-6 are below the minimum stationary source action levels enforced by the NCUAQMD. Therefore, long-term air emissions associated with the proposed project would not result in a significant health risk.

The American Lung Association issued its *State of the Air: 2008*, its annual report card on air pollution, ranking cities and counties most affected by three types of pollution: short-term particle pollution, year-round particle pollution and ozone pollution. Humboldt County was listed in *State of the Air: 2008*, Table 6, as one of the cleanest counties in the nation for short-term particle pollution (24-hour PM2.5). The list of cleanest counties represents counties with the lowest levels of short-term PM2.5 air pollution. According to the American Lung Association, monitors in these counties reported no days with unhealthful PM2.5 levels. *State of the Air: 2008* lists Humboldt County's grade for Particle Pollution Days as having improved from B to A, the best grade possible.

Table IV.C-7 presents American Lung Association estimates of at-risk populations for Humboldt County and for the State of California. Humboldt County appears to be at no greater or less risk than California as a whole for the groups identified.

Mitigation

None recommended.

Finding of Significance

The potential for the Marina Center project to expose sensitive receptors to substantial pollutant concentrations would be a ***less-than-significant*** impact.

TABLE IV.C-7
POPULATIONS AT RISK OF HEALTH EFFECTS FROM AIR POLLUTION[a]

Groups at Risk	Humboldt County	California	Humboldt County as % of California Population
Total Population: Estimate is based on 2006 US Census and represents the at-risk populations in counties with ozone or PM2.5 pollution monitors; it does not represent the entire state's sensitive populations.	128,330	36,295,000	.4%
Population Under 18: Those 18 years of age and under are vulnerable to ozone and PM2.5. They should not be used as population denominators for disease estimates.	26,672	9,494,396	.3%
Population 65 & Over: Those 65 years of age and over are vulnerable to ozone and PM2.5. They should not be used as population denominators for disease estimates.	16,194	3,912,645	.4%
Pediatric Asthma: Estimates are for those under 18 years of age and represent the estimated number of people who had asthma in 2006 based on national rates (NHIS) applied to county population estimates (US Census).	2,475	881,080	.3%
Adult Asthma: Estimates are for those 18 years and older and represent the estimated number of people who had asthma during 2006 based on state rates (BRFSS) applied to county population estimates (US Census).	7,771	2,021,365	.4%
Chronic Bronchitis: Estimates are for adults 18 years of age and older who had been diagnosed within 2006 based on national rates (NHIS) applied to county population estimates (US Census).	4,351	1,120,995	.4%
Emphysema: Estimates are for adults 18 years of age and older who have been diagnosed within their lifetime based on national rates (NHIS) applied to county population estimates (US Census).	1,857	458,734	.4%
Cardiovascular Disease: Estimates are for adults 18 years of age and older who had been diagnosed within 2006 based on national rates (NHIS) applied to county population estimates (US Census). CV disease includes coronary heart disease, hypertension, stroke, angina pectoris and heart attack.	34,129	8,568,481	.4%
Diabetes: Estimates are for adults 18 years of age and older who have been diagnosed within their lifetime based on national rates (NHIS) applied to county population estimates (US Census).	7,833	1,967,221	.4%

[a] According to the American Lung Association *State of the Air: 2008* report

Impact C-5: Would the Marina Center project create objectionable odors affecting a substantial number of people?

The project would not involve the development of the types of land uses typically associated with odor issues, such as wastewater treatment plants, landfills, composting facilities, refineries, and chemical plants.

Mitigation

None recommended.

Finding of Significance

The potential for the Marina Center project to create objectionable odors would be a ***less-than-significant*** impact.

Cumulative Impacts

Impact C-6: Would the Marina Center project make a cumulatively considerable contribution to GHG emissions?

The proposed project would result in emissions of GHGs, which contribute to global climate change. Given the scope of global climate change, however, it is not anticipated that the Marina Center project would have an individually discernable effect on global climate change (i.e., increase global temperature as a result of emissions from the project).

Some amount of GHG emissions would result from the motor vehicle trips associated with the proposed project, as well as from natural gas combustion and landscape maintenance activities. Using CARB's URBEMIS2007 Version 9.2.2 model and trip generation numbers obtained from the project's traffic analysis, GHG emissions that would be associated with the proposed project were calculated. Because CO_2 is the only GHG for which URBEMIS2007 generates emissions estimates, scaling factors derived from the State of California Inventory of GHG Emissions were used to determine the relative emissions of CH_4 and N_2O in order to estimate emissions of GHG as equivalent carbon dioxide (eCO_2). Carbon dioxide equivalent units are a weight-based measurement unit that accounts for varying degrees of heat absorption of GHGs and standardizes them to CO_2, the most prevalent GHG.

The URBEMIS2007 model also estimates CO_2 emissions from natural gas combustion for space and water heating and fuel combustion for landscape maintenance, based on land use size (number of dwelling units or commercial square footage). Again, the appropriate scaling factors from the State Inventory of GHG Emissions were used to determine the relative amounts of CH_4 and N_2O emitted from residential and commercial fuel combustion. Table IV.C-8 presents the estimated GHG emissions that would result from motor vehicle trips, natural gas usage, and landscape maintenance activities that would be associated with the proposed project. In addition

TABLE IV.C-8
ESTIMATED EMISSIONS OF GREENHOUSE GASES FROM PROPOSED PROJECT

Emission Source	Emissions (metric tons of CO_2 per year)			
	CO_2	CH_4	N_2O	Total eCO_2
Motor vehicle trips	17,801	57	1,118	18,976
Natural gas usage	1,028	48	7	1,083
Landscape maintenance	2	<1	<1	2
Total Operational GHG Emissions	18,831	105	1,125	**20,061**

to the emissions presented in Table IV.C-8, other GHG emissions would be generated by the proposed project to a lesser extent through indirect sources, including electricity generation and solid waste decay. See Appendix C for the detailed calculations.

As with other individual relatively small projects (i.e., projects that are not cement plants, oil refineries, electricity-generating facilities/providers, co-generation facilities, hydrogen plants, or other stationary combustion sources that emit more than 25,000 metric tons per year CO_2e emissions), the project specific emissions from this project would not be expected to individually have an impact on Global Climate Change (AEP, 2007) and the primary concern would be whether the project would be in conflict with the State of California goals for reducing GHG emissions.

Three types of analyses are used to determine whether the project would conflict with the State goals for reducing GHG emissions. The analyses review:

A. The potential conflicts with the CARB 44 early action strategies;

B. The relative size of the project in comparison to the estimated greenhouse reduction goal of 174 million metric tons per year CO_2e emissions by 2020 and in comparison to the size of major facilities that are required to report greenhouse gas emissions (25,000 metric tons of CO_2e emissions)[1]; and

C. The basis parameters of the project to determine whether its design is inherently energy-efficient.

With regard to Item A, the project does not pose any apparent conflict with the most recent list of the CARB early action strategies (see Table IV.C-3).

With regard to Item B, project long-term greenhouse gas emissions would be approximately 20,000 metric tons per year CO_2e emissions from operations (including emissions from vehicle trips, natural gas usage and landscape maintenance). The project would not be classified as a major source of greenhouse gas emissions because emissions would be less than the lower

[1] The State of California has not provided guidance as to quantitative significance thresholds for assessing the impact of greenhouse gas emissions on climate change and global warming concerns. Nothing in the CEQA Guidelines has yet addressed this issue.

reporting limit for industrial stationary sources, which is proposed to be 25,000 metric tons per year of CO_2e.

When compared to the overall State reduction goal of approximately 174 million metric tons per year of CO_2e, the GHG emissions for the project (20,000 metric tons per year of CO_2e or 0.0001 percent of the State goal) are quite small and should not conflict with the State's ability to meet the AB 32 goals.

Moreover, because the effects of GHGs are global, a project that merely shifts the location of a GHG-emitting activity (e.g., where people live, where vehicles drive, or where companies conduct business) would result in no net change in global GHG emission levels. For example, if a substantial portion of California's population migrated from the South Coast Air Basin (managed by the South Coast Air Quality Management District) to the North Coast Air Basin (managed by the NCUAQMD), this would likely result in decreased emissions in the South Coast Air Basin and increased emissions in the North Coast Air Basin, but little change in overall global GHG emissions. However, if a person moves from one location where the land use pattern requires substantial vehicle use for day-to-day activities (commuting, shopping, etc.) to a new development that promotes shorter and fewer vehicle trips, more walking, and overall less energy usage, the new development might reduce, rather than increase global GHG emissions.

It is not possible to know at this time whether the project tenants would have longer or shorter commutes relative to their existing homes; whether they would walk, bike, and use public transportation more or less than under existing circumstances; and whether their overall driving habits would result in higher or lower tailpipe emissions. However, much of the vehicle generated CO_2e emissions attributed to the project could simply be from vehicles currently emitting CO_2e at an existing location moving to the project site, and not from new vehicle emissions sources relative to global climate change.

With regard to Item C, the implementation of the mixed-use and other project features, Mitigation Measures C-2a and C-2b and compliance with energy conservation and other local measures would reduce the emission of GHG attributable to the project through vehicle emissions reductions, vehicular trip reductions, recycling programs, and increases in building and appliance energy efficiencies. With implementation of these project features, mitigation measures, and compliance with City policies, the proposed project would be inherently energy-efficient. Future reductions in energy demand directly reduce the emission of GHG.

The review of Items A, B, and C indicate that the project would not conflict with the State goals identified in AB32 and therefore the proposed project would not make a cumulatively considerable contribution to GHG emissions. This impact would be less-than-significant.

Mitigation

See Mitigation Measures C-2a and C-2b (above).

Finding of Significance

The project would not make a cumulatively considerable contribution to GHG emissions. Therefore, impacts related to global climate change would be ***less-than-significant***.

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