Appendix C
Air Quality Analysis

NEWARK SPECIFIC PLAN AREA 3 AND 4
DRAFT AIR QUALITY STUDY
NEWARK, CALIFORNIA

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INTRODUCTION

This report presents the results of the air quality analysis conducted for the proposed development of Newark Areas 3 & 4. The proposed project is bordered in the north by Mowry Avenue, the east by Cherry Street, and the south by Stevenson Boulevard. Currently, the site is occupied by industrial and agricultural uses. Area 3 of the Specific Plan consists of over 295 acres located east of the railroad tracks. Currently, this area includes agricultural lands, a community center, a fire station, Ohlone College, and light industrial or commercial buildings. Area 4 includes 553 acres of mostly undeveloped agricultural lands to the west of the railroad tracks.

The proposed Areas 3 and 4 Specific Plan will include a golf course, up to 1,260 housing units of various densities, a 600-student elementary school, park uses, undeveloped areas, as well as retention of existing light industrial, institutional (Ohlone College), and City fire station, park, and community center uses.

The project also would extend Stevenson Boulevard westward over the existing railroad tracks into Area 4. This new roadway would contain two travel lanes, bike lanes, and a sidewalk to serve Area 4. Access to this project site would be provided via Cherry Street and Stevenson Boulevard.

Both Areas 3 and 4 would require the import of fill materials. Area 3 would require about 56,000 cubic yards of material, while Area 4 would require over 2.1 million cubic yards of fill, depending on how much residential is developed within that area. Fill material would be expected to come from the BART extension project for a subway under Lake Elizabeth.

The City's General Plan update in 1992 identified and established land use designations for Areas 3 and 4. In Area 3 a 77-acre portion has been planned for Research and Development (R&D) High Tech development. Under the proposed Specific Plan this 77-acre area is planned for residential uses and an elementary school Area 4 is one of the last undeveloped areas in the City and it is largely agricultural in use. According to the General Plan, Area 4 is planned for high-quality low-density residential use (2,700 units), a 18-hole golf course, and open space.

This analysis evaluates the air quality impacts of the proposed project. The impact associated with the proposed development was evaluated in terms of operational and construction impacts to air quality. The primary focus of the air quality study was to evaluate future project-related emissions on regional air quality as well as existing sources of air pollution near the project that could affect the new sensitive receptors. The project would include new residences, which are considered sensitive receptors. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD)[1].

[1]BAAQMD CEQA Guidelines for Assessing Air Quality Impacts from Projects and Plans, 1996, revised 1999.

OVERALL REGULATORY SETTING

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to Federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the Federal level, the United States Environmental Protection Agency (USEPA) administers the Federal Clean Air Act. The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level, which includes the nine-county Bay Area.

United States Environmental Protection Agency

The United States Environmental Protection Agency (US EPA) is responsible for enforcing the Federal CAA. The US EPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). NAAQS are required under the 1977 Clean Air Act and subsequent amendments. The US EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

California Air Resources Board

In California, California Air Resources Board (CARB), part of the California Environmental Protection Agency, is responsible for meeting the state requirements of the Federal Clean Air Act, administering the California Clean Air Act, and establishing the California Ambient Air Quality Standards (CAAQS). The California Clean Air Act requires all air districts in the State to endeavor to achieve and maintain CAAQS. CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB has established passenger vehicle fuel specifications and oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level. CARB also conducts or supports research into the effects of air pollution on the public and develops innovative approaches to reducing air pollutant emissions.

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is primarily responsible for assuring that the National and State ambient air quality standards are attained and maintained in the Bay Area. BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle

emissions, conducting public education campaigns, as well as many other activities. BAAQMD has jurisdiction over much of the nine-county Bay Area counties, including Alameda County, in which Fremont is located.

National and State Ambient Air Quality Standards

The ambient air quality in a given area depends on the quantities of pollutants emitted within the area, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, as well as the surrounding topography of the air basin. Air quality is described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate ambient air quality standard. The standards represent the allowable pollutant concentrations designed to ensure that the public health and welfare are protected, while including a reasonable margin of safety to protect the more sensitive individuals in the population.

As required by the Federal Clean Air Act, National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur oxides, and lead. Pursuant to the California Clean Air Act, the State of California has also established ambient air quality standards. The California Ambient Air Quality Standards (CAAQS) are generally more stringent than the corresponding federal standards and incorporate additional standards for pollutants such as sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Both State and Federal standards are summarized in Table 1. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for adverse air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare. Because CAAQS are more stringent than NAAQS, CAAQS are used as the comparative standard in this analysis.

Table 1 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards [a]	
			Primary [b,c]	Secondary [b,d]
Ozone	8-hour	0.070 ppm	0.075 ppm	—
	1-hour	0.09 ppm	—[e]	Same as primary
Carbon monoxide	8-hour	9.0 ppm	9 ppm	—
	1-hour	20 ppm	35 ppm	—
Nitrogen dioxide	Annual	0.03 ppm	0.053 ppm	Same as primary
	1-hour	0.18 ppm	0.030 ppm	—
Sulfur dioxide	Annual	—	0.03 ppm	—
	24-hour	0.04 ppm	0.14 ppm	—
	3-hour	—	—	0.5 ppm
	1-hour	0.25 ppm	—	—
PM_{10}	Annual	20 µg/m^3	--[f]	Same as primary
	24-hour	50 µg/m^3	150 µg/m^3	Same as primary
$PM_{2.5}$	Annual	12 µg/m^3	15 µg/m^3	
	24-hour	—	35 µg/m^3 [f]	
Lead	Calendar quarter	—	1.5 µg/m^3	Same as primary
	30-day average	1.5 µg/m^3	—	—

Notes:
(a) Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.
(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.
(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the EPA.
(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
(e) The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005. A new 8-hour standard was established in May 2008.
(f) The annual PM_{10} standard was revoked by U.S. EPA on September 21, 2006 and a new $PM_{2.5}$ 24-hour standard was established.

AIR QUALITY PLANNING

The BAAQMD and other agencies prepare clean air plans in response to the State and federal Clean Air Acts. The City of Fremont also includes General Plan policies that encourage development that reduces air quality impacts. In addition, the BAAQMD has developed CEQA Guidelines to assist local agencies in evaluating and mitigation air quality impacts.

Regional Clean Air Plans

2001 Ozone Attainment Plan

The Bay Area 2001 Ozone Attainment Plan was prepared by the BAAQMD, the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). This plan is a proposed revision to the Bay Area's part of the State Implementation Plan, or SIP to achieve the NAAQS for the 1-hour ozone standard. The plan was prepared in response to US EPA's partial approval and partial disapproval of the Bay Area's 1999 Ozone Attainment Plan. Although U.S. EPA revoked the 1-hour NAAQS, commitments made in that plan along with emissions budgets remain valid until the region develops an attainment demonstration/maintenance plan for the 8-hour NAAQS for ozone. The U.S. EPA has already determined that the region met the 1997 8-hour ozone standard. However, the region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to U.S. EPA in when the 8-hour ozone NAAQS is met. BAAQMD will likely not act on this submittal for a few years. In addition, the U.S. EPA's new, slightly more stringent, 8-hour standard was recently established. The U.S. EPA will be making new attainment designations based on that standard in about 3 years and eventually revoking the older standard. A Carbon Monoxide Maintenance Plan was approved in 1998 by EPA, which demonstrated how NAAQS for carbon monoxide standard would be maintained.

1991 Clean Air Plan

In 1991, the BAAQMD, MTC and ABAG prepared the Bay Area 1991 Clean Air Plan or CAP. This air quality plan addresses the California Clean Air Act. Updates are developed approximately every three years. The plans are meant to demonstrate progress toward meeting the more stringent 1-hour ozone CAAQS. The latest update to the plan, which was adopted in January 2006, is called the *Bay Area 2005 Ozone Strategy*. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan objective is to indicate how the region would make progress toward attaining the stricter state air quality standards, as mandated by the California Clean Air Act. The plan is designed to achieve a region-wide reduction of ozone precursor pollutants through the expeditious implementation of all feasible measures. The plan proposes expanded implementation of transportation control measures (TCMs) and programs such as Spare the Air. Spare the Air is a public outreach program designed to educate the public about air pollution in the Bay Area and promote individual behavior changes that improve air quality. Some of these measures or programs rely

on local governments for implementation. An update to the plan is currently being developed and should be available by 2009.

PM_{10} and PM2.5 Plans

The clean air planning efforts for ozone will also reduce PM_{10} and $PM_{2.5}$, since a substantial amount of this air pollutant comes from combustion emissions such as vehicle exhaust. In addition, BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM_{10} and $PM_{2.5}$ emissions (e.g., Spare the Night Program). SB 656 requires further action by CARB and air districts to reduce public exposure to PM_{10} and $PM_{2.5}$. Efforts identified by BAAQMD in response to SB656 are primarily targeting reductions in wood smoke emissions and adoption of new rules to further reduce NOx and particulate matter from internal combustion engines and reduce particulate matter from commercial charbroiling activities. Currently, BAAQMD is proposing a rule addressing residential wood burning. The rule would restrict operation of any indoor or outdoor fireplace, fire pit, wood or pellet stove, masonry heater or fireplace insert on specific days during the winter when air quality conditions are forecasted to exceed the NAAQS for $PM_{2.5}$. The proposed rule would also limit excess visible emissions from wood burning devices and require clean burning technology for wood burning devices sold (or resold) or installed in the Bay Area. NOx emissions contribute to ammonium nitrate formation that resides in the atmosphere as particulate matter, so a reduction in NOx emissions would reduce wintertime $PM_{2.5}$ levels. The Bay Area experiences the highest PM_{10} and $PM_{2.5}$ in winter when wood smoke and ammonium nitrate contributions to particulate matter are highest.

PHYSICAL SETTING

Newark is located in the southern portion of the San Francisco Bay Area Air Basin. The basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, and Alameda, along with the southeast portion of Sonoma County and the southwest portion of Solano County. The local air quality regulatory agency responsible for this basin is the Bay Area Air Quality Management District (BAAQMD).

Climate and Topography

The climate of Newark is characterized by warm dry summers and cool moist winters. The proximity of the San Francisco Bay and Pacific Ocean has a moderating influence on the climate. Fremont is located in the climate sub region of the Bay Area known as Southwestern Alameda County.

The major large-scale weather feature controlling the area's climate is a large high pressure system located in the eastern Pacific Ocean, known as the Pacific High. The strength and position of the Pacific High varies seasonally. It is strongest during summer and located off the west coast of the United States. Large-scale atmospheric subsidence associated with the Pacific High produces an elevated temperature inversion along the West Coast. The base of this inversion is usually located from 1,000 to 3,000 feet above mean sea level, depending on the

intensity of subsidence and the prevailing weather condition. Vertical mixing is often limited to the base of the inversion, trapping air pollutants in the lower atmosphere. Marine air trapped below the base of the inversion is often condensed into fog or stratus clouds by the cool Pacific Ocean. This condition is typical of the warmer months of the year from roughly May through October. Stratus clouds usually form offshore and move into the Bay Area during the evening hours. As the land warms the following morning, the clouds often dissipate, except along the immediate coast. The stratus then redevelops and moves inland late in the day along with an increase in winds. Otherwise, clear skies and dry conditions prevail during summer.

As winter approaches, the Pacific High becomes weaker and shifts south, allowing weather systems associated with the polar jet stream to affect the region. Low pressure systems produce periods of cloudiness, strong shifting winds, and precipitation. The number of days with precipitation can vary greatly from year to year, resulting in a wide range of annual precipitation totals. Precipitation is generally lowest along the Bay with much higher amounts occurring along south and west facing slopes. Newark, which lies adjacent to the Bay, receives about 20 inches of precipitation. About 90 percent of this rainfall occurs from November through April. High-pressure systems are also common in winter and can produce cool stagnant conditions. Fog and haze are common during winter when high-pressure systems influence the weather

The proximity of the eastern Pacific High and relatively lower pressure inland produces a prevailing westerly sea breeze along the central and northern California coast for most of the year. As this wind is channeled through the Golden Gate and other topographical gaps, it branches off to the northeast and southeast, following the general orientation of the San Francisco Bay system. Newark is mostly flat, with the southern extent of the Bay to the west and mountains to the east. Marine air penetrates from the Bay; however, it is moderated by bayside conditions as it reaches Newark. The prevailing wind is primarily from the northwest, especially during spring and summer. In winter, winds become variable with more of a southeasterly orientation. Nocturnal winds and land breezes during the colder months of the year prevail with variable drainage out of the mountainous areas. Wind speeds are highest during the spring and early summer and lightest in fall. Winter storms bring relatively short episodes of strong southerly winds.

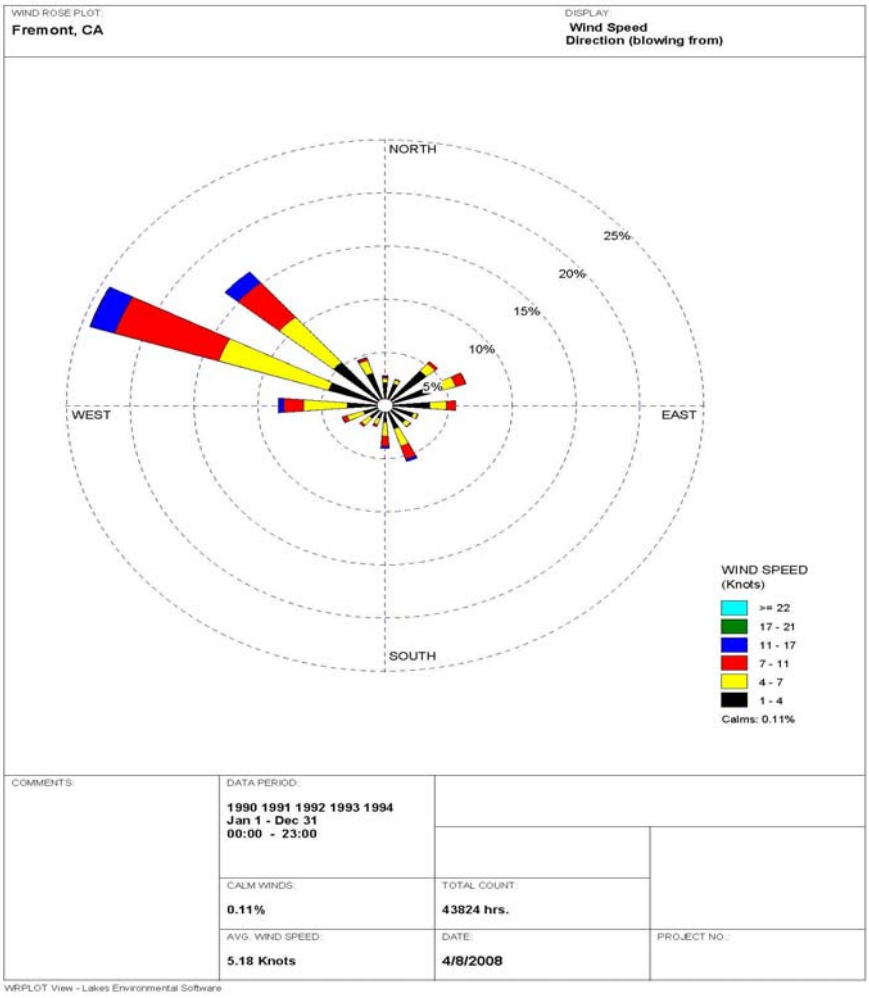
Wind flow in Newark is illustrated using wind roses in Figure 1 that are based on 4 to 5 years of meteorological measurements in Fremont. The petals of wind rose indicate where the wind flows from and the percentage of the time is blows from that direction. The strength of the wind is also illustrated by the wind roses. These wind roses in Figure 1 illustrate the high frequency of northwest winds. They also show a southeasterly flow that is present most often in late fall and winter.

Temperatures in Newark tend to be less extreme compared to inland locations due to the moderating effect of the Pacific Ocean and the Bay. In summer, high temperatures are generally in the high 70’s, and in the 50's during winter. Low temperatures range from the 50's in summer to the 30's in winter.

During the fall and winter months, the Pacific High can combine with high pressure over the interior regions of the western United States (known as the Great Basin High) to produce

extended periods of light winds and low-level temperature inversions. Fair weather and very warm temperatures are common to the Bay Area with this weather pattern. This condition frequently produces poor atmospheric mixing that results in degraded regional air quality. Ozone standards traditionally are exceeded when this condition occurs during the warmer months of the year.

Figure 1. Wind Rose for Fremont Describing Winds in Newark



Wind Rose for the BAAQMD Fremont Station 1990-1994.
Average wind speed = 5.18 knots.
% Of Cal Conditions = 0.11%

EXISTING AIR QUALITY CONDITIONS

Criteria Air Pollutants and Effect

Air quality studies generally focus on five pollutants that are most commonly measured and regulated: carbon monoxide (CO), ground level ozone, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and suspended particulate matter, i.e., PM_{10} and $PM_{2.5}$. In Alameda County, ozone and particulate matter are the pollutants of greatest concern since measured air pollutant levels exceed these concentrations at times.

Carbon Monoxide

Highest carbon monoxide concentrations measured in Fremont have been well below the national and state ambient standards. Since the primary source of carbon monoxide in is automobiles, highest concentrations would be found near congested roadways that carry large volumes of traffic. Carbon monoxide emitted from a vehicle is highest near the origin of a trip and considerably lower when vehicles are operating in a hot-stabilized mode (usually five to ten minutes into a trip). However, this is different for vehicles of different ages, where older cars require a longer time to reach a hot-stabilized running mode. A vehicle sitting idle for over an hour is normally considered to return to a cold start mode. Vehicles near the origin of a trip are considered to be in Cold-Start mode. Vehicle operation on freeways is usually in a hot-stabilized mode so the individual emission rates are much lower than those encountered on arterial roadways leading to the freeway.

Ozone

While O_3 serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere it can be harmful to the human respiratory system and to sensitive species of plants. O_3 concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Short-term O_3 exposure can reduce lung function in children, make persons susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. Sensitivity to O_3 varies among individuals, but about 20 percent of the population is sensitive to O_3, with exercising children being particularly vulnerable. O_3 is formed in the atmosphere by a complex series of photochemical reactions that involve “ozone precursors” that are two families of pollutants: oxides of nitrogen (NOx) and reactive organic gases (ROG). NO_x and ROG are emitted from a variety of stationary and mobile sources. While NO_2, an oxide of nitrogen, is another criteria pollutant itself, ROGs are not in that category, but are included in this discussion as O_3 precursors. U.S. EPA recently established a new more stringent standard of 0.75 ppm for 8-hour exposures, based on a review of the latest new scientific evidence.

Over the last five years, NAAQS for 8-hour ozone was exceeded once in 2003 at the nearby Fremont monitoring station. The Bay Area, as a whole, exceeded the 8-hour ozone NAAQS on 0 to 12 days annually and the 8-hour CAAQS on 9 to 22 days (statistics kept since 2005). In

Fremont, the 1-hour State standard for ozone was exceeded on 0 to 4 days annually while that same standard was exceeded on 4 to 19 days annually in the Bay Area as a whole. Most exceedances of ozone standard in the Bay Area occur in downwind portions of the basin, such as Livermore, Concord, and Gilroy.

Nitrogen Dioxide

NO_2, a reddish-brown gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Similar to ozone, NO_2 is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x) and are major contributors to ozone formation. NO_2 also contributes to the formation of PM_{10} (see discussion of PM_{10} below). Monitored levels in the Bay Area are well below ambient air quality standards.

Sulfur Oxides

Sulfur oxides, primarily SO_2, are a product of high-sulfur fuel combustion. The main sources of SO_2 are coal and oil used in power stations, in industries, and for domestic heating. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 concentrations have been reduced to levels well below the state and national standards, but further reductions in emissions are needed to attain compliance with standards for PM_{10}, of which SO_2 is a contributor.

PM_{10} and $PM_{2.5}$

Measured exceedances of the PM_{10} standards occurred on four separate sampling days over the last five years. Statistics on the new NAAQS for $PM_{2.5}$ have only been kept since 2006. Two exceedances have occurred each year since in Fremont. Monitoring data indicate that the new standard would have been exceeded also in 2004. PM_{10} and $PM_{2.5}$ are only measured once every sixth day at Fremont (most monitoring stations measure particulates every sixth day according to a national schedule). It is estimated that there were 24 days over the past five years that the State PM_{10} standard was exceeded. Most stations in the Bay Area reported exceedances of the State standard on the same fall/winter days as reported in Fremont. This indicates a regional air quality problem. The primary sources of these pollutants are wood smoke and local traffic. Meteorological conditions that are common during this time of the year result in calm winds and strong surface-based inversions that trap pollutants near the surface. The buildup of these pollutants is greatest during the evenings and early morning periods. The high levels of PM_{10} result in not only health effects, but also reduced visibility.

Particulate matter pollution consists of very small particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when industry and gaseous pollutant undergo chemical reactions in the atmosphere. Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) represent fractions of particulate matter. PM_{10} refers to particulate matter less than 10 microns in diameter and $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter. Major sources of $PM_{2.5}$ results primarily from diesel fuel combustion (from motor vehicles, power generation, industrial facilities), residential fireplaces,

and wood stoves. PM_{10} include all $PM_{2.5}$ sources as well as emissions from dust generated by construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions. PM_{10} and $PM_{2.5}$ pose a greater health risk than larger-size particles because these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract, increasing the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas larger particles tend to collect in the upper portion of the respiratory system, $PM_{2.5}$ are so miniscule and can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility. The U.S. EPA recently adopted a new more stringent standard of 35 $\mu g/m^3$ for 24-hour exposures based on a review of the latest new scientific evidence. At the same time, U.S. EPA revoked the annual PM_{10} standard due to a lack of scientific evidence correlating long-term exposures of ambient PM_{10} with adverse health effects. Monitoring data collected at Fremont and the rest of the Bay Area indicate that the new $PM_{2.5}$ standard is exceeded.

Toxic Air Contaminants (TAC)

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants (HAPs) under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, State, and Federal level.

HAPs are the air contaminants identified by US EPA as known or suspected to cause cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile source air toxics (MSATs) are a subset of the 188 identified HAPS. Of the 21 HAPs identified by EPA as MSATs, priority lists of six HAPs were identified that include: diesel exhaust, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. While vehicle miles traveled in the United States is expected to increase by 64 percent over the period 2000 to 2020, emissions of MSATs are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57 percent to 67 percent depending on the contaminant)[2].

California developed a program under the Tanner Toxics Act (AB 1807) to identify, characterize and control toxic air contaminants (TACs). Subsequently, AB 2728 incorporated all 188 HAPs into the AB 1807 process. TACs include all HAPs plus other containments identified by CARB. These are a broad class of compounds known to cause morbidity or mortality (cancer risk). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Chronic exposure to TACs can result in adverse health effects. Like criteria air pollutants, TACs are regulated at the regional, state, and federal level.

[2] Federal Highway Administration, 2006. Interim Guidance on Air Toxic Analysis in NEPA Documents.

Particulate matter from diesel exhaust is the predominant TAC in urban air and was estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average in 2000). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Diesel particulate matter (DPM) emitted by diesel-fueled engines was found to comprise much of that risk. DPM can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by EPA as HAPs, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of PM2.5, which are particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

Smoke from residential wood combustion can also be a source of TACs. Wood smoke is typically emitted during wintertime when dispersion conditions are poor. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind; the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

Air Monitoring Data

Air quality in the region is controlled by the rate of pollutant emissions and meteorological conditions. Meteorological conditions such as wind speed, atmospheric stability, and mixing height may all affect the atmosphere's ability to mix and disperse pollutants. Long-term variations in air quality typically result from changes in air pollutant emissions, while frequent, short-term variations result from changes in atmospheric conditions. The San Francisco Bay Area is considered to be one of the cleanest metropolitan areas in the country with respect to air quality. BAAQMD monitors air quality conditions at more than 30 locations throughout the Bay Area. The closest monitoring station to the project is in Fremont. Summarized air pollutant data for this station is shown in Table 2. This table shows the highest air pollutant concentrations measured at the stations.

Table 2 Highest Measured Air Pollutant Concentrations

Pollutant	Average Time	Measured Air Pollutant Levels				
		2003	**2004**	**2005**	**2006**	**2007**
Fremont						
Ozone (O_3)	1-Hour	**0.12** ppm	0.09 ppm	**0.11** ppm	0.10 ppm	0.080 ppm
	8-Hour	**0.09 ppm**	0.07 ppm	0.08 ppm	0.07 ppm	0.07 ppm
Carbon Monoxide (CO)	8-Hour	1.9 ppm	1.7 ppm	2.0 ppm	1.8 ppm	1.6 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.08 ppm	0.06 ppm	0.07 ppm	0.06 ppm	0.06 ppm
	Annual	0.017 ppm	0.015 ppm	0.015 ppm	0.015 ppm	0.014 ppm
Respirable Particulate Matter (PM_{10})	24-Hour	37 ug/m^3	49 ug/m^3	**54 ug/m^3**	**57 ug/m^3**	**61 ug/m^3**
	Annual	18 ug/m^3	19 ug/m^3	18 ug/m^3	20 ug/m^3	20 ug/m^3
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	34 ug/m^3	40 ug/m^3	33 ug/m^3	**44 ug/m^3**	**51 ug/m^3**
	Annual	9 ug/m^3	9 ug/m^3	9 ug/m^3	**10 ug/m^3**	9 ug/m^3
Bay Area (Basin Summary)						
Ozone (O_3)	1-Hour	**0.12** ppm	**0.11** ppm	**0.12** ppm	**0.12** ppm	**0.12** ppm
	8-Hour	**0.10** ppm	**0.08** ppm	**0.09** ppm	**0.11 ppm**	**0.09 ppm**
Carbon Monoxide (CO)	8-Hour	4.0 ppm	3.4 ppm	3.1 ppm	2.9 ppm	2.7 ppm
Nitrogen Dioxide (NO_2)	1-Hour	0.09 ppm	0.07 ppm	0.07 ppm	0.11 ppm	0.07 ppm
	Annual	0.021ppm	0.019ppm	0.019ppm	0.018ppm	0.017ppm
Respirable Particulate Matter (PM_{10})	1-Hour	**60** ug/m^3	**65** ug/m^3	**81** ug/m^3	**73** ug/m^3	**78** ug/m^3
	Annual	**25** ug/m^3	**26** ug/m^3	**24** ug/m^3	**23** ug/m^3	**26** ug/m^3
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	56 ug/m^3	52 ug/m^3	55 ug/m^3	**75** ug/m^3	**58** ug/m^3
	Annual	12 ug/m^3	12 ug/m^3	12 ug/m^3	11 ug/m^3	11 ug/m^3

Source: BAAQMD Air Quality Summaries for 2002, 2003, 2004, 2005, and 2006.
Note: ppm = parts per million and ug/m^3 = micrograms per cubic meter
Values reported in **bold** exceed ambient air quality standard
NA = data not available.

Table 3 Annual Number of Days Exceeding Ambient Air Quality Standards

Pollutant	Standard	Monitoring Station	Days Exceeding Standard				
			2003	2004	2005	2006	2007
Ozone (O_3.)	NAAQS 1-hr	Fremont	0	0	X	X	X
		BAY AREA	1	0	X	X	X
	NAAQS 8-hr	Fremont	1	0	0	0	0
		BAY AREA	7	0	1	12	1
	CAAQS 1-hr	Fremont	4	0	1	4	0
		BAY AREA	19	7	9	18	4
	CAAQS 8-hr	Fremont	--	--	1	3	0
		BAY AREA	--	--	9	22	9
Fine Particulate Matter (PM_{10})	NAAQS 24-hr	Fremont	0	0	0	0	0
		BAY AREA	0	0	0	0	0
	CAAQS 24-hr	Fremont	0	0	1	2	1
		BAY AREA	6	7	6	15	4
Fine Particulate Matter ($PM_{2.5}$)	NAAQS 24-hr*	Fremont	0	0	0	2	2
		BAY AREA	0	1	0	10	14
All Other (CO, NO_2, Lead, SO_2)	All Other	Fremont	0	0	0	0	0
		BAY AREA	0	0	0	0	0

* Based on standard of 65 µg/m^3 that was in place until September 21, 2006, then 35 µg/m^3 standard in 2006.
X = Standard revoked in 2004.
NA = data not available.

Attainment Status

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Bay Area as a whole does not meet State or federal ambient air quality standards for ground level ozone and State standards for PM_{10} and $PM_{2.5}$.

Under the Federal CAA, the U.S. EPA has classified the region as marginally nonattainment for the 1997 8-hour ozone standard. EPA required the region to attain the standard by 2007. As previously mentioned, U.S. EPA has determined that the Bay Area has met this standard, but a formal redesignation request and maintenance plan would have to be submitted before redesignation could be made. In May 2008, U.S. EPA lowered the 8-hour ozone standard from 0.08 to 0.075 ppm. Final designations based upon the new 0.075 ppm standard will be made by March 2010.U.S. In December 2008, US EPA designated the entire Bay Area as nonattainment for the 2006 24-hour $PM_{2.5}$ standard. This designation was based on violations of the standard measured in San Jose and Vallejo. The area will have until 2015 to attain the standards. The Bay Area has met the CO standards for over a decade and is classified attainment maintenance

by the US EPA. The US EPA grades the region unclassified for all other air pollutants, which include PM_{10}.

At the State level, the region is considered serious non-attainment for ground level ozone and non-attainment for PM_{10}. The region is required to adopt plans on a triennial basis that show progress towards meeting the State ozone standard. The area is considered attainment or unclassified for all other pollutants.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

AIR QUALITY IMPACTS AND MITIGATIONS

Thresholds of Significance

CEQA Guidelines prepared by BAAQMD are used to establish the significance criteria to judge the impacts caused by a project. The following are the significance criteria that are used to judge project impacts:

- A cumulatively considerable net increase of any criteria pollutant or a precursor to that 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). This is judged by comparing direct and indirect project emissions to BAAQMD significance thresholds of 80 pounds per day for ROG, NOx, or PM_{10}.

- A substantial contribution to an existing or project violation of an ambient air quality standard would result if the project would cause an exceedance of the California Ambient Air Quality Standard for carbon monoxide of 9.0 parts per million over an 8-hour averaging period:
- Expose sensitive receptors or the general public to substantial pollutant concentrations. This is evaluated by assessing the health risk in terms of cancer risk or hazards posed by the placement of new sources of air pollutant emissions near existing sensitive receptors or placement of new sensitive receptors near existing sources.
- Create or expose a substantial number of people to objectionable odors.
- Conflict with or obstruct implementation of the applicable air quality plan.

Impact 1: 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)? *Significant*

The Bay Area is considered a non-attainment area for ground-level ozone under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for respirable particulates or particulate matter with a diameter of less than 10 micrometers (PM_{10}), and particulate matter with a diameter of less than 2.5 micrometers ($PM_{2.5}$) under the California Clean Air Act. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, BAAQMD has established thresholds of significance for air pollutants. These thresholds are for ozone precursor pollutants (reactive organic gases and nitrogen oxides) and PM_{10}.

Emissions During Construction

The BAAQMD CEQA Guidelines apply daily and annual emissions thresholds to operational impacts, but not normally to construction impacts. According to the Guidelines, construction equipment is included in the regional emissions inventory, so since they are temporary, quantification of those emissions are not necessary. However, this project would include the import of a substantial amount of fill material, which is not typical of construction projects. Therefore, emissions associated with the import and spreading of fill material were calculated and compared against the BAAQMD CEQA thresholds of 80 pounds per day for ozone precursor pollutants (i.e., ROG and NOx) and PM_{10}.

Prior to project construction, up to about 2.1 million cubic yards of soil may be exported from the project site by truck. Most of this soil would be imported to Area 4. There are no specific plans to export this soil, but preliminary estimates are that it would require over one year. This assessment assumes that 100 truckloads of material would be exported per day. The BART extension project to Warm Springs would require tunneling under Lake Elizabeth and would be expected to provide the anticipated fill material. Soil exported from BART construction to project would require about a 4-mile one-way trip, however to be conservative an average 10-mile one-way trip was assumed. Each truckload would include two trips: a trip to export the material and a return trip.

Emissions from these truck trips and associated construction equipment were computed using the URBEMIS2007 model. An emission rate for a Heavy-Heavy Duty Diesel Truck was used, assuming a speed of 25 miles per hour. Emissions are reported in Table 4. Truck hauling was assumed to occur beginning 2010.

Table 4 Truck Hauling Emissions Based on URBEMIS2007 Modeling

Description	Daily Emissions (lbs/day)		
	ROG	NOx	PM_{10}
- Daily Hauling of Fill Material	10	108	33
Air District Operational Thresholds BAAQMD	80	80	80

Temporary daily emissions of NOx from truck hauling along with emissions from on-site equipment used to move fill material would have emissions that exceed the BAAQMD daily thresholds. Therefore, the effect of these emissions to the air basin would be *significant*.

Mitigation Measure: None Available. The applicant or the City cannot control emissions from independent trucks used to haul fill material. It should be noted that use of fill from the planned Warm Springs BART extension may reduce emissions associated with that project, since the project may be a more convenient location for transporting fill. This would reduce those planned truck trips.

Operational Emissions

Build out of the proposed Area 3 and Area 4 plans would add new traffic trips, which would lead to increased emissions of air pollutants. Emissions of air pollutants associated with the project were predicted using the URBEMIS2007 model (Version 9.2.4), distributed by the Rimpo Associates (*www.urbemis.com*) and recommended for use by BAAQMD. This model predicts daily emissions associated with land use developments from motor vehicle activity and area emissions.

Area 3 and Area 4 would include up to 1,260 new single-family residences, 600-student elementary school, and a golf course and clubhouse, and parks.

The URBEMIS2007 model combines predicted daily traffic activity, associated with the different land use types, with emission factors from the State's mobile emission factor model (i.e., EMFAC2007). Hexagon Transportation Consultants provided trip generation rates in the traffic report for the project that were used in the model. The air quality analysis was conducted in the same manner as the traffic report, where the proejct included up to 1,260 residential units, a golf course, and elementary school. The traffic trip generation estimates does not include corrections for internal trips, passby trips, effects of a mixed-use project, pedestrian or bicycle modes of transportation, or use of transit.

Area 3 of the specific plan is served by transit and includes some bicycle lanes. Retail uses are located about 0.3 to 0.5 miles from Area 3. These uses are situated along the major roadways serving the specific plan area. Therefore, Area 3 and 4 was assumed to include a mix of uses. The URBEMIS2007 modeling assumed trip reductions based on these factors, so the project emissions are already somewhat mitigated (by about 6 to 8% over unmitigated emissions). For instance, nine AC Transit bus routes serve the area with headways of 30 to 60 minutes. Area 3 is less than a 1/4-miles from these bus routes; however, Area 4 is located more than 0.5 miles away and would not be well served by existing transit. The URBEMIS2007 model includes default trip reductions based on the project type and setting. These adjustments were made to reflect the project conditions.

Build out of both Area 3 and Area 4 were anticipated to occur in 2018 at the earliest, with Area A completed by 2015. The year of analysis is important to consider when modeling vehicle emissions. The vehicle emission rates for ROG and NOx are currently decreasing with each year

and are predicted to decrease substantially between 2010 and 2020. For instance, NOx emission rates will decrease by 56% during that period because of improvements in vehicle emissions and retirement of older, more polluting, vehicles from the roadways.

PM_{10} emissions are comprised of running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. The contribution of tire and brake wear is small compared to the other particulate matter emission processes. Gasoline powered engines have small rates of particulate matter emissions compared with diesel-powered trucks. Since much of the project traffic fleet is made up of light-duty gasoline-powered vehicles, a large portion of the PM_{10} emissions is from entrainment of roadway dust from vehicle travel. The URBEMIS2007 default silt loading values were changed to reflect values that CARB uses for calculating paved roadway dust emissions for average vehicle traveling on arterial and collector roadways[3].

The model predicts area source emissions associated with the proposed projects, which are minor for NOx and PM_{10} compared to emissions associated with traffic. These emissions are associated with natural gas consumption (primarily space and water heating), use of landscape equipment, consumer products, architectural coatings, and wood burning. ROG emissions associated with consumer product uses from new residences can be substantial. Model default values for area sources are used, since more refined data are not available. Newark is not listed by the BAAQMD as a city that has adopted a wood smoke ordinance, so these emissions were included. PM_{10} emissions include about 15 percent wood burning fireplaces or wood stoves, recognizing that a majority would likely be natural gas-fired. Worst day PM_{10} emissions were calculated for a winter day that includes mobile sources and wood smoke and a summer day that primarily includes vehicle travel.

Daily emissions predicted with full build out of the project scenarios are reported in Table 4 and compared against BAAQMD thresholds. URBEMIS2007 Model output files are included as Attachment 1. Development of the specific plan area would increase emissions of ROG, NO_x, and PM_{10}. As shown in Table 4, the combination of new travel and new consumer product use by residences associated with the project would result in emissions of ROG and PM_{10} that exceed BAAQMD significance thresholds.

[3]A factor of 0.032 grams silt per square meter was used based on data developed in 2006 for calculating area source emissions in the San Joaquin Valley Air Basin (*http://www.arb.ca.gov/ei/areasrc/PMSJVPavedRoadMethod2003.pdf*)

Table 4 Daily Project Emissions for Build Out of the Area 3 and Area 4 Specific Plan in Pounds Per Day

Scenario	Modeled Daily Emissions in Pounds Per Day (lbs/day)			
	Reactive Organic Gases (ROG)	**Nitrogen Oxides (NOx)**	**Respirable Particulates (PM_{10})**	**Fine Particulates ($PM_{2.5}$)**
Area 3 2015	97	48	60 winter 48 summer	25 winter 10 summer
Area 3 2018	90	39	60 winter 48 summer	25 winter 10 summer
Area 4 2018	59	27	47 winter 34 summer	19 winter 7 summer
Total Area 3 + Area 4 in 2018				
Area 3 & 4 2018	149	66	107 winter 82 summer	44 winter 17 summer
BAAQMD Significance Thresholds	*80*	*80*	*80*	--

The URBEMIS2007 model does not predict emissions from stationary equipment, other than general natural gas usage (i.e., area sources). Stationary equipment that could emit air pollution has not been identified for the plan area. Residential or mixed-use projects do not usually include these sources. If stationary sources are included in the plan, they may require permits from BAAQMD. Such sources could include combustion emissions from large boilers used for heating and cooling or standby emergency generators (rated 50 horsepower or greater). These sources would normally result in minor emissions, compared to those from traffic generation reported above. Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality impact. Stationary sources that are exempt from BAAQMD permit requirements due to low emission thresholds would not be considered to have a significant air quality impact.

The ROG direct and indirect emissions are predicted to be above the significance thresholds established by the BAAQMD for proposed specific plan. Emissions of PM_{10} would be above the significance thresholds for the specific plan in winter and summer. Since the project would have emissions that exceed the BAAQMD thresholds, the impact to regional air quality would be considered *significant*

Mitigation Measure AQ-1: Include measures to reduce air pollutant emissions.

The Specific Plan should incorporate the following measures, which would reduce air pollutant emissions from traffic trips and area sources.

1. Improve existing or construct new bus pullouts and transit stops at convenient locations along Cherry Street and Stevenson Boulevard with pedestrian access to the project sites. Pullouts should be designed so that normal traffic flow on arterial roadways would not be

impeded when buses are pulled over to serve riders. Bus stops should include shelters, benches and posting of transit information;

2. The project should be reviewed and appropriate bicycle amenities should be included. This would include bike lane connections throughout the project site. Off site bicycle lane improvements should be considered for roadways that would serve the project;

3. The City and project applicants shall explore and implement feasible means to bring transit or shuttle service to Area 4;

4. Provide pedestrian sidewalks or paths throughout the project site with convenient access to bus stops along adjacent arterials;

5. Consider providing pedestrian signs and signalization to make a more friendly pedestrian environment. Include convenient pedestrian crossings at strategic areas with count-down signals at intersections that would enhance pedestrian use;

6. Review landscape plans to ensure that they provide new trees that would shade buildings and walkways in summer to reduce the cooling loads on buildings;

7. Develop and implement building practices for the project that that are based on energy efficient standards that exceed State building code.

8. Require that only natural gas fireplaces or woodstoves that meet current U.S. EPA standards may be installed in new homes.

Conclusion After Mitigation: The mitigation measures listed above are expected to further reduce emissions from build out of the proposed Area 3 and 4 Specific Plan. ROG emissions, which are mostly produced by consumer products, would remain well above the significance threshold. Emissions of PM_{10} under the proposed project would be reduced to less than significant levels for both winter and summer, but ROG would remain above the thresholds. The impact would, therefore, be *significant and unavoidable.*

Impact 2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? *Less than significant*

Carbon monoxide emissions from traffic generated by the project would be the greatest pollutant concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. At local intersections, vehicles tend to travel at a slower rate than freeways or highways and have higher emissions, because they tend to be closer to the origin of their trip (i.e., cold start emissions). Measured carbon monoxide levels have been at healthy levels (i.e., below State and Federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as

attainment for the standard. Highest measured 8-hour carbon monoxide levels over the last 3 years are 2.0 ppm in Fremont.

The contribution of project-generated traffic to these levels was predicted following the screening guidance recommended by the BAAQMD. This contribution was added to the background levels described above. A review of intersection traffic volumes and level of service was conducted to identify intersections with the potential for highest carbon monoxide levels that would be affected by the project. These are intersections with large traffic volumes that would have a degraded level of service (LOS D, E, or F) and result in further delay caused by the project (i.e., at least 10 percent increase). The intersection of Cherry Street and Central Avenue, as well as Cherry Street and Mowry Boulevard were considered the worst intersections (in terms of elevated carbon monoxide levels from traffic) that may be affected by project-generated traffic. Future carbon monoxide levels were predicted near these intersections for existing conditions and future conditions with the project in place using traffic projections provided by Hexagon Transportation Consultants. Emission factors used were calculated using the EMFAC2007 model, developed by the California Air Resources Board, with default assumptions for the San Francisco Bay Area during the winter, including a temperature of 40 degrees F. A slow speed of 5 miles per hour was used which results in higher emission rates. The screening analysis included the number of through lanes in the intersection configuration with a receptor located at the edge of the roadway. Screening calculations are provided in Attachment 2. Refined modeling using wider roadways that account for turn lanes would result in lower concentrations due to an increase in mixing zone width. Results are reported in Table 5

Table 5: Predicted Roadside 8-Hour Carbon Monoxide Concentrations (reported in ppm)

Intersection	Existing (2008)	Background (2015)	Project (2015)	Cumulative No Project (2030)	Cumulative Project (2030)
Int. 35: Cherry & Central	3.9	3.0	3.2	2.7	2.8
Int 36: Cherry & Mowry	4.3	3.2	3.4	2.8	2.9

The highest 8-hour concentration with the project in place (in about 2015 to 2020 at the earliest) is predicted to be 3.4 ppm over an 8-hour averaging period. This concentration would occur along Cherry Street near Mowry Boulevard. Lower concentrations would occur at other intersections affected by project traffic. The results of this screening analysis indicate that project levels would be below the California ambient air quality standard (used to judge the significance of the impact) of 9.0 ppm; therefore, the impact is considered less-than-significant. Had levels been above the ambient air quality standards, a more refined analysis would have been conducted using the CALINE4 dispersion model and actual lane-receiver geometry.

Impact 3: Expose sensitive receptors to substantial pollutant concentrations (from existing air pollution sources)? *Less than significant*

The project would not be a permanent source of air pollution that would expose the public to substantial pollutant concentrations. However, the specific plan area is located near industrial sources of air pollution.

Air pollution sources within ¼ mile of new housing or a school were considered to have a potential impact. A review of aerial photos indicates that most stationary sources associated with this facility are about a ¼ of a mile away or further from the Area 3. A review of currently available emissions inventories from CARB and BAAQMD indicate that the Certain Teed Corporation at 6400 Stevenson Blvd in Fremont is a source of criteria air pollutants. This facility, which manufacturers building products (e.g., gypsum) is located about 500 feet from the closest portion of Area 3 and about ¾ of a mile or further from Area 4. The facility does include active truck areas that are about 700 to 1,000 feet from Area 3. CARB has recommended that lead agencies avoid siting new residences near truck distribution areas that accommodate more than 100 trucks per day. A separation distance of 1,000 feet was recommended based on health risk analysis that CARB conducted in 2000.

The risk analysis that CARB conducted were for large distribution areas that had transport refrigeration units operating. This facility would not have these units operating and would be smaller than the facilities that CARB analyzed. In addition, the Area 3 would not be developed and occupied until around 2015 or later. As a result, emissions from trucks at this facility would be lower. Since 2000, U.S. EPA has enacted strict diesel particulate matter emission standards and the State law now prohibits excessive idling of diesel trucks. As a result, emissions would be much lower than those analyzed by CARB. In addition, prevailing winds in the area are mostly from the northwest, which would put Area 3 upwind of this facility most of the time. As a result, the Certain Teed facility is not expected to result in substantial air pollutant levels at any of the specific plan areas. There are no other facilities within ¼ miles of the specific plan area that were identified as air pollutant emissions sources or would generate a large number of diesel truck trips. The impact would be *less than significant*.

The BAAQMD was contacted regarding sources of hazardous air pollutant or TAC emissions near the location where a school could be included on the project site. The BAAQMD did not identify any such facilities within one-quarter mile. The search radius was expanded to one-half mile where four facilities that are sources of these emissions were identified. However, BAAQMD reported that none of these facilities had emissions over the toxic trigger levels. As a result, the location of the site where a school may be sited would not be exposed to substantial air pollution from existing sources. The BAAQMD analysis is provided as Attachment 2.

Impact 3: Expose sensitive receptors to substantial pollutant concentrations (during project construction)? *Less than significant with mitigation*

The project would not be a permanent source of air pollution that would expose the public to substantial pollutant concentrations. The project is not located near a source of air pollution that

could expose new sensitive receptors that are part of the project to substantial air pollutant emissions. However, project construction would result in temporary emissions of dust and diesel exhaust that could adversely affect nearby sensitive receptors..

Construction Dust

Dust would be generated during grading and construction activities. Most of the dust would result during grading activities. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed, amount of activity, soil conditions and meteorological conditions. Typical winds during late spring through summer are from the northwest. The project would also require import of a substantial amount of fill material. Truck travel and the deposit of fill material would also generate dust. Nearby land uses around Area 3 are mostly light industrial with residences located along the northern side of the site. Area 4 is surrounded by mostly undeveloped or agricultural land uses. Nearby active land uses could be adversely affected by dust generated during construction activities. As the project is developed, new residences constructed as part of the project could also be exposed to dust generated by construction activities.

Although the import of fill material, grading and construction activities would be temporary, they would have the potential to cause both nuisance and health air quality impacts. PM_{10} is the pollutant of greatest concern associated with dust. If uncontrolled, PM_{10} levels downwind of actively disturbed areas could possibly exceed State standards. In addition, dust fall on adjacent properties could be a nuisance Construction dust emissions can also contribute to regional PM_{10} emissions. If uncontrolled, dust generated by grading and construction activities represents a *significant* impact.

Construction Equipment Exhaust

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known Toxic Air Contaminant. BAAQMD has not developed any procedures or guidelines for identifying these impacts from temporary construction activities where emissions are transient. They are typically evaluated for stationary sources (e.g., large compression ignition engines such as generators) in health risk assessments over the course of lifetime exposures (i.e., 24 hours per day over 70 years). Diesel exhaust poses both a health and nuisance impact to nearby receptors. Because these construction emissions are expected to occur during a relatively short time, the impacts are considered to be less than significant if reasonable available control measures are applied. Use of older or poorly maintained construction equipment that emits more pollutants or staging of construction equipment near residences could result in high concentrations of PM_{10} and $PM_{2.5}$ that could result in nuisance and health impacts. As a result, these emissions are considered significant unless measures to reduce the potential for high exposures to residential receptors are included in the project. Therefore, these emissions are considered *significant*.

Mitigation Measure AQ-1: Include measures to control construction dust emissions. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a *less- than-significant* level. Measures to reduce diesel particulate matter and $PM_{2.5}$ from construction are recommended to ensure that short-term health impacts to nearby sensitive receptors are avoided.

Dust (PM_{10}) Control Measures:

1. Water all active construction areas at least twice daily and more often during windy periods. Active areas adjacent to residences should be kept damp at all times.

2. Cover all hauling trucks or maintain at least two feet of freeboard.

3. Pave, apply water at least twice daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas.

4. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) if visible soil material is deposited onto the adjacent roads.

5. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (i.e., previously-graded areas that are inactive for 10 days or more).

6. Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles.

7. Limit traffic speeds on any unpaved roads to 15 mph.

8. Replant vegetation in disturbed areas as quickly as possible.

9. Suspend construction activities that cause visible dust plumes to extend beyond the construction site.

Mitigation Measure AQ-2: Include measures to control construction diesel exhaust emissions.

1. [Mitigation Measure for Area 3] The project shall provide a plan, for approval by the City, demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at time of construction.
2. Prohibit equipment with dirty emissions. The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. This measure means that equipment with continuous dark emissions is in violation of the requirement.

3. Reduce equipment and vehicle idle times. Diesel equipment standing idle for more than five minutes shall be turned off. This would include trucks waiting to deliver or receive soil, aggregate, or other bulk materials. Rotating drum concrete trucks could keep their engines running continuously as long as they were onsite.
4. Reduce vehicle emissions. Properly tune and maintain equipment for low emissions.
5. Separate equipment and trucks from residences. Avoid staging equipment within 200 feet of residences (including newly built and occupied residences)

Impact 5: Create objectionable odors affecting a substantial number of people? *Less than significant*

During construction, the various diesel powered vehicles and equipment in use onsite would create localized odors. These odors would be temporary and not likely to be noticeable for extended periods of time much beyond the project's site boundaries. The potential for diesel odor impacts is therefore *less than significant.* The proposed uses that would be constructed are not expected to produce any offensive odors that would result in frequent odor complaints; therefore this would be a *less-than-significant* impact.

The specific plan would develop new residences in an area that may have noticeable odors. The specific plan area, especially Area 4, is located near the east shore of San Francisco Bay. This area contains numerous square miles of tidal wetlands that result in occasional odors. In addition, Cargill operates salt evaporation ponds to the north-northwest of the specific plan area. Both the wetlands and the salt evaporation ponds have the potential to cause odors that may affect residences. Naturally decaying organic material, such as algae, produces odors. These odors could be strongest in spring and summer when there is an abundance of algae and winds may blow this decaying material on to dikes. Very low tides during these times could also result in odors. However, these types of odors are not likely to result in odor complaints because they will be considered as part of the natural environment by the occupants. As a result, natural odors that are produced by the bay wetlands would have a *less-than-significant* impact.

Impact 6: Conflict with or obstruct implementation of the applicable air quality plan? *Less than significant with mitigation*

Consistency with Population and VMT

A key element in air quality planning is to make reasonably accurate projections of future human activities, particularly vehicle activities that are related to air pollutant emissions. BAAQMD uses population projections made by the Association of Bay Area Governments and vehicle use trends made by the Metropolitan Transportation Commission to formulate future air pollutant emission inventories. These projections are based on estimates from cities and counties. In order to provide the best plan to reduce air pollution in the Bay Area, accurate projections from

local governments are necessary. When General Plans are not consistent with these projections, they cumulatively reduce the effectiveness of air quality planning in the region. Regional clean air planning efforts address both the federal and State ozone standards using the most recent population and vehicle travel projections.

The most current Clean Air Plan (CAP), the *2005 Bay Area Ozone Strategy*, was adopted by BAAQMD in 2006. This plan is based on population projections through 2020 compiled by the association of Bay Area Governments (ABAG). The General Plan assumed 2,700 residential units for Area 4. The General Plan assumed special industrial (high-tech Business Park) for Area 3 area. The proposed Area 3 and 4 Specific Plan is assuming no more than 1,260 units. Therefore, this specific plan would not add to the population over what is currently allowed in the General Plan. As a result, the proposed project would not increase population at a rate greater than anticipated for preparation of the latest Clean Air Plan.

Consistency with TCMs

Determining consistency with the Clean Air Plan also involves assessing whether Transportation Control Measures (TCMs) contained in the *2005 Bay Area Ozone Strategy* are implemented. The 2005 Ozone Strategy (i.e., BAAQMD's most recent Clean Air Plan) includes 20 transportation control measures, of which seven require participation at the local level. The latest set of adopted TCMs, which identify local governments as implementing agencies, are listed by BAAQMD CEQA Guidelines. TCMs that would apply to projects are designed to reduce motor vehicle travel by encouraging use of other transportation modes. For projects, these would include amenities that would encourage transit, bicycle and pedestrian modes of transportation.

The project cannot individually implement the listed TCMs that require local action; however, the City's General Plan policies should include all those measures that are consistent with the City's responsibility. There are measures that the project could implement to make TCMs more effective. The current specific plan does not show details of how TCMs would be incorporated into the design of projects (e.g., bicycle and pedestrian connections throughout the site). Project features should be included that enhance the implementation of appropriate TCMs for a project of this size. Without these features, the project may not appropriately implement TCMs. The impact would be *significant*.

Mitigation Measure: See Mitigation Measure AQ-1, which includes measures to reduce transportation-related emissions.

Conclusion After Mitigation: The measures listed in Mitigation Measure 1 are expected to include implementation of appropriate TCMs and would develop a mix of uses. The impact would be reduced to a *less-than-significant* level.

Attachment 1

12/10/2008 12:24:36 PM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\I&R Docs\06-174 Areas 3 and 4 SP\Area 3 Option B 2015.urb924

Project Name: Newark Area 3 Year 2015 Alt B

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

12/10/2008 12:24:36 PM

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	55.26	10.33	39.87	0.00	0.12	0.11	12,708.40
TOTALS (lbs/day, mitigated)	52.74	8.27	31.90	0.00	0.10	0.10	10,178.16
Percent Reduction	4.56	19.94	19.99	NaN	16.67	9.09	19.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	45.65	42.17	456.50	0.57	53.16	11.15	57,139.66
TOTALS (lbs/day, mitigated)	42.29	38.04	411.74	0.51	47.94	10.06	51,537.36
Percent Reduction	7.36	9.79	9.81	10.53	9.82	9.78	9.80

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	100.91	52.50	496.37	0.57	53.28	11.26	69,848.06
TOTALS (lbs/day, mitigated)	95.03	46.31	443.64	0.51	48.04	10.16	61,715.52
Percent Reduction	5.83	11.79	10.62	10.53	9.83	9.77	11.64

12/10/2008 12:24:36 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.77	9.93	4.40	0.00	0.02	0.02	12,651.12
Hearth - No Summer Emissions							
Landscape	6.25	0.40	35.47	0.00	0.10	0.09	57.28
Consumer Products	37.18						
Architectural Coatings	11.06						
TOTALS (lbs/day, unmitigated)	55.26	10.33	39.87	0.00	0.12	0.11	12,708.40

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 5%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	37.94	39.15	424.88	0.53	49.52	10.39	53,229.95
Elementary school	7.71	3.02	31.62	0.04	3.64	0.76	3,909.71
TOTALS (lbs/day, unmitigated)	45.65	42.17	456.50	0.57	53.16	11.15	57,139.66

12/10/2008 12:24:36 PM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	34.84	35.31	383.22	0.48	44.66	9.37	48,010.98
Elementary school	7.45	2.73	28.52	0.03	3.28	0.69	3,526.38
TOTALS (lbs/day, mitigated)	42.29	38.04	411.74	0.51	47.94	10.06	51,537.36

Operational Settings:

Includes correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2015 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	253.33	9.57	dwelling units	760.00	7,273.20	54,441.81
Elementary school		1.29	students	600.00	774.00	3,998.42
					8,047.20	58,440.23

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.8	0.2	99.6	0.2
Light Truck < 3750 lbs	12.7	0.8	96.8	2.4
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0

12/10/2008 12:24:36 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	50.0	50.0	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Elementary school				20.0	10.0	70.0

12/10/2008 12:28:05 PM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\I&R Docs\06-174 Areas 3 and 4 SP\Area 3 Option B 2018.urb924

Project Name: Newark Area 3 Option B Year 2018

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

12/10/2008 12:28:05 PM

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	55.26	10.33	39.87	0.00	0.12	0.11	12,708.40
TOTALS (lbs/day, mitigated)	52.74	8.27	31.90	0.00	0.10	0.10	10,178.16
Percent Reduction	4.56	19.94	19.99	NaN	16.67	9.09	19.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	38.01	32.24	367.55	0.57	53.07	11.08	56,954.12
TOTALS (lbs/day, mitigated)	35.27	29.08	331.51	0.51	47.87	9.99	51,370.01
Percent Reduction	7.21	9.80	9.81	10.53	9.80	9.84	9.80

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	93.27	42.57	407.42	0.57	53.19	11.19	69,662.52
TOTALS (lbs/day, mitigated)	88.01	37.35	363.41	0.51	47.97	10.09	61,548.17
Percent Reduction	5.64	12.26	10.80	10.53	9.81	9.83	11.65

12/10/2008 12:28:05 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.77	9.93	4.40	0.00	0.02	0.02	12,651.12
Hearth - No Summer Emissions							
Landscape	6.25	0.40	35.47	0.00	0.10	0.09	57.28
Consumer Products	37.18						
Architectural Coatings	11.06						
TOTALS (lbs/day, unmitigated)	55.26	10.33	39.87	0.00	0.12	0.11	12,708.40

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 5%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	31.38	29.93	342.10	0.53	49.44	10.32	53,057.29
Elementary school	6.63	2.31	25.45	0.04	3.63	0.76	3,896.83
TOTALS (lbs/day, unmitigated)	38.01	32.24	367.55	0.57	53.07	11.08	56,954.12

12/10/2008 12:28:05 PM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	28.86	26.99	308.56	0.48	44.59	9.31	47,855.25
Elementary school	6.41	2.09	22.95	0.03	3.28	0.68	3,514.76
TOTALS (lbs/day, mitigated)	35.27	29.08	331.51	0.51	47.87	9.99	51,370.01

Operational Settings:

Includes correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2018 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	253.33	9.57	dwelling units	760.00	7,273.20	54,441.81
Elementary school		1.29	students	600.00	774.00	3,998.42
					8,047.20	58,440.23

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.9	0.0	99.8	0.2
Light Truck < 3750 lbs	12.7	0.0	98.4	1.6
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	43.8	56.2	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Elementary school				20.0	10.0	70.0

12/10/2008 11:02:23 AM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\I&R Docs\06-174 Areas 3 and 4 SP\Area 4 2018.urb924

Project Name: Newark Area 4 Year 2018

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

12/10/2008 11:02:23 AM

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	36.21	6.54	26.54	0.00	0.07	0.07	8,036.65
TOTALS (lbs/day, mitigated)	34.58	5.23	21.22	0.00	0.06	0.06	6,437.03
Percent Reduction	4.50	20.03	20.05	NaN	14.29	14.29	19.90

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	23.72	21.96	249.57	0.39	36.17	7.55	38,788.01
TOTALS (lbs/day, mitigated)	22.58	20.65	234.59	0.37	34.00	7.09	36,460.08
Percent Reduction	4.81	5.97	6.00	5.13	6.00	6.09	6.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	59.93	28.50	276.11	0.39	36.24	7.62	46,824.66
TOTALS (lbs/day, mitigated)	57.16	25.88	255.81	0.37	34.06	7.15	42,897.11
Percent Reduction	4.62	9.19	7.35	5.13	6.02	6.17	8.39

12/10/2008 11:02:23 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.48	6.27	2.67	0.00	0.01	0.01	7,998.00
Hearth - No Summer Emissions							
Landscape	4.16	0.27	23.87	0.00	0.06	0.06	38.65
Consumer Products	24.46						
Architectural Coatings	7.11						
TOTALS (lbs/day, unmitigated)	36.21	6.54	26.54	0.00	0.07	0.07	8,036.65

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 5%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	20.65	19.69	225.07	0.35	32.53	6.79	34,906.11
City park	3.07	2.27	24.50	0.04	3.64	0.76	3,881.90
TOTALS (lbs/day, unmitigated)	23.72	21.96	249.57	0.39	36.17	7.55	38,788.01

12/10/2008 11:02:23 AM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	19.63	18.51	211.56	0.33	30.57	6.38	32,811.16
City park	2.95	2.14	23.03	0.04	3.43	0.71	3,648.92
TOTALS (lbs/day, mitigated)	22.58	20.65	234.59	0.37	34.00	7.09	36,460.08

Operational Settings:

Includes correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2018 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	166.67	9.57	dwelling units	500.00	4,785.00	35,816.98
City park		5.04	acres	140.00	705.60	4,014.92
					5,490.60	39,831.90

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.9	0.0	99.8	0.2
Light Truck < 3750 lbs	12.7	0.0	98.4	1.6
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0

12/10/2008 11:02:23 AM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	43.8	56.2	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
City park				5.0	2.5	92.5

Attachment 2

CO Int

Newark Areas 3 & 4
CARBON MONOXIDE ANALYSIS

PM Peak Hour
Assumes worst case of all intersections based on total volume, LOS and project traffic contribution

Intersection	Traffic Volume: Existing (2008)	Background (2015)	Project Alt A (2015)	Project Alt B (2015)	Cumulative No Project (2030)	Cumulative Alt A (2030)	Cumulative Alt B (2030)	1-Hour CO Contribution: Existing (2008)	Background (2015)	Project Alt A (2015)	Project Alt B (2015)	Cumulative No Project (2030)	Cumulative Alt A (2030)	Cumulative Alt B (2030)	**Total 8-Hour CO Concentration**: Existing (2008)	Background (2015)	Project Alt A (2015)	Project Alt B (2015)	Cumulative No Project (2030)	Cumulative Alt A (2030)	Cumulative Alt B (2030)
Link: Int. 35: Cherry & Central															**3.9**	**3.0**	**3.2**	**3.1**	**2.7**	**2.8**	**2.7**
North/South	1951	2103	2401	2346	2787	3085	3020	2.4	1.3	1.4	1.4	0.8	0.9	0.9							
East/West	1064	1078	1104	1104	1813	1839	1839	0.4	0.2	0.2	0.2	0.2	0.2	0.2							
Link: Int 36: Cherry & Mowry															**4.3**	**3.2**	**3.4**	**3.3**	**2.8**	**2.9**	**2.7**
North/South	2281	2433	2760	2698	3136	3643	3401	2.8	1.5	1.7	1.6	0.9	1.1	1.0							
East/West	1233	1417	1615	1585	1785	2064	1943	0.5	0.3	0.3	0.3	0.2	0.2	0.0							

Emission Factors (EMFAC2002 - 5mph)
Bay Area

LOS E or F (5mph)	2008	(5 mph)	10.230	g/mi
	2015	(5mph)	5.070	g/mi
	2025	(5mph)	2.500	g/mi
	2008	(25 mph)	4.746	g/mi
	2015	(25mph)	2.454	g/mi
	2025	(25mph)	1.243	g/mi

Background CO Levels -

	1-Hour	8-Hour
Fremont	3	2.0

Dispersion Factors

Primary	Edge
2 Ln	14.0
4 Ln	11.9
6 Ln	9.5
Secondary	
2 Ln	3.7
4 Ln	3.3
6 Ln	2.8

Dispersion Factors

Freeway	Edge
8 Ln	1.6

Attachment 3

BAY AREA AIR QUALITY MANAGEMENT DISTRICT SINCE 1955

February 10, 2009

James A. Reyff
Illingworth & Rodkin, Inc.
Acoustics - Air Quality
505 petaluma Blvd. South
Petaluma, CA 94952

Re: Proposed Site at the site located in Newark between Cherry Street near Balentine Dr.

Dear Mr. Reyff:

I am writing in response to your email request dated December 4th, 2008, in which you request that the District identify sources of hazardous air emissions located within one-quarter mile of the above site in Newark.

The Bay Area Air Quality Management District staff has not identified any facility within prescribed one-quarter mile of the site. The actual distance can vary slightly from the information provided and may perhaps merit additional measurement to be verify the actual distance. The search radius is usually increased to ½ mile to provide information on sources that are located near the edge of the search radius.

The results of the search are as follows:

VM Services (11852)
6701 Mowry Avenue
Newark, CA 94560

CertainTeed Corporation (12749)
6400 Stevenson Blvd
Fremont, CA 94538

Dow Corning Corporation (17999)
39714 Eureka Drive
Newark, CA 94560

Ohlone College Newark Center (18728)
39399 Cherry Street
Newark, CA 94560

4 Facilities were found within a ½ mile radius. Of the 4, there were no facilites that had emissions over the toxic trigger levels. One facility was within ¼ mile radius. The major source of hazardous air emissions at this facility is a new emergency stand-by generator that is projected to emit low levels of Diesel particulate. The most recent emissions from all of the facilities listed are attached for your reference.

Please be advised, however, that this statement applies only to the emission of hazardous air pollutants. A facility that does not emit, but does store, hazardous materials on site is not required to report the fact of such storage to this agency.

We do not normally have any knowledge of the existence of such facilities. Accordingly, if you become aware of the existence of any facility within ¼ mile of the proposed site which stores, but does not emit, hazardous materials you should contact that facility directly.

Please feel free to call me at (415) 749-4677 for more information concerning the emissions from these facilities or our Section's manager, Scott Lutz at (415) 749-4676, if you wish to discuss the District's Risk Policies further.

Sincerely,

Marc Nash
Toxics Evaluation Section

MAN:mn

Program lists facilities within a specified radius and the TACs
emitted based on a specified approved inventory year.

  1 - List plants only.
  2 - List gdfs only.
  3 - List both plants and gdfs.
  0 - To End.

Enter number of types of facility to list: ?3
BAD INPUT--RETYPE FROM ITEM 1
??3

Horizontal UTM (km): 588.2
Vertical UTM (km):   4152.5
Units for search radius (1=miles, 2=kilometers): 1
Enter desired radius: ?.5
Enter year (must be after 1990): 2008

The following facilities are located within .50 miles from the point
specified (UTM 4152.50N, 588.20E).
Listed are the facility name, address and the toxic air pollutants emitted,
based on our 2008 Inventory. Toxic air pollutants emitted in quantities
requiring District review are indicated by an asterisk (*).

Date Printed: FEB 10, 2009   (source toxpltb.tox)

VM Services   (11852)
6701 Mowry Avenue
Newark, CA 94560
   .46   miles
Toxic air pollutants emitted
      Isopropyl alcohol

CertainTeed Corporation   (12749)
6400 Stevenson Blvd
Fremont, CA 94538
   .43   miles
Toxic air pollutants emitted
      Methyl ethyl ketone (MEK)
      Ethylene glycol

Dow Corning Corporation   (17999)
39714 Eureka Drive
Newark, CA 94560
   .31   miles
Toxic air pollutants emitted
      Isopropyl alcohol

Ohlone College Newark Center   (18728)
39399 Cherry Street
Newark, CA 94560
   .21   miles

No TAC inventory data.

Number of plants: 4

Number of GDF's: 0

VM Services (P# 11852)

S#	Source Name/Material	Source Code	Throughput	Date	Emissions: Pollutant	Code	lbs/day
1	Wipe Cleaning						
		SF03A157			Isopropyl alcohol	157	3.02E+00
		SF03B318			Hydrocarbon - mixtures, othe	318	0.00E+00
2	Electrovert Wave Solder Machine						
		SG94A157			Isopropyl alcohol	157	1.19E+00
					Hydrocarbon - mixtures, othe	318	4.40E-01
		SG94B157			Isopropyl alcohol	157	4.89E+00
					Organic liquid - other/not s	201	0.00E+00

&dDPLANT TOTAL: &d@

&dDlbs/day	Pollutant	&d@
4.40E-01	Hydrocarbon - mixtures, other/not spec (318)	
9.10E+00	Isopropyl alcohol (157)	
0.00E+00	Organic liquid - other/not spec (201)	

P/O APPROVED (2008)

CertainTeed Corporation (P# 12749)

S#	Source Name/Material	Source Code	Throughput	Date	Pollutant	Code	lbs/day
22	Filler Unloading System #2						
		G4030402			Particulates (portion of tot	1990	1.64E+00
23	Laminate Storage Tank						
		T43??030			Asphalt	30	0.00E+00
25	Dimensional Sol Seal Applicator						
		G7999030			Organics (part not spec else	990	2.61E-03
					Particulates (portion of tot	1990	2.71E-04
26	Dimensional Laminate Applicator						
		G7999030			Organics (part not spec else	990	1.14E-02
					Particulates (portion of tot	1990	1.19E-03
27	Mat Coater Pan						
		G4020030			Organics (part not spec else	990	3.91E-01
					Particulates (portion of tot	1990	4.11E-03
28	Presidental T/L Laminate Application						
		SJ00A030			Asphalt	30	0.00E+00
29	Modified asphalt laminant mixer						
		G7011030			Organics (part not spec else	990	5.20E-02
					Particulates (portion of tot	1990	1.43E-02
					Sulfur Dioxide (SO2)	3990	9.15E-02
30	SBS Unload Bin						
		G7009405			Particulates (portion of tot	1990	1.09E-03
31	Ink Jet Printer						
		SC32A169			Methyl ethyl ketone (MEK)	169	9.67E-01
					Organic liquid - other/not s	201	0.00E+00
		SC700169			Methyl ethyl ketone (MEK)	169	1.47E-01
32	Paint Line Applicator						
		SG92A131			Glycols	131	9.44E-02
					Organic liquid - other/not s	201	1.78E+00
					Ethylene glycol	561	9.44E-03

&dDPLANT TOTAL: &d@

&dDlbs/day	Pollutant	&d@
0.00E+00	Asphalt (30)	
9.44E-03	Ethylene glycol (561)	
9.44E-02	Glycols (131)	
1.11E+00	Methyl ethyl ketone (MEK) (169)	
1.18E-03	Nitrogen Oxides (part not spec elsewhere) (2990)	
1.78E+00	Organic liquid - other/not spec (201)	
1.22E+01	Organics (part not spec elsewhere) -- including Methane (990)	
3.06E+01	Particulates (portion of total not spec elsewhere) (1990)	
1.65E+00	Sulfur Dioxide (SO2) (3990)	

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
DETAIL POLLUTANTS - ABATED
P/O APPROVED (2008)

Printed: FEB 10, 2009
PAGE No. 1

Dow Corning Corporation (P# 17999)

S#	Source Name/Material	Source Code	Throughput	Date	Emissions: Pollutant	Code	lbs/day
1	Cold Cleaner - Custom	SD01A157			Isopropyl alcohol	157	3.59E-01
2	Facility Wide Wipe Cleaning, IPA,	720 gal/yr SF01A157			Isopropyl alcohol	157	5.78E+00

&dDPLANT TOTAL: &d@

&dDlbs/day	Pollutant	&d@
6.14E+00	Isopropyl alcohol (157)	

source#: [#####] single, [M]ultiple, [@] all, [E]xit: @

No 2008 P/O Approved records found for P# 18728, S# 0

NEWARK SPECIFIC PLAN AREA 3 AND 4 DRAFT CUMULATIVE GLOBAL CLIMATE CHANGE SECTION NEWARK, CALIFORNIA

December 1, 2008
Revised December 10, 2008
Revised April 10, 2009

♦ ♦ ♦

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Job No.: 06-174

Global climate change refers to changes in the Earth's weather including temperature, precipitation, and wind patterns.

Global Warming

Global temperatures are affected by naturally occurring and anthropogenic-generated (generated by mankind) atmospheric gases, such as carbon dioxide, methane, and nitrous oxide.[1] Gases that trap heat in the atmosphere are called greenhouse gases (GHG). Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed at the surface. The earth emits this radiation back toward space as infrared radiation. Greenhouse gases, which are mostly transparent to incoming solar radiation, are effective in absorbing infrared radiation and redirecting some of this back to the earth's surface. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This is known as the greenhouse effect. The greenhouse effect, maintains a habitable climate. Greenhouse gases (GHG), are emitted by natural processes and human activities. Emissions from human activities, such as electricity production, motor vehicle use and agriculture are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or climate change. Other than water vapor, the GHGs contributing to global warming include the following gases:

- Carbon dioxide, primarily a byproduct of fuel combustion.
- Nitrous oxide is a byproduct of fuel combustion and also associated with agricultural operations such as fertilization of crops.
- Methane is commonly created by off-gassing from agricultural practices (e.g. keeping livestock) and landfill operation.
- Chlorofluorocarbons were widely used as refrigerants, propellants and cleaning solvents but their production has been mostly reduced by international treaty.
- Hydrofluorocarbons are now used as a substitute for chlorofluorocarbons in refrigeration and cooling.
- Perfluorocarbons and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semiconductor manufacturing.

The world's leading climate scientists have reached consensus that global climate change is underway, is "very likely" caused by humans, and hotter temperatures and rises in sea level "would continue for centuries," no matter how much humans control future emissions. A report of the Intergovernmental Panel on Climate Change (IPCC) - an international group of scientists and representatives concludes "The widespread warming of the atmosphere and ocean, together with ice-mass loss, support the conclusion that it is extremely unlikely that global climate change

[1] IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available at: http://www.ipcc.ch/.

of the past 50 years can be explained without external forcing, and very likely that it is not due to known natural causes alone."[2]

Human activities have exerted a growing influence on some of the key factors that govern climate by changing the composition of the atmosphere and by modifying vegetation. The concentration of carbon dioxide in the atmosphere has increased from the burning of coal, oil, and natural gas for energy production and transportation and the removal of forests and woodlands around the world to provide space for agriculture and other human activities. Emissions of other greenhouse gases, such as methane and nitrous oxide, have also increased due to human activities. Carbon dioxide accounts for approximately 85 percent of total emissions from human sources, and methane and nitrous oxide account for almost 14 percent. Each of these gases, however, contributes to global warming at a different relative rate. Methane has a global warming potential 23 times that of carbon dioxide, while nitrous oxide is 296 times that of the same amount of carbon dioxide. To account for these differences, estimates of greenhouse gas emissions are often described in terms of carbon dioxide equivalents (CO2e). Since the Industrial Revolution (i.e., about 1750), global atmospheric concentrations of CO2 have risen about 36 percent, due primarily to the combustion of fossil fuels[3].

The IPCC predicts a temperature increase of between two and 11.5 degrees Fahrenheit (F) (1.1 and 6.4 degrees Celsius) by the end of the 21st century under six different scenarios of emissions and carbon dioxide equivalent concentrations.[4] Sea levels are predicted to rise by 0.18 to 0.59 meters (seven to 23 inches) during this time, with an additional 3.9 to 7.8 inches possible depending upon the rate of polar ice sheets melting from increased warming. The IPCC report states that the increase in hurricane and tropical cyclone strength since 1970 can likely be attributed to human-generated greenhouse cases.

According to the 2006 Climate Action Team Report[5] the following climate change effects and conditions can be expected in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 percent to 90 percent, threatening the state's water supply;
- Increasing temperatures from eight to 10.4 degrees Fahrenheit (F) under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas;

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2 *Climate Change 2007 - The Physical Science Basis Contribution of Working Group I to the Fourth Assessment Report of the IPCC.* February 2, 2007. (http://ipcc-wg1.ucar.edu/wg1/wg1-report.html]

3 IPCC. 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. (http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf]

4 IPCC. 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. (http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf]

5 California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature.* (http://www.climatechange.ca.gov/climate_action_team/reports/2006-04-03_FINAL_CAT_REPORT.PDF]

- Coastal erosion along the length of California and sea water intrusion into the Sacramento River Delta from a four-to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions;
- Increased vulnerability of forests due to pest infestation and increased temperatures;
- Increased challenges for the state's important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta; and
- Increased electricity demand, particularly in the hot summer months.

Regulatory Context for Global Climate Change

Global climate change resulting from greenhouse gas emissions is an emerging environmental concern being raised and discussed at the international, national, and statewide level. At each level, agencies are considering strategies to control emissions of gases that contribute to global warming.

U.S. EPA

The United States Participates in the United Nations Framework Convention on Climate Change (UNFCCC). While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, the Congress never ratified the protocol. The federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science. In 2002, the United States announced a strategy to reduce the greenhouse gas intensity of the American economy by 18 percent over the 10-year period from 2002 to 2012. To date, the U.S. EPA has not regulated GHGs under the Clean Air Plan (note that a 2007 Supreme Court ruling held that the U.S. EPA can regulate GHG emissions) [6].

As part of the commitments to UNFCCC, the U.S. EPA has developed inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases. This inventory is periodically updated, with the latest update being 2008[7]. EPA reports that total U.S. emissions have risen by 14.7 percent from 1990 to 2006, while the U.S. gross domestic product has increased by 59 percent over the same period. A 1.1 percent decrease was noted from 2005 to 2006, which is reported to be attributable to: (1) climate conditions, (2) reduced use of petroleum products for transportation, and (3) increased use of natural gas over other fuel sources. The inventory notes that the transportation sector emits about 33 percent of CO2 emissions, with 60 percent of those emissions coming from personal automobile use. Residential uses, primarily from energy use, accounted for 20 percent of CO2 emissions.

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[6] On April 2, 2007, the United States Supreme Court issued a 5-4 decision in *Massachusetts v. EPA*, which holds that the U.S. Environmental Protection Agency has authority under the Clean Air Act to regulate greenhouse gas emissions from new vehicles. The U.S. EPA had previously argued it lacked legal authority under the Clean Air Act to regulate greenhouse gases. The majority opinion of the Supreme Court decision noted that greenhouse gases meet the Clean Air Act's definition of an "air pollutant," and the EPA has the statutory authority to regulate the emission of such gases from new motor vehicles.

[7] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2006. U.S. EPA. April 15, 2008.

State of California

The State of California is concerned about GHG emissions and their effect on global climate change. California emissions of GHG gases or CO2 equivalent emissions was estimated at 484 million metric tons of equivalent CO2 emissions (MMTCO2e), which is about seven percent of the emissions from the entire United States[8]. It is estimated that the United States contributes up to 35 percent of the world's CO2 equivalent emissions. Transportation is the largest source of GHG emissions in California, contributing about 40 percent of the emissions. Electricity generation is second at over 20 percent, but California does import electricity during the summer bringing energy sources up to about 25 percent. Industrial activities account for about 20 percent of the State's emissions. Transportation is the largest source of greenhouse gas emissions in California, followed by industrial sources and electric power generation.[9] On a per-person basis, greenhouse gas emissions are lower in California than most other states; however, California is a populous state and the second largest emitter of greenhouse gases in the United States and one of the largest emitters in the world.[10]

Under a "business as usual" scenario, emissions of GHG in California are estimated to increase to approximately 600 MMTCO2e. CARB Staff has estimated the 1990 statewide emissions level to be 427 MMTCO2e; therefore, requiring a reduction of almost 30 percent in emissions by 2020 to meet the AB32 goal.

State of California Executive Order S-3-05

In June 2005, the Governor of California signed Executive Order S-3-05 which identified Cal/EPA as the lead coordinating State agency for establishing climate change emission reduction targets in California. A "Climate Action Team", a multi-agency group of state agencies, was set up to implement Executive Order S-3-05. Under this order, the state plans to reduce greenhouse gas emissions to 80 percent below 1990 levels by 2050. Greenhouse gas emission reduction strategies and measures to reduce global warming were identified by the California Climate Action Team in 2006.[11]

Assembly Bill (AB) 32—The California Global Warming Solutions Act of 2006

In 2006, the governor of California signed AB 32, the Global Warming Solutions Act, into legislation. The Act requires that California cap its greenhouse gas emissions at 1990 levels by 2020. This legislation requires CARB to establish a program for statewide greenhouse gas emissions reporting and monitoring/enforcement of that program. CARB recently publish a list

[8] California Air Resources Board. 2008. *Climate Change Draft Scoping Plan*. June.

[9] California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature.* (http://www.climatechange.ca.gov/climate_action_team/reports/2006-04-03_FINAL_CAT_REPORT.PDF]

[10] California Legislative Analyst's Office. 2006. *Analysis of the 2006-07 Budget Bill (Governor's Climate Change Initiative).* (http://www.lao.ca.gov/analysis_2006/resources/res_04_anl06.html]

[11] California Environmental Protection Agency. 2006. *Climate Action Team Executive Summary Climate Action Team Report to Governor Schwarzenegger and the California Legislature.* (http://www.climatechange.ca.gov/climate_action_team/reports/2006-04-03_FINAL_CAT_REPORT_EXECSUMMARY.PDF]

of discrete greenhouse gas emissions reduction measures that can be implemented immediately. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions. CARB's Early Action Plan identified regulations and measures that could be implemented in the near future to reduce GHG emissions.

Much of the measures to reduce GHG emissions from transportation will come from CARB. AB 1493, the Paveley Bill, directed CARB to adopt regulations to reduce emissions from new passenger vehicles. CARB's AB32 Early Action Plan released in 2007 included a strengthening of the Pavley regulation for 2017 and included a commitment to develop a low carbon fuel standard (LCFS). Current projections indicate that with implementation of a strengthened Pavley Regulation, including LCFS, California will still fall short of the 1990 Level targets for transportation emission reductions. A recent denial of a waiver to implement an LCFS by the U.S. EPA and pending legal challenges by the automotive industry could further complicate the schedule to achieve emission reduction targets. CARB is considering additional actions to reduce mobile source emissions that will be released in late 2008.

CARB is targeting other sources of emissions. The main measures to reduce GHG emissions will be contained in the AB32 Scoping Plan. A draft of that plan was released in June 2008. This draft plan includes a range of GHG reduction actions. Central to the draft plan is a cap and trade program covering 85 percent of the state's emissions. This program will be developed in conjunction with the Western Climate Initiative, comprised of seven states and three Canadian provinces, to create a regional carbon market. The draft plan also proposes that utilities produce a third of their energy from renewable sources such as wind, solar and geothermal, and proposes to expand and strengthen existing energy efficiency programs and building and appliance standards. The draft plan also includes full implementation of the Pavley standards to provide a wide range of less polluting and more efficient cars and trucks to consumers who will save on operating costs through reduced fuel use. It also calls for development and implementation of the Low Carbon Fuel Standard, which will require oil companies to make cleaner domestically produced fuels. A final draft of plan the plan will be considered for adoption in November 2008. Once adopted, the regulatory process will begin to implement the plan. This will last two years.

Senate Bill 97—Modification to the Public Resources Code

Pursuant to Senate Bill 97, the Governor's Office of Planning and Research (OPR) is in the process of developing CEQA guidelines addressing GHGs. OPR is required to "prepare, develop, and transmit" the guidelines to the Resources Agency on or before July 1, 2009. In June 2008, OPR issued interim guidance for addressing climate change through CEQA. OPR recommends that each agency develop an approach to addressing GHG emissions that is based on best available information. The approach includes three basic steps: (1) identify and quantify emissions; (2) assess the significance of the emissions; and (3) if emissions are significant, identify mitigation measures or alternatives that will reduce the impact to a less than significant level. At this time, both the City of Newark and the BAAQMD have not identified a significance threshold for GHG emissions.

At the direction of the Governor's Office of Planning and Research, CARB is currently developing statewide interim thresholds of significance for green house gas emissions. CARB is focusing on common project types that, collectively, are responsible for substantial green house gas emissions – specifically industrial, residential, and commercial projects. The ongoing workshops have been planned to discuss further development of concepts introduced in its Preliminary Draft Staff Proposal on Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act (CEQA).

California's Energy Efficiency Standards for Residential Buildings, Title 24, Part 6, of the California Code of Regulations

The Energy Efficiency Standards for Residential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2005 Standards went into effect October 1, 2005. Projects that apply for a building permit on or after this date must comply with the 2005 Standards. The 2008 Standards are currently being developed and will go into effect in 2009.

Recently, California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 would develop emissions-reduction goals around which regions can apply to planning activities. SB 375 provides incentives for local governments and developers to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable and sustainable communities and revitalizing existing communities. The legislation also allows developers to bypass certain environmental reviews under the CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled along with traffic congestion would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency to develop regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB would work with the metropolitan planning organizations (e.g., ABAG and MTC) to align their regional transportation, housing and land use plans to reduce vehicle miles travelled and demonstrate the region's ability to attain its greenhouse gas reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

City of Newark Climate Protection Plan

The City is working on a Climate Protection Plan. As part of this plan, community and government GHG emissions were inventoried. In 2005, the City of Newark emitted approximately 387,363 tons of CO2e from the residential, commercial, industrial, transportation, waste and government sectors [12]. Vehicle travel on local roads accounted for 35% of the emissions. However, these emissions were community-based and did not include emissions on State highways or travel outside of Newark. For example, Fremont transportation emissions are about 60% of the total when including State highways, but 34% when only including the contribution of traffic on local roadways. About 14% of the Newark emissions are from residential natural gas combustion and electricity use. Commercial and industrial uses were

[12] ICLEI. 2008. City of Fremont - Baseline Greenhouse Gas Emissions Inventory Report. June

estimated to make up 53% of the community-based emissions. Of the 387,363 tons of CO2e, government operations were estimated to make up about 1%.

Global Climate Change Impacts

Given the global scope of global climate change and the large quantity of greenhouse gas emissions, the challenge under CEQA is for a Lead Agency to present information on the possible impacts of a project on global warming in a way that is meaningful to the decision making process. Under CEQA, there are two essential questions: would a project increase or substantially contribute to an environmental impact *or* would the project be subject to impacts from the environment associated with global climate change.

Accordingly, projects can both contribute to global climate change and be exposed to impacts from global climate change, and mitigation measures can be identified to minimize project impacts to and from global climate change.

Thresholds of Significance

Under State Senate Bill (SB) 97 (August 2007), the State Office of Planning and Research (OPR) is to certify and adopt guidelines for evaluation of the effects of greenhouse gas emissions and mitigation of those effects by January 1, 2010. Neither CEQA nor the CEQA Guidelines currently provide any methodology for analysis of greenhouse gases. The Lead Agency has not adopted its own standards of significance for global climate change impacts. Therefore, in lieu of OPR guidance or locally adopted thresholds, a primarily qualitative approach will be used to evaluate possible impacts for this project.

At this time, for a project to be a substantial source of new greenhouse gas emissions it would have to meet the following criteria:

- result in a net increase in greenhouse gas emissions, in terms of carbon dioxide equivalents, that could substantially impede local, regional or statewide efforts to reduce overall greenhouse gas emissions to 1990 levels.

Impact: The project will result in emission of greenhouse gases that could cumulatively contribute to global warming or climate change.

Carbon dioxide, the primary man-made greenhouse gas of concern, would be generated by the proposed project primarily from mobile sources and energy usage. Thresholds of significance have not been developed for projects to evaluate their contribution to global warming. Currently, neither CARB, BAAQMD, nor the City of Newark, have established regulations, guidance, methodologies, or other means that would require the implementation of measures that would reduce GHG emissions from projects. The Governor's OPR has recently recommended that lead agencies quantify emissions, assess the significance, and mitigate significant emissions. The

BAAQMD encourages projects to reduce GHG emissions. Reducing greenhouse gas emissions from the project would benefit the environment.

Emissions associated with the development of the proposed Area 3 and Area 4 Specific Plan were calculated. The California Air Pollution Control Officers Association (CAPCOA) has provided guidance for calculating project emissions.[13] Emissions from area, mobile and electricity usage are recommended by CAPCOA.

Area and mobile source emissions were calculated using the URBEMIS2007 model with the same inputs used to calculate emissions of air pollutant.

Indirect source emissions from electricity usage were based on rates recommended by the California Climate Action Registry General Reporting Protocol and electricity emission rates recommended by EPA[14]. CAPCOA and CCAR recommend an annual electricity usage rate of 16.7 kilowatts per square foot for commercial spaces (these rates were also used for school uses). The residential electricity consumption rates were based on a CEC sponsored study of residential electrical appliance saturation identified typical electricity usage rates for new and existing homes in California[15]. For new homes, this study identified an annual usage rate of 8,114 kilowatts per single-family residence. CO_2 emission rates for electricity use in the PG&E service grid are 0.456 pounds per kilowatt-hour[16]. It should be noted that the PG&E rate is about 52 percent of the statewide average emission rate for electricity production and 35 percent of the national average.

CO2 is the primary GHG emitted from this type of project. Although there are emissions of methane and nitrous oxide, which are more potent GHGs, there emissions are very small compared to CO2 (i.e., less than three percent equivalent CO2). As a result, these emissions are not calculated. Table 1 shows the annual GHG emissions in tons per year. Emission calculations are contained in Attachment 1.

The results reported in Table 1 are based primarily on a "business-as-usual" scenario, where current emission rates would apply. This will not likely be the case as AB 32 will require GHG emission reductions in all sectors. Transportation emission rates will likely decrease due to increased fuel efficiency and lower carbon content in fuels. The URBEMIS2007 model does not reflect future fuel efficiency very well. Fuel efficiency is regulated by the U.S. Department of Transportation and current CARB regulations that address climate change. Newer fuel standards would increase light-duty automobile and light-duty truck fuel efficiency by 10 miles per gallon (to 34 miles per gallon for cars sold in 2020). CARB proposes more efficient standards as part of the State's efforts to reduce GHG emissions. These standards would apply to new vehicles sold, and therefore, would gradually effect the overall fleet as these new vehicles replace older

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13 California Air Pollution Control Officers Association. 2008. *CEQA & Climate Change*, , January.

14 California Climate Action Registry. 2008. *California Climate Action Registry General Reporting Protocol – Reporting Entity-Wide Greenhouse Gas Emissions*, Version 3.0. April.

15 KEMA-XENERGY, Itron RoperASW. 2004. California Statewide Residential Appliance Saturation Study – Volume 2, Study Results Final Report. CEC Consultant Report. June.

16 *Local Government Operations Protocol for the quantification and reporting of Greenhouse Gas Emissions, Version 1.0* - CARB, CCAR, ICLEI. Sept. 2008

vehicles. The CO2 emissions estimates for vehicle travel do not accurately reflect future conditions. It is likely that CO2 emissions with a more fuel-efficient vehicle fleet would be less.

Table 1
Annual CO2 Emissions from Area 3 and 4 Specific Plan Alternatives

Source Type	Basis for Calculation	Annual Emissions (in tons per year)
Area Source	Natural gas and landscape equipment from URBEMIS2007	3,938[1]
Mobile Sources	Traffic from URBEMIS2007	15,292[2]
Electricity Usage	Estimated commercial/school space and residential energy usage along with PG&E emission rates	2,485
	Total	**21,715**

Notes: (1) Could be reduced by 20% or more through increased energy efficiency (e.g., green building practices)

(2) Includes reduction due to existing mix of uses, alternative transportation options and other project features that reduce trips and vehicles miles traveled.

Source: Illingworth & Rodkin, 2008.

The largest majority of GHG emissions associated with the project would come from motor vehicle use (about 70 percent). The Area 3 project would be located within walking distance of some services for proposed project users, such as a school, retail establishments and restaurants. Area 4 would be mostly located beyond normal walking distance to transit and retail services.

Energy usage (natural gas and electricity usage combined) would generate about 30 percent of the proposed project GHG emissions. Features that reduce energy consumption and waste can be included in new development that would reduce emissions. These would include energy-efficient construction methods, inclusion of solar photovoltaic panels to produce energy, solar water heaters, passive solar design, appropriate landscape and water recycling systems. For example, Energy Star rated buildings have CO2 emissions that are about 25% lower than existing buildings of similar size and use[17].

As previously discussed, there are no formally recognized methods under CEQA for quantifying greenhouse gas emissions from a proposed project, and no standards or thresholds in place to evaluate potential impacts on global climate change from a proposed project. Currently, compliance with AB32 is the State's plan to achieve reductions in GHG emissions to 1990 levels. This will not be an easy task, as the State is expected to experience population growth that would include increased vehicle usage and energy demand. As a result, long-term emissions would require substantial reductions to achieve AB 32 goals.

[17] Energy Star – U.S. EPA and U.S. Department of Energy - http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager_carbon

While the Specific Plan would result in a net increase in greenhouse gas emissions, in terms of carbon dioxide equivalents, the Specific Plan would provide a mixed use development at in an urban setting. New housing would have access to transit, nearby employment centers, and commercial and retail areas. Development under the proposed Specific Plan would be designed and constructed pursuant to the City of Newark Green Building and Construction and Demolition Recycling Ordinance and would include provisions for recycled water for all non-potable water needs. For these reasons, it is not expected to impede local, regional, or statewide efforts to reduce overall greenhouse gas emissions to 1990 levels. For the reasons described above, the projects would not make a cumulatively significant contribution to global climate changes impacts. **(Less Than Significant Cumulative Impact)**

Attachment 1

12/10/2008 12:29:02 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: U:\I&R Docs\06-174 Areas 3 and 4 SP\Area 3 Option B 2018.urb924

Project Name: Newark Area 3 Option B Year 2018

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

12/10/2008 12:29:02 PM

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.71	1.92	9.13	0.01	0.76	0.73	2,411.48
TOTALS (tons/year, mitigated)	12.37	1.55	8.33	0.01	0.76	0.73	1,949.70
Percent Reduction	2.68	19.27	8.76	0.00	0.00	0.00	19.15

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	6.71	6.85	68.01	0.10	9.68	2.02	9,916.41
TOTALS (tons/year, mitigated)	6.17	6.17	61.35	0.09	8.74	1.82	8,944.15
Percent Reduction	8.05	9.93	9.79	10.00	9.71	9.90	9.80

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	19.42	8.77	77.14	0.11	10.44	2.75	12,327.89
TOTALS (tons/year, mitigated)	18.54	7.72	69.68	0.10	9.50	2.55	10,893.85
Percent Reduction	4.53	11.97	9.67	9.09	9.00	7.27	11.63

12/10/2008 11:03:18 AM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: U:\I&R Docs\06-174 Areas 3 and 4 SP\Area 4 2018.urb924

Project Name: Newark Area 4 Year 2018

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

12/10/2008 11:03:18 AM

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	8.32	1.21	6.02	0.01	0.50	0.49	1,527.25
TOTALS (tons/year, mitigated)	8.10	0.98	5.49	0.01	0.49	0.48	1,235.32
Percent Reduction	2.64	19.01	8.80	0.00	2.00	2.04	19.11

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	4.31	4.66	46.20	0.07	6.61	1.38	6,753.21
TOTALS (tons/year, mitigated)	4.08	4.38	43.43	0.07	6.21	1.29	6,347.90
Percent Reduction	5.34	6.01	6.00	0.00	6.05	6.52	6.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.63	5.87	52.22	0.08	7.11	1.87	8,280.46
TOTALS (tons/year, mitigated)	12.18	5.36	48.92	0.08	6.70	1.77	7,583.22
Percent Reduction	3.56	8.69	6.32	0.00	5.77	5.35	8.42

Newark Area 3 & 4 Specific Plan
Newark, CA

Propposed Project

Using CAPCOA/CCAR method

Sq. Feet	Usage Rate	CO2 Emission Rate (lbs/Kw-hr)	Emissions (tpy)	Metric tpy
SF Commercial				
40000	16.75	0.456	153	139
SF Residential				
1260	8117	0.456	2332	2115
MF Residential				
0	3451	0.456	0	0
			2,485	tpy

NEWARK AREAS 3 & 4
CLIMATE CHANGE IMPACT ADDENDUM

Introduction

In February 2009 Schaaf & Wheeler presented potential climate change impacts to the City of Newark (City) as a part of the cumulative impacts section of an Administrative Draft Environmental Impact Report (ADEIR) for Newark Areas 3 and 4 (Project). This discussion focused on the current status of climate change understanding, research, and projections, and how these projected changes may impact the Project. The ADEIR concluded that the only readily quantifiable cumulative impact is sea level rise, noted the uncertainty in sea level rise predictions, and found that although anticipated sea level rise might reduce freeboard afforded by Project fill, the Project itself should not be in jeopardy from 100-year tidal flooding.

Since the completion of the ADEIR, several additional studies have been published, many of which focus on climate change projections and impacts to California. The purpose of this report addendum is to present findings from the updated studies with emphases on new information contained therein, and to revise the anticipated impacts, conclusions, and recommendations as warranted by the additional studies.

Most of these updated studies are from the California Climate Change Center (CCCC). Established in 2003 by the California Energy Commission's Public Interest Energy Research (PIER) Program to document climate change research relative to the state, core research activities take place at the Scripps Institution of Oceanography and the University of California, Berkeley, complemented by efforts at other research institutions. The CCCC Report Series, which make up the majority of updated studies reviewed for this addendum, detail ongoing center-sponsored research. Priority research areas defined in PIER's five year climate change research plan are: monitoring, analysis, and modeling of climate; analysis of options to reduce greenhouse gas emissions; assessment of physical impacts and of adaptation strategies; and analysis of the economic consequences of both climate change impacts and the efforts designed to reduce emissions.

Reports reviewed for this addendum include:

- Water Resource Policies and Authorities Incorporating Sea-level Change Considerations in Civil Works Programs (United States Army Corps of Engineers, July 1, 2009);
- Climate Change Scenarios and Sea Level Rise Estimates for the California 2009 Climate Change Scenarios Assessment (California Climate Change Center, August 2009);
- Using Future Climate Projections to Support Water Resource Decision Making in California (California Climate Change Center, August 2009);
- Projections of Potential Flood Regime Changes in California (California Climate Change Center, August 2009);
- The Impacts of Sea-Level Rise on the California Coast (California Climate Change Center, August 2009); and
- 2009 California Climate Adaptation Strategy, Public Review Draft (California Natural Resources Agency, August, 2009).

All of the above reports have been published by the respective agencies sponsoring each report, and as such have not necessarily undergone the peer-review process required for publication in scholarly journals. All of the California Climate Change Center (CCCC) reports include a preface which clarifies that the report presents interim project results, and information contained within the reports is subject to change.

This addendum is formatted to generally repeat the sections of the ADEIR. However, only relevant new or updated information is presented.

Current Status of Climate Change Understanding and Research

This addendum to the ADEIR updates the current status of climate change understanding and research to October 2009. Several reports which specifically focus on climate change projection and impacts to the State of California have been published since the ADEIR was prepared. While this addendum offers an updated summary of these projections and impacts, it should be noted that uncertainty is an inherent quality of any climate change projections, becoming more uncertain the farther into the future these projections are forecast.

Climate Change Impacts to Water Resources in Newark, California

The study reports listed above include updated projections and impacts relevant to sea level rise, storm surge and wave height, precipitation, and flooding. Temperature change, water supply and water quality projections and impacts are not significantly different as a result of this updated review, and as such those discussion topics from the ADEIR are not included in this addendum. This should not be construed to imply that these issues are any less of a concern, only that those concerns are not affected by the reports reviewed for this addendum.

Only relevant updated information for sea level rise, storm surge, precipitation, and flooding are discussed herein. A more general background on the projections and impacts of these parameters can be found in the ADEIR.

Sea Level Rise

Two of the above listed reports deal directly with sea level rise projections, and their incorporation into general project planning. Each of these reports is described in more detail below.

The United States Army Corps of Engineers (USACE) published an engineering circular (July 1, 2009) to direct the consideration of sea level rise estimates in project planning and design. While this methodology is required only for USACE civil work activities, it offers a valuable guidance for any planning effort. In summary, the USACE report recommends that the planning, engineering and designing for projects within the tidal zone or with downstream tidal boundary conditions consider how sensitive and adaptable the project is to a range of sea level rise estimates (low, intermediate and high). Specifically, the USACE directs determination of "how sensitive alternative plans and designs are to these rates for future local mean sea-level change, how this sensitivity affects calculated risk, and what design of operations and maintenance measures should be implemented to minimize adverse consequences while maximizing beneficial effects".

The "low" sea level rise estimate recommended by the USACE report is based on local historic tide gauges. In San Francisco, the Presidio tide gauge has the longest period of record and is consistently used for historic sea level trends in San Francisco Bay. The long term average sea level rise at the Presidio gauge is 2.01 millimeters per year (mm/yr), with a 95% confidence limit of plus or minus 0.21 mm/yr (NOAA, Station

9414290). "Intermediate" and "high" sea level rise estimates are based on the National Resource Council (NRC) curves and equations developed for a 1987 Report (*Responding to Changes in Sea Level: Engineering Implications*), modified to account for the updated annual estimate of sea level rise made in the 2007 IPCC report, and manipulated to include consideration of the date of the equation development. The "intermediate" sea level rise projection is based on the modified NRC Curve I, and the "high" sea level rise projection on the modified NRC Curve III. This equation is:

$$E(t_2) - E(t_1) = 0.0017(t_2 - t_1) + b(t_2^2 - t_1^2)$$

where:

t_1 = time between construction date and 1986;

t_2 = time between date at which sea level rise projection is desired and 1986;

$E(t)$ = eustatic sea-level, in meters, as a function of (t);

b = Variable; 2.36E-5 for modified NRC Curve I and 1.005E-4 for modified NRC Curve III.

Table 1 presents the range of sea level rise potential for the City of Newark using this methodology, assuming adoption of the Presidio gauge for the local historic sea level trend, and construction of a given project in 2010.

Table 1: Range of Sea Level Rise Projections Using USACE Methodology with Presidio Gage and 2010 Construction Year

USACE Methodology Sea Level Rise Projection Range (feet)			
Year	**Low**	**Intermediate**	**High**
2025	0.1	0.2	0.4
2050	0.3	0.5	1.4
2075	0.4	0.9	2.8
2100	0.6	1.5	4.6

A draft version of the *Impacts of Sea-Level Rise on the California Coast*, developed by The Pacific Institute for the CCCC was released in March 2009, with much publicity surrounding the new 2100 sea level rise estimate of "5 feet" (March 12, 2009 *San Francisco Chronicle* article). The development of this sea level rise estimate is presented

in somewhat more detail, however, in the *Climate Change Scenarios and Sea Level Rise Estimates for the California 2009 Climate Change Scenarios Assessment* Report (August 2009), also produced for the CCCC. In short, the sea level rise estimates adopted by the CCCC are based on an empirical formula developed by Rahmstorf (2007) which relates global mean sea level rise to global mean surface air temperature. The report states (and shows graphically) that the Rahmstorf predicted values are then manipulated to include the impact of reservoirs and dams, but exactly what this modification entails, and its justification, is unclear. The supporting article for this modification, *Impact of Artificial Reservoir Water Impoundment on Global Sea Level,*[1] appears to focus on the impact of reservoir and dam storage to historic sea level trends, and Schaaf & Wheeler is unable to locate any published article which details a modified Rahmstorf method.

Using the above methodology, the 2009 Assessment Report gives a range of sea level rise of 30-45 cm (12 – 18 inches) by 2050 (relative to 2000 levels). Although other CCCC reports, as well as the San Francisco Bay Conservation and Development District have adopted a 2100 sea level rise projection of 1.4 meters (4.6 feet), this projection is not explicitly stated in the text of the 2009 Assessment Report (it can only be deduced from included graphs). It should be noted that the range of sea level rise estimates produced from this methodology is about 0.6 m – 1.45 m (2.0 – 4.8 feet). The 4.6 feet of rise by 2100 predicted at the upper end of this range is similar to the USACE methodology high range for 2100 for San Francisco Bay, as shown in Table 1.

In summary, significant uncertainties remain in sea level rise projections, particularly as one forecast's farther into the future. The most current available estimates for sea level rise by 2050 range from 0.3 foot to 1.5 feet, and by 2100 from 0.6 foot to 4.8 feet.

Storm Surge and Wave Runup

Updated reports repeat the general trend of increasing extreme high sea levels (surge) presented in the ADEIR. In short, it is expected that as mean sea level rises, not only will the occurrence of high sea level, or surge, events increase, but so may the amount of surge itself (currently about 3.1 feet above mean-higher high water in Newark). This increased storm surge elevation will decrease project freeboard in Newark; however quantitative estimates for the increased storm surge have not been made, and are unlikely to be determined in the foreseeable future.

[1] Chao, B.F., Wu, Y.H., Li, Y.S., April 11, 2008: 'Impact of Artificial Reservoir Water Impoundment on Global Sea Level', Science Magazine, Volume 320, pp. 212-214.

In general, wave runup in San Francisco Bay is a function of local bathymetry and wind patterns, which are not well-captured by regional climate models. Discussed in more detail below, 'storminess' trends due to climate change are uncertain and differ in both magnitude and direction in different reports. As such, this addendum makes no changes to the findings presented in the ADEIR.

Project Impact from Projected Sea Level Rise

The one-percent storm surge for San Francisco Bay at Newark Slough is 7.5 feet NGVD, compared to a mean high tide of about 4.4 feet NGVD.[2] Wave runup is the elevation wind-driven waves will reach as waves break on land, which is not anticipated to be an issue within the Plan Area. Both storm surge and wave runup may be affected by climate change. However, these impacts are not particularly well understood at this time. Extreme wave heights and surge fluctuations tend to increase from the south to the north along California Coast, as a result of increasing storm intensities along the northern coast (Cayan, 2007; ADEIR).

Although uncertainty remains, recent studies have concluded that if sea level rise is on the lower end of the current predicted ranges, the occurrence of extremely high sea level events will increase, but the increase in extremes would be not so different from the increasing trend that has been seen in California for the past several decades. Common practice, consequently, is to treat projections of future mean sea level rise as equivalent to a shift in vertical datum.

In short, it is expected that as sea levels rise, not only will the occurrence of high sea level, or surge, events increase, but so may the amount of surge itself (currently about 3.1 feet above mean-high high water in Newark). Fill will be placed within the Plan Area to a minimum elevation of 11.25 feet NGVD, providing 3.75 feet of freeboard above the current one-percent stillwater elevation of 7.5 feet and 3.25 feet of freeboard over the regulatory base flood elevation of 8 feet NGVD. If the predicted 'intermediate' scenario of a 1.5 feet rise in sea level with an accompanying rise in extreme storm surge comes to fruition by 2100; absent fill settlement, the placed fill would then provide 2.25 feet of freeboard. For the 'high' sea level rise scenario, the one-percent surge would inundate the Project by nearly one foot. However, quantitative estimates for the increased storm surge have not been made, and are unlikely to be determined in the foreseeable future.

[2] U.S. Army Corps of Engineers, San Francisco District, "San Francisco Bay Tidal Stage vs. Frequency Study," October 1984.

Precipitation

The ADEIR concluded that although there is no scientific consensus, the most recent global and regional models predict that total mean precipitation will modestly decrease in the latter half of the next century. Further, that while total rainfall may decrease a modest increase in the number and magnitude of large precipitation events, with longer dry periods between events is predicted.

The most updated *Climate Change Scenarios* report (2009) states that the occurrence of significant storms declines at least marginally and that the occurrence of high daily precipitation events generally remains about the same through 2100 as it does in the historical projections. It should be noted that this conclusion is markedly different from previous conclusions by the same authors,[3] and that several CCCC reports reviewed for this addendum state the conclusion that was previously presented: that there is a modest tendency for increases in the numbers and magnitudes of large precipitation events.

The most current studies reviewed for this addendum both conflict previous conclusions and other updated studies, further exemplifying that there is no consensus regarding the potential impacts of climate change on the frequency or magnitude of large storm events.

Flooding

For this addendum, Schaaf & Wheeler reviewed the Projections of *Potential Flood Regime Changes in California* report, produced for the CCCC (August 2009). In general, this report is only able to project flood regime changes in those watershed areas affected by snowmelt and distribution of precipitation between rain and snow. These projections are not useful to the Project, given that snowfall in Newark is exceedingly rare.

While increased flood risk is very generally identified as an impact of climate change in most reports, in general, the knowledge about this impact is limited to those impacts caused by increased sea level rise and occurrence and magnitude of extreme high tide events, as described in more detail previously. Whether climate change will result in increased runoff in areas with no snow is unknown.

[3] Cayan, D. R., Maurer, E. P., Dettinger, M. D., Tyree, M., and Hayhoe, K., 2007: 'Climate change scenarios for the California region', Climatic Change, 87, Suppl. 1, 21–42 doi: 10.1007/s10584-007-9377-6.

Regulations, Policies and Actions Related to Climate Change

Federal

United States Army Corps of Engineers

The recent engineering circular presenting guidance on incorporating sea level rise into project planning, engineering, and design is described in detail previously in this report. While incorporation of these guidelines is only required for USACE civil works projects, and as such does not directly affect the Project, but it may be a useful tool for sea level rise analysis.

State

California Department of Water Resources

The California Department of Water Resources (DWR) recently published a draft *2009 California Climate Adaptation Strategy* Report (August 2009). This report includes several proposed actions to incorporate climate change impacts to the California Environmental Quality Act (CEQA) process. These actions include near term goals of continuing to address climate change impacts from projects on wildlife, including cumulative impacts, and the development of internal guidance by the Department of Fish and Game (DFG) to help staff address climate adaptation and to ensure climate change impacts are appropriately address in CEQA documents.

Long term actions include:

- Based on climate change scenarios, the development by DFG of thresholds of significant for the adaptive capacity of species related to direct, indirect and cumulative impacts of projects;
- Encouragement of local governments to adopt climate change adaptation actions for conservation, land use, research and regulatory measures;
- Achieve consistency in state and local regulations, general plans, and ordinances and develop sustainable funding mechanisms to support climate change planning efforts that focus on biodiversity conservation.

Local

San Francisco Bay Conservation and Development District

The San Francisco Bay Conservation and Development District (BCDC) has proposed several changes to their authority including expanding BCDCs regulatory authority to allow BCDC to decide if and under what conditions shoreline development may be authorized. In May 2009, BCDC submitted preliminary recommendations for amendments to the Bay Plan to incorporate climate change. This proposal adopts sea level rise estimates of 16 inches (1.3 feet) by 2050 and 55 inches (4.6 feet) by 2100. Proposed changes to the Bay Plan which may be relevant to the Project include the following:[4]

- "Addressing the impacts of sea level rise and shoreline flooding may require large-scale flood protection projects, including some that extend across jurisdictional or property boundary. Coordination with adjacent property owners or jurisdictions to create contiguous, effective shoreline protection is critical when planning and constructing flood protection projects. Failure to coordinate may result in inadequate shoreline protection. (e.g., a protection system with gaps or one that causes accelerated erosion in adjacent areas)"

- "New shoreline protection projects and the maintenance or reconstruction of existing projects should be authorized if: (a) the project is necessary to project the shoreline from erosion or to protect shoreline development from flooding; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the erosion and flooding conditions at the site, (c) the project is properly engineering to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; and (e) the protection is integrated with adjacent shoreline protection measures."

- "...the Commission should...encourage new projects on the shoreline to be set back from the edge of the shore above a 100-year flood level that takes future sea level rise into account for the expected life of the project, or otherwise be specifically designed to tolerate sea level rise and storms and to minimize environmental impacts; discourage new projects that will require new structural shoreline protection during the expected life of the projects, especially where no shoreline protection currently exits [*sic*]; determine whether alternative measures

[4] Travis, W., Executive Director, Lacko, L., Senior Planner, San Francisco Bay Conservation and Development Commission. Memo to the Commissioners and Alternates, San Francisco, CA. April 7, 2009.

that would involve less fill or impacts to the Bay are feasible; require an assessment of risks from a 100-year flood that takes future sea level rise into account for the expected life of the project; and require that where shoreline protection is necessary, ecosystem impacts are minimized."

- "The Commission may approve fill that is needed to provide flood protection for existing projects. New projects on fill or near the shoreline should either be set back from the edge of the shore so that the project will not be subject to dynamic wave energy, be built so the bottom floor level of structures will be above a 100-year flood elevation that takes future sea level rise into account for the expected life of the project, be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Right-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay."

- "Design and evaluation (of any ecosystem restoration project) should include an analysis of: (a) how the system's adaptive capacity can be enhanced so that it is resilient to sea level rise an climate change...(h) an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises..."

- "Public access should be sited, designed, managed, and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding."

These changes, if approved, may have significant impacts on the approach to development, planning, and design of both flood control projects and new or re-development within portions of the Plan Area; particularly with respect to the determination of an appropriate project life.

If the 'high' sea level rise scenario proves to be true, adaptive strategies to improve flood protection (for example levees or floodwalls) may prove to be necessary in the future.

Conclusions

The ADEIR concluded that the only quantifiable flood risk impact to Newark due to climate change is the increase in sea level rise, and a wide range, with no assigned certainties or upper bounds to that range, is projected. While this update does not change that basic conclusion, reports specific to the state of California as well as the BCDC have now adopted specific values for sea level rise projections: 16 inches (1.3 feet) by 2050 and 55 inches (4.6 feet) by 2100.

Storm surge, wave runup, precipitation, and flooding have been reviewed based on updated studies not available when the ADEIR was prepared. These updated studies do not make any numerical forecasts for the aforementioned parameters. While the overall precipitation trends of modest drying is repeated in these updated reports, the previous projection of an increased number and magnitude of significant rainfall events (with longer drying periods between storms) is updated to project either no change, or a minor decrease in the magnitude and frequency of these significant rainfall events. In conclusion, significant uncertainty remains regarding the projections of how climate change will impact the magnitude and frequency of significant rainfall events.

The Project will provide 3.75 feet of freeboard above the current one-percent stillwater elevation. Using the USACE methodology and assuming construction in 2010 (for consistency), available project freeboard would not be overwhelmed by projected sea level rise through 2178 for the 'intermediate' scenario, but would be overwhelmed by 2089 for the 'high' sea level rise scenario.

Given the uncertainty in these sea level rise projection scenarios, it is not clear that the additional foot of fill needed for theoretical protection against rising one-percent storm surge for an additional ten years or so, particularly when the weight of such additional fill accelerates settlement. An adaptive strategy against rising sea level, which might include an earthen levee or structural floodwall along the perimeter of the fill, is more appropriate and can take advantage of more complete climate change data and predictions in the future.

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ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

Memo

To: **Julie Meir,** *David J. Powers and Associates*

Cc: Judy Shanley, *David J. Powers and Associates*

Date: **November 24, 2009**

From: **James A. Reyff**

Subject: **Newark Areas 3 and 4 Addendum to the Air Quality Study**

This memo serves as an addendum to the project Air Quality study (dated February 17, 2009) and the Cumulative Global Climate Change Study (dated April 10, 2009). This memo provides information to describe the proposed changes in the BAAQMD CEQA Guidelines that are likely to be adopted in December 2009[1].

Air Quality Study

Updates to the guidelines include the following changes:

Construction Period Impacts

Under the current guidelines, construction activities are discussed and appropriate mitigation, mostly in the form of feasible PM_{10} control measures, are identified for the project. The Air Quality study described project construction impacts and identified mitigation measures to reduce dust (including PM_{10}) and exhaust emissions to a less-than-significant levels. The study also quantified the unusual construction emissions that would occur as a result of importing fill material to the project site, assuming 100 daily truck loads of fill are imported to the site. The proposed guidelines establish daily quantified emission thresholds for ROG, NOx, PM_{10} exhaust and PM2.5 exhaust that apply to construction activities. BAAQMD recommends that URBEMIS2007 be used to model construction exhaust emissions. Project construction period emissions were not modeled in the air quality study. BAAQMD will still recommend that fugitive dust emissions be based on application of feasible PM_{10} control measures, as was included in the project Air Quality Study.

[1] BAAQMD 2009. BAAQMD California Environmental Quality Act – Air Quality Guidelines. November.

In this addendum, the URBEMIS2007 model was used to model construction activity associated with the project. Full build out of the proposed project was assumed to begin in 2011 and last for about 5 to 8 years. Construction would probably last longer, but a more aggressive schedule was assumed for this analysis to avoid under prediction of emissions. All grading activities were assumed to occur in the first two years. The emissions include truck travel associated with fill import. In general, the emissions were computed using URBEMIS2007 default equipment selection and usage assumptions. The long duration periods for construction tasks were also selected, which tend to overstate the daily emissions. Emissions from this modeling are shown in Table 1.

Operational Impacts

The proposed Air Quality Guidelines for operational impacts change the project direct and indirect emissions thresholds. For ROG and NOx, these change from 80 pounds per day to 54 pounds per day. For PM_{10}, the threshold was changed slightly from 80 pounds per day to 82 pounds per day. BAAQMD proposes a new $PM_{2.5}$ threshold of 54 pounds per day. BAAQMD also has annual thresholds, but those can't be exceeded without exceeding the daily threshold.

Assuming complete build out of Area 3 by 2015, ROG emissions would be significant and other emissions would be less than significant under the existing and proposed thresholds. In 2018, build out of Areas 3 and 4 would result in significant emissions for ROG, NOx, and PM_{10} with the proposed thresholds. That is, daily NOx emissions that were not identified as significant under the current guidelines would be considered significant under the proposed guidelines. Emissions of ROG and PM_{10} would remain significant. The mitigation measures in the air quality study were developed to reduce ROG and PM_{10} emissions, mostly from vehicle travel. The same measures would reduce NOx emissions, but not to a less than significant level. There are no other reasonable and feasible mitigation measures that would further reduce project NOx emissions.

Community Risk

The proposed Air Quality Guidelines include new specific methods for evaluating local community risk and hazard impacts from siting new sensitive receptors near sources of toxic air contaminants and particulate matter. This issue was addressed in the project Air Quality study. The study included a search of air contaminant sources near the project site. This search was performed by BAAQMD at our request. BAAQMD did not identify significant sources or air pollution within ¼ mile of the project site. There are no air pollutant sources listed in CARB's Air Quality and Land Use Handbook that would affect the site. As a result, nearby sources would not result in incremental lifetime cancer risks greater than 10 in one million, a non-cancer risk hazard index greater than 1.0, or an annual $PM_{2.5}$ concentration greater than 0.3 $\mu g/m^3$. This conclusion was reached, because significant sources (e.g., freeway) are not located near the project. In addition, all sources within 1,000 feet would not result in cumulative impacts above a lifetime cancer risk of 100 in one million, or a non-cancer risk hazard index greater than 1.0, or an annual $PM_{2.5}$ concentration greater than 0.8 $\mu g/m^3$.

Table 1 Daily Project Construction Emissions for Build Out of the Area 3 and Area 4 Specific Plan in Pounds Per Day

Scenario	Modeled Daily Emissions in Pounds Per Day (lbs/day)			
	Reactive Organic Gases (ROG)	Nitrogen Oxides (NOx)	Exhaust Respirable Particulates (PM_{10})	Exhaust Fine Particulates ($PM_{2.5}$)
Construction 2012	24	222	10	10
Construction 2012	22	206	10	8
Construction 2013	32	254	12	12
Construction 2014	34	136	8	8
Construction 2015	22	70	4	4
Construction 2016	86	64	4	4
Construction 2017	84	58	4	4
Construction 2018	84	52	4	2
Proposed BAAQMD Significance Thresholds	*54*	*54*	*82*	*54*

Cumulative Global Warming Section Report

The proposed Air Quality Guidelines include, essentially, the first quantified emission thresholds for land use projects. The basis for the GHG threshold established by BAAQMD is to help bring the Bay Area in to compliance with the goals of AB 32, by ensuring that future emissions from land use projects will not interfere with the AB 32 goal that would reduce 2020 GHG emissions to 1990 levels. The proposed new BAAQMD thresholds do not require quantification of GHG emission from projects that comply with a qualified Climate Action Plan. Since Newark and most Bay Area communities have not adopted a qualified Climate Action Plan, BAAQMD is recommending two different project thresholds: The first is a bright-line threshold of total direct and indirect emissions of 1,100 metric tons per year. This threshold basically serves as a *de minimus* threshold. Projects with emissions below this level are not expected to conflict with the overall goal of the Bay Area doing it's fair share to help the State reach AB 32's goal in 2020. This project, like many others, would have emissions well above the thresholds mostly due to the size. The second threshold is to have emissions that meet an efficiency standard of 4.6 metric tons per service population per year. This threshold is developed by dividing the project's annual direct and indirect GHG emissions by the sum of the predicted population increase and the number of new jobs.

Predicted annual emissions of GHG in the Climate Change GHG Emissions report are shown in Table 2. Table 2 is updated from the original report to include the emissions from water conveyance. These

emissions are recommended in the proposed BAAQMD guidelines, based on water usage and generic statewide electricity consumption rates for conveying water to residences.

Unmitigated, the project would result in 19,991 metric tons per year. The Specific Plan is expected to increase population by 3,427 people, based on up to 1,260 new residential units. Approximately 482 total new jobs would be created, including jobs associated with the proposed elementary school and golf course. As a result, the project would generate 5.1 metric tons of CO_2 per year per service population (residents plus employees). Obtaining LEED certification that reduces energy usage emissions by 20 percent would reduce the efficiency number to 4.8 metric tons of CO_2 per year per service population

Table 1 Annual CO2 Emissions from Area 3 and 4 Specific Plan Alternatives

Source Type	Basis for Calculation	Annual Emissions (in tons per year)	Annual Emissions (in metric tons per year)
Area Source	Natural gas and landscape equipment from URBEMIS2007	3,938[1]	3,573
Mobile Sources	Traffic from URBEMIS2007	15,292[2]	13,873
Electricity Usage	Estimated commercial/school space and residential energy usage along with PG&E emission rates	2,485	2,254
Water Conveyance	Assuming 356 million gallons (mg) annual water and 3,950 kwh to convey 1 mg water	321	291
Total		**22,036**	**19,991**

Notes:

(1) Could be reduced by 20% or more through increased energy efficiency (e.g., green building practices)

(2) Includes reduction due to existing mix of uses, alternative transportation options and other project features that reduce trips and vehicles miles traveled – mostly applied to Area 3.

Source: Illingworth & Rodkin, 2008.

The BAAQMD is not proposing a threshold of significance for GHG emissions during construction. However, the guidelines recommend that Lead Agencies quantify and disclose GHG emission that would occur during construction and make a determination of the significance in relation to meeting AB 32 GHG reduction goals. At this time, the City has not developed any criteria for reducing GHG emissions during construction. As described in the ADEIR Global Climate Change section, the City has programs to reduce construction period emissions. In 2007, the City adopted the Green Building and Construction and Demolition Recycling ordinance. This ordinance requires construction projects to recycle 100 percent of all demolished Portland cement and at least 50 percent of all other materials. The City requires green building practices for City buildings and encourages this practice for private buildings.

Project construction period emissions were predicted using the URBEMIS2007 model as described previously in this addendum to predict air pollutant emissions. In the case of this GHG assessment, annual emissions were predicted. These annual emissions were expected to range from 1,721 to 6,677 metric tons of CO_2 per year over the 8-year construction period used in the air quality analysis. Annual emissions would vary depending on the length of the construction period. A longer build out period would most likely result in lower annual construction emissions. Highest emission would occur during the grading period when fill material would be imported to the site.

Model information used to develop the additional emissions data for this report is attached.

JR

Newark Area 3 & 4 Construction Period Emissions
Nov. 24, 2009

Scenario	Modeled Daily Emissions (pounds per day) ROG	NOx	Exhaust PM10	Exhaust PM2.5	Annual Emissions (tons per year) CO_2
Construction 2011					
URBEMIS2007 Area 3	5	41	2	2	410
URBEMIS2007 Area 4	12	111	5	5	1,497
Total	24	222	10	10	1,907
Construction 2012					
URBEMIS2007 Area 3	5	38	2	2	540
URBEMIS2007 Area 4	11	103	5	4	1,628
Total	22	206	10	8	2,168
Construction 2013					
URBEMIS2007 Area 3	9	65	4	4	535
URBEMIS2007 Area 4	16	127	6	6	2,057
Total	32	254	12	12	2,592
Construction 2014					
URBEMIS2007 Area 3	8	45	2	2	2,408
URBEMIS2007 Area 4	17	68	4	4	4,989
Total	34	136	8	8	7,397
Construction 2015					
URBEMIS2007 Area 3	6	29	2	1	2,240
URBEMIS2007 Area 4	11	35	2	2	4,912
Total	22	70	4	4	7,152
Construction 2016					
URBEMIS2007 Area 3	58	27	1	1	2,249
URBEMIS2007 Area 4	43	32	2	2	4,919
Total	86	64	4	4	7,168
Construction 2017					
URBEMIS2007 Area 3	57	24	1	1	2,240
URBEMIS2007 Area 4	42	29	2	2	4,901
Total	84	58	4	4	7,141
Construction 2018					
URBEMIS2007 Area 3	57	22	1	1	2,198
URBEMIS2007 Area 4	42	26	2	1	4,920
Total	84	52	4	2	7,118

Note: All Fill import emissions assigned to Area 4

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\I&R Docs\2006\06-174 Newark Areas 3 and 4 SP\Area 3 Option B 2018construction.urb924

Project Name: Newark Area 3 Year 2018 Construction

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2011 TOTALS (lbs/day unmitigated)	5.30	40.94	390.01	2.37	392.38	81.45	2.18	83.63
2011 TOTALS (lbs/day mitigated)	5.30	40.94	88.44	2.37	90.81	18.47	2.18	20.65
2012 TOTALS (lbs/day unmitigated)	4.99	38.28	390.01	2.15	392.16	81.45	1.98	83.43
2012 TOTALS (lbs/day mitigated)	4.99	38.28	88.44	2.15	90.59	18.47	1.98	20.45
2013 TOTALS (lbs/day unmitigated)	9.09	65.17	390.02	3.95	393.97	81.46	3.63	85.09
2013 TOTALS (lbs/day mitigated)	9.09	65.17	88.46	3.95	92.40	18.48	3.63	22.11
2014 TOTALS (lbs/day unmitigated)	8.36	45.35	0.70	2.36	3.05	0.25	2.13	2.38
2014 TOTALS (lbs/day mitigated)	8.36	45.35	0.70	2.36	3.05	0.25	2.13	2.38
2015 TOTALS (lbs/day unmitigated)	6.14	29.30	0.69	1.65	2.34	0.25	1.48	1.73

2015 TOTALS (lbs/day mitigated)	6.14	29.30	0.69	1.65	2.34	0.25	1.48	1.73
2016 TOTALS (lbs/day unmitigated)	57.73	26.66	0.70	1.47	2.17	0.25	1.32	1.56
2016 TOTALS (lbs/day mitigated)	57.73	26.66	0.70	1.47	2.17	0.25	1.32	1.56
2017 TOTALS (lbs/day unmitigated)	57.22	24.25	0.70	1.34	2.03	0.25	1.19	1.44
2017 TOTALS (lbs/day mitigated)	57.22	24.25	0.70	1.34	2.03	0.25	1.19	1.44
2018 TOTALS (lbs/day unmitigated)	56.76	22.04	0.70	1.21	1.91	0.25	1.08	1.33
2018 TOTALS (lbs/day mitigated)	56.76	22.04	0.70	1.21	1.91	0.25	1.08	1.33

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 3/30/2011-12/30/2011 Active Days: 198	5.30	40.94	390.01	2.37	392.38	81.45	2.18	83.63
Mass Grading 03/30/2011-03/11/2013	5.30	40.94	390.01	2.37	392.38	81.45	2.18	83.63
Mass Grading Dust	0.00	0.00	390.00	0.00	390.00	81.45	0.00	81.45
Mass Grading Off Road Diesel	5.24	40.84	0.00	2.37	2.37	0.00	2.18	2.18
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.10	0.01	0.00	0.01	0.00	0.00	0.01

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Time Slice 1/2/2012-12/31/2012 Active Days: 261	4.99	38.28	390.01	2.15	392.16	81.45	1.98	83.43
Mass Grading 03/30/2011-03/11/2013	4.99	38.28	390.01	2.15	392.16	81.45	1.98	83.43
Mass Grading Dust	0.00	0.00	390.00	0.00	390.00	81.45	0.00	81.45
Mass Grading Off Road Diesel	4.93	38.19	0.00	2.15	2.15	0.00	1.98	1.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	0.01	0.00	0.01	0.00	0.00	0.01
Time Slice 1/1/2013-3/11/2013 Active Days: 50	9.09	**65.17**	**390.02**	**3.95**	**393.97**	**81.46**	**3.63**	**85.09**
Asphalt 01/01/2013-01/11/2014	2.65	15.19	0.01	1.30	1.31	0.00	1.19	1.20
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.40	14.70	0.00	1.28	1.28	0.00	1.18	1.18
Paving On Road Diesel	0.03	0.43	0.00	0.02	0.02	0.00	0.01	0.02
Paving Worker Trips	0.04	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Mass Grading 03/30/2011-03/11/2013	4.70	35.82	390.01	1.97	391.98	81.45	1.81	83.26
Mass Grading Dust	0.00	0.00	390.00	0.00	390.00	81.45	0.00	81.45
Mass Grading Off Road Diesel	4.65	35.73	0.00	1.96	1.96	0.00	1.81	1.81
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	0.01	0.00	0.01	0.00	0.00	0.01
Trenching 01/01/2013-12/23/2014	1.74	14.17	0.00	0.68	0.68	0.00	0.63	0.63
Trenching Off Road Diesel	1.72	14.12	0.00	0.68	0.68	0.00	0.62	0.62
Trenching Worker Trips	0.03	0.05	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 3/12/2013-12/31/2013 Active Days: 211	4.39	29.35	0.01	1.98	1.99	0.01	1.82	1.82
Asphalt 01/01/2013-01/11/2014	2.65	15.19	0.01	1.30	1.31	0.00	1.19	1.20
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.40	14.70	0.00	1.28	1.28	0.00	1.18	1.18
Paving On Road Diesel	0.03	0.43	0.00	0.02	0.02	0.00	0.01	0.02
Paving Worker Trips	0.04	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Trenching 01/01/2013-12/23/2014	1.74	14.17	0.00	0.68	0.68	0.00	0.63	0.63
Trenching Off Road Diesel	1.72	14.12	0.00	0.68	0.68	0.00	0.62	0.62
Trenching Worker Trips	0.03	0.05	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/1/2014-1/10/2014 Active Days: 8	4.15	27.44	0.01	1.81	1.82	0.01	1.66	1.67
Asphalt 01/01/2013-01/11/2014	2.51	14.37	0.01	1.22	1.23	0.00	1.12	1.12
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.27	13.94	0.00	1.20	1.20	0.00	1.10	1.10
Paving On Road Diesel	0.03	0.38	0.00	0.01	0.02	0.00	0.01	0.01
Paving Worker Trips	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Trenching 01/01/2013-12/23/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 1/13/2014-12/23/2014 Active Days: 247	8.36	45.35	0.70	2.36	3.05	0.25	2.13	2.38
Building 01/11/2014-12/22/2018	6.73	32.28	0.69	1.76	2.46	0.25	1.59	1.84
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.78	9.37	0.11	0.35	0.46	0.04	0.32	0.36
Building Worker Trips	3.02	5.26	0.59	0.30	0.89	0.21	0.25	0.46
Trenching 01/01/2013-12/23/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 12/24/2014-12/31/2014 Active Days: 6	6.73	32.28	0.69	1.76	2.46	0.25	1.59	1.84
Building 01/11/2014-12/22/2018	6.73	32.28	0.69	1.76	2.46	0.25	1.59	1.84
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.78	9.37	0.11	0.35	0.46	0.04	0.32	0.36
Building Worker Trips	3.02	5.26	0.59	0.30	0.89	0.21	0.25	0.46
Time Slice 1/1/2015-12/31/2015 Active Days: 261	6.14	29.30	0.69	1.65	2.34	0.25	1.48	1.73
Building 01/11/2014-12/22/2018	6.14	29.30	0.69	1.65	2.34	0.25	1.48	1.73
Building Off Road Diesel	2.69	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	0.72	8.34	0.11	0.32	0.42	0.04	0.29	0.32
Building Worker Trips	2.72	4.79	0.59	0.30	0.89	0.21	0.25	0.46
Time Slice 1/1/2016-1/7/2016 Active Days: 5	5.63	26.64	0.69	1.47	2.16	0.25	1.31	1.56
Building 01/11/2014-12/22/2018	5.63	26.64	0.69	1.47	2.16	0.25	1.31	1.56
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.67	7.42	0.11	0.29	0.39	0.04	0.26	0.30
Building Worker Trips	2.49	4.38	0.59	0.30	0.89	0.21	0.25	0.46

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Time Slice 1/8/2016-12/30/2016 Active Days: 256	**57.73**	26.66	0.70	1.47	2.17	0.25	1.32	1.56
Building 01/11/2014-12/22/2018	5.63	26.64	0.69	1.47	2.16	0.25	1.31	1.56
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.67	7.42	0.11	0.29	0.39	0.04	0.26	0.30
Building Worker Trips	2.49	4.38	0.59	0.30	0.89	0.21	0.25	0.46
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/2/2017-12/29/2017 Active Days: 260	57.22	24.25	0.70	1.34	2.03	0.25	1.19	1.44
Building 01/11/2014-12/22/2018	5.12	24.23	0.69	1.33	2.03	0.25	1.19	1.44
Building Off Road Diesel	2.25	13.62	0.00	0.77	0.77	0.00	0.71	0.71
Building Vendor Trips	0.62	6.61	0.11	0.26	0.36	0.04	0.23	0.27
Building Worker Trips	2.25	4.00	0.59	0.30	0.89	0.21	0.25	0.46
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Time Slice 1/1/2018-12/21/2018 Active Days: 255	56.76	22.04	0.70	1.21	1.91	0.25	1.08	1.33
Building 01/11/2014-12/22/2018	4.66	22.03	0.69	1.21	1.90	0.25	1.08	1.33
Building Off Road Diesel	2.03	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	0.58	5.91	0.11	0.23	0.34	0.04	0.21	0.25
Building Worker Trips	2.06	3.66	0.59	0.30	0.89	0.21	0.25	0.46
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/24/2018-12/31/2018 Active Days: 6	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 3/30/2011 - 3/11/2013 - Mass site grading

Total Acres Disturbed: 78

Maximum Daily Acreage Disturbed: 19.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2013 - 12/23/2014 - Trenching

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 1/1/2013 - 1/11/2014 - Default Paving Description

Acres to be Paved: 19.5

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/11/2014 - 12/22/2018 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 1/8/2016 - 12/31/2018 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

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CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 3/30/2011-12/30/2011 Active Days: 198	5.30	40.94	88.44	2.37	90.81	18.47	2.18	20.65
Mass Grading 03/30/2011-03/11/2013	5.30	40.94	88.44	2.37	90.81	18.47	2.18	20.65
Mass Grading Dust	0.00	0.00	88.43	0.00	88.43	18.47	0.00	18.47
Mass Grading Off Road Diesel	5.24	40.84	0.00	2.37	2.37	0.00	2.18	2.18
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.10	0.01	0.00	0.01	0.00	0.00	0.01
Time Slice 1/2/2012-12/31/2012 Active Days: 261	4.99	38.28	88.44	2.15	90.59	18.47	1.98	20.45
Mass Grading 03/30/2011-03/11/2013	4.99	38.28	88.44	2.15	90.59	18.47	1.98	20.45
Mass Grading Dust	0.00	0.00	88.43	0.00	88.43	18.47	0.00	18.47
Mass Grading Off Road Diesel	4.93	38.19	0.00	2.15	2.15	0.00	1.98	1.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	0.01	0.00	0.01	0.00	0.00	0.01

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Time Slice 1/1/2013-3/11/2013 Active Days: 50	9.09	**65.17**	88.46	**3.95**	92.40	18.48	**3.63**	22.11
Asphalt 01/01/2013-01/11/2014	2.65	15.19	0.01	1.30	1.31	0.00	1.19	1.20
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.40	14.70	0.00	1.28	1.28	0.00	1.18	1.18
Paving On Road Diesel	0.03	0.43	0.00	0.02	0.02	0.00	0.01	0.02
Paving Worker Trips	0.04	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Mass Grading 03/30/2011-03/11/2013	4.70	35.82	88.44	1.97	90.41	18.47	1.81	20.28
Mass Grading Dust	0.00	0.00	88.43	0.00	88.43	18.47	0.00	18.47
Mass Grading Off Road Diesel	4.65	35.73	0.00	1.96	1.96	0.00	1.81	1.81
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	0.01	0.00	0.01	0.00	0.00	0.01
Trenching 01/01/2013-12/23/2014	1.74	14.17	0.00	0.68	0.68	0.00	0.63	0.63
Trenching Off Road Diesel	1.72	14.12	0.00	0.68	0.68	0.00	0.62	0.62
Trenching Worker Trips	0.03	0.05	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 3/12/2013-12/31/2013 Active Days: 211	4.39	29.35	0.01	1.98	1.99	0.01	1.82	1.82
Asphalt 01/01/2013-01/11/2014	2.65	15.19	0.01	1.30	1.31	0.00	1.19	1.20
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.40	14.70	0.00	1.28	1.28	0.00	1.18	1.18
Paving On Road Diesel	0.03	0.43	0.00	0.02	0.02	0.00	0.01	0.02
Paving Worker Trips	0.04	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Trenching 01/01/2013-12/23/2014	1.74	14.17	0.00	0.68	0.68	0.00	0.63	0.63
Trenching Off Road Diesel	1.72	14.12	0.00	0.68	0.68	0.00	0.62	0.62
Trenching Worker Trips	0.03	0.05	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 1/1/2014-1/10/2014 Active Days: 8	4.15	27.44	0.01	1.81	1.82	0.01	1.66	1.67
Asphalt 01/01/2013-01/11/2014	2.51	14.37	0.01	1.22	1.23	0.00	1.12	1.12
Paving Off-Gas	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.27	13.94	0.00	1.20	1.20	0.00	1.10	1.10
Paving On Road Diesel	0.03	0.38	0.00	0.01	0.02	0.00	0.01	0.01
Paving Worker Trips	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Trenching 01/01/2013-12/23/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/13/2014-12/23/2014 Active Days: 247	8.36	45.35	0.70	2.36	3.05	0.25	2.13	2.38
Building 01/11/2014-12/22/2018	6.73	32.28	0.69	1.76	2.46	0.25	1.59	1.84
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.78	9.37	0.11	0.35	0.46	0.04	0.32	0.36
Building Worker Trips	3.02	5.26	0.59	0.30	0.89	0.21	0.25	0.46
Trenching 01/01/2013-12/23/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 12/24/2014-12/31/2014 Active Days: 6	6.73	32.28	0.69	1.76	2.46	0.25	1.59	1.84
Building 01/11/2014-12/22/2018	6.73	32.28	0.69	1.76	2.46	0.25	1.59	1.84
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.78	9.37	0.11	0.35	0.46	0.04	0.32	0.36
Building Worker Trips	3.02	5.26	0.59	0.30	0.89	0.21	0.25	0.46

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Time Slice 1/1/2015-12/31/2015 Active Days: 261	6.14	29.30	0.69	1.65	2.34	0.25	1.48	1.73
Building 01/11/2014-12/22/2018	6.14	29.30	0.69	1.65	2.34	0.25	1.48	1.73
Building Off Road Diesel	2.69	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	0.72	8.34	0.11	0.32	0.42	0.04	0.29	0.32
Building Worker Trips	2.72	4.79	0.59	0.30	0.89	0.21	0.25	0.46
Time Slice 1/1/2016-1/7/2016 Active Days: 5	5.63	26.64	0.69	1.47	2.16	0.25	1.31	1.56
Building 01/11/2014-12/22/2018	5.63	26.64	0.69	1.47	2.16	0.25	1.31	1.56
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.67	7.42	0.11	0.29	0.39	0.04	0.26	0.30
Building Worker Trips	2.49	4.38	0.59	0.30	0.89	0.21	0.25	0.46
Time Slice 1/8/2016-12/30/2016 Active Days: 256	**57.73**	26.66	0.70	1.47	2.17	0.25	1.32	1.56
Building 01/11/2014-12/22/2018	5.63	26.64	0.69	1.47	2.16	0.25	1.31	1.56
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.67	7.42	0.11	0.29	0.39	0.04	0.26	0.30
Building Worker Trips	2.49	4.38	0.59	0.30	0.89	0.21	0.25	0.46
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Time Slice 1/2/2017-12/29/2017 Active Days: 260	57.22	24.25	0.70	1.34	2.03	0.25	1.19	1.44
Building 01/11/2014-12/22/2018	5.12	24.23	0.69	1.33	2.03	0.25	1.19	1.44
Building Off Road Diesel	2.25	13.62	0.00	0.77	0.77	0.00	0.71	0.71
Building Vendor Trips	0.62	6.61	0.11	0.26	0.36	0.04	0.23	0.27
Building Worker Trips	2.25	4.00	0.59	0.30	0.89	0.21	0.25	0.46
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/1/2018-12/21/2018 Active Days: 255	56.76	22.04	0.70	1.21	1.91	0.25	1.08	1.33
Building 01/11/2014-12/22/2018	4.66	22.03	0.69	1.21	1.90	0.25	1.08	1.33
Building Off Road Diesel	2.03	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	0.58	5.91	0.11	0.23	0.34	0.04	0.21	0.25
Building Worker Trips	2.06	3.66	0.59	0.30	0.89	0.21	0.25	0.46
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/24/2018-12/31/2018 Active Days: 6	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Coating 01/08/2016-12/31/2018	52.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 3/30/2011 - 3/11/2013 - Mass site grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

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PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: U:\I&R Docs\2006\06-174 Newark Areas 3 and 4 SP\Area 3 Option B 2018construction.urb924

Project Name: Newark Area 3 Year 2018 Construction

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO2
2011 TOTALS (tons/year unmitigated)	410.09
2011 TOTALS (tons/year mitigated)	410.09
Percent Reduction	0.00
2012 TOTALS (tons/year unmitigated)	540.59
2012 TOTALS (tons/year mitigated)	540.59
Percent Reduction	0.00
2013 TOTALS (tons/year unmitigated)	534.64
2013 TOTALS (tons/year mitigated)	534.64
Percent Reduction	0.00
2014 TOTALS (tons/year unmitigated)	2,408.47

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2014 TOTALS (tons/year mitigated)	2,408.47
Percent Reduction	0.00
2015 TOTALS (tons/year unmitigated)	2,240.18
2015 TOTALS (tons/year mitigated)	2,240.18
Percent Reduction	0.00
2016 TOTALS (tons/year unmitigated)	2,248.58
2016 TOTALS (tons/year mitigated)	2,248.58
Percent Reduction	0.00
2017 TOTALS (tons/year unmitigated)	2,240.49
2017 TOTALS (tons/year mitigated)	2,240.49
Percent Reduction	0.00
2018 TOTALS (tons/year unmitigated)	2,197.88
2018 TOTALS (tons/year mitigated)	2,197.88
Percent Reduction	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

CO2

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2011	410.09
Mass Grading 03/30/2011-03/11/2013	410.09
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	392.43
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	17.67
2012	540.59
Mass Grading 03/30/2011-03/11/2013	540.59
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	517.29
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	23.30

2013	534.64
Asphalt 01/01/2013-01/11/2014	193.99
Paving Off-Gas	0.00
Paving Off Road Diesel	166.05
Paving On Road Diesel	11.29
Paving Worker Trips	16.65
Mass Grading 03/30/2011-03/11/2013	103.56
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	99.10
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	4.47
Trenching 01/01/2013-12/23/2014	237.08
Trenching Off Road Diesel	223.76
Trenching Worker Trips	13.32

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2014	2,408.47
Asphalt 01/01/2013-01/11/2014	5.95
Paving Off-Gas	0.00
Paving Off Road Diesel	5.09
Paving On Road Diesel	0.35
Paving Worker Trips	0.51
Trenching 01/01/2013-12/23/2014	231.64
Trenching Off Road Diesel	218.62
Trenching Worker Trips	13.02
Building 01/11/2014-12/22/2018	2,170.88
Building Off Road Diesel	285.80
Building Vendor Trips	364.84
Building Worker Trips	1,520.24
2015	2,240.18
Building 01/11/2014-12/22/2018	2,240.18
Building Off Road Diesel	294.84
Building Vendor Trips	376.40
Building Worker Trips	1,568.94

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2016	2,248.58
Building 01/11/2014-12/22/2018	2,240.62
Building Off Road Diesel	294.84
Building Vendor Trips	376.43
Building Worker Trips	1,569.36
Coating 01/08/2016-12/31/2018	7.95
Architectural Coating	0.00
Coating Worker Trips	7.95
2017	2,240.49
Building 01/11/2014-12/22/2018	2,232.41
Building Off Road Diesel	293.71
Building Vendor Trips	375.01
Building Worker Trips	1,563.70
Coating 01/08/2016-12/31/2018	8.08
Architectural Coating	0.00
Coating Worker Trips	8.08
2018	2,197.88
Building 01/11/2014-12/22/2018	2,189.77
Building Off Road Diesel	288.06
Building Vendor Trips	367.82
Building Worker Trips	1,533.89
Coating 01/08/2016-12/31/2018	8.11
Architectural Coating	0.00
Coating Worker Trips	8.11

Phase Assumptions

Phase: Mass Grading 3/30/2011 - 3/11/2013 - Mass site grading

Total Acres Disturbed: 78

Maximum Daily Acreage Disturbed: 19.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2013 - 12/23/2014 - Trenching

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 1/1/2013 - 1/11/2014 - Default Paving Description

Acres to be Paved: 19.5

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/11/2014 - 12/22/2018 - Default Building Construction Description

Off-Road Equipment:

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1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 1/8/2016 - 12/31/2018 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	CO2
2011	410.09
Mass Grading 03/30/2011-03/11/2013	410.09
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	392.43
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	17.67

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2012	540.59
Mass Grading 03/30/2011-03/11/2013	540.59
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	517.29
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	23.30
2013	534.64
Asphalt 01/01/2013-01/11/2014	193.99
Paving Off-Gas	0.00
Paving Off Road Diesel	166.05
Paving On Road Diesel	11.29
Paving Worker Trips	16.65
Mass Grading 03/30/2011-03/11/2013	103.56
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	99.10
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	4.47
Trenching 01/01/2013-12/23/2014	237.08
Trenching Off Road Diesel	223.76
Trenching Worker Trips	13.32

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2014	2,408.47
Asphalt 01/01/2013-01/11/2014	5.95
Paving Off-Gas	0.00
Paving Off Road Diesel	5.09
Paving On Road Diesel	0.35
Paving Worker Trips	0.51
Trenching 01/01/2013-12/23/2014	231.64
Trenching Off Road Diesel	218.62
Trenching Worker Trips	13.02
Building 01/11/2014-12/22/2018	2,170.88
Building Off Road Diesel	285.80
Building Vendor Trips	364.84
Building Worker Trips	1,520.24
2015	2,240.18
Building 01/11/2014-12/22/2018	2,240.18
Building Off Road Diesel	294.84
Building Vendor Trips	376.40
Building Worker Trips	1,568.94

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2016	2,248.58
Building 01/11/2014-12/22/2018	2,240.62
Building Off Road Diesel	294.84
Building Vendor Trips	376.43
Building Worker Trips	1,569.36
Coating 01/08/2016-12/31/2018	7.95
Architectural Coating	0.00
Coating Worker Trips	7.95
2017	2,240.49
Building 01/11/2014-12/22/2018	2,232.41
Building Off Road Diesel	293.71
Building Vendor Trips	375.01
Building Worker Trips	1,563.70
Coating 01/08/2016-12/31/2018	8.08
Architectural Coating	0.00
Coating Worker Trips	8.08
2018	2,197.88
Building 01/11/2014-12/22/2018	2,189.77
Building Off Road Diesel	288.06
Building Vendor Trips	367.82
Building Worker Trips	1,533.89
Coating 01/08/2016-12/31/2018	8.11
Architectural Coating	0.00
Coating Worker Trips	8.11

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 3/30/2011 - 3/11/2013 - Mass site grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\I&R Docs\2006\06-174 Newark Areas 3 and 4 SP\Area 4 2018construction.urb924

Project Name: Newark Area 4 Year 2018 Construction

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2011 TOTALS (lbs/day unmitigated)	11.92	111.03	1,125.13	5.05	1,130.18	234.99	4.64	239.63
2011 TOTALS (lbs/day mitigated)	11.92	111.03	255.23	5.05	260.27	53.32	4.64	57.96
2012 TOTALS (lbs/day unmitigated)	11.26	102.93	1,125.13	4.62	1,129.75	234.99	4.25	239.24
2012 TOTALS (lbs/day mitigated)	11.26	102.93	255.23	4.62	259.85	53.32	4.25	57.57
2013 TOTALS (lbs/day unmitigated)	15.67	127.05	1,125.15	6.38	1,131.53	234.99	5.87	240.87
2013 TOTALS (lbs/day mitigated)	15.67	127.05	255.24	6.38	261.63	53.32	5.87	59.20
2014 TOTALS (lbs/day unmitigated)	16.51	67.86	1.72	4.15	5.88	0.62	3.72	4.34
2014 TOTALS (lbs/day mitigated)	16.51	67.86	1.72	4.15	5.88	0.62	3.72	4.34
2015 TOTALS (lbs/day unmitigated)	10.76	34.88	1.71	2.08	3.79	0.61	1.82	2.43

2015 TOTALS (lbs/day mitigated)	10.76	34.88	1.71	2.08	3.79	0.61	1.82	2.43
2016 TOTALS (lbs/day unmitigated)	43.35	31.83	1.71	1.91	3.62	0.62	1.66	2.28
2016 TOTALS (lbs/day mitigated)	43.35	31.83	1.71	1.91	3.62	0.62	1.66	2.28
2017 TOTALS (lbs/day unmitigated)	42.43	29.05	1.71	1.79	3.49	0.62	1.55	2.17
2017 TOTALS (lbs/day mitigated)	42.43	29.05	1.71	1.79	3.49	0.62	1.55	2.17
2018 TOTALS (lbs/day unmitigated)	41.64	26.48	1.71	1.67	3.38	0.62	1.44	2.06
2018 TOTALS (lbs/day mitigated)	41.64	26.48	1.71	1.67	3.38	0.62	1.44	2.06

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/31/2011-12/30/2011 Active Days: 240	11.92	111.03	1,125.13	5.05	1,130.18	234.99	4.64	239.63
Mass Grading 01/30/2011-12/31/2013	11.92	111.03	1,125.13	5.05	1,130.18	234.99	4.64	239.63
Mass Grading Dust	0.00	0.00	1,125.00	0.00	1,125.00	234.95	0.00	234.95
Mass Grading Off Road Diesel	10.48	89.68	0.00	4.27	4.27	0.00	3.93	3.93
Mass Grading On Road Diesel	1.35	21.20	0.12	0.77	0.88	0.04	0.71	0.74
Mass Grading Worker Trips	0.09	0.15	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 1/2/2012-12/31/2012 Active Days: 261	11.26	102.93	1,125.13	4.62	1,129.75	234.99	4.25	239.24
Mass Grading 01/30/2011-12/31/2013	11.26	102.93	1,125.13	4.62	1,129.75	234.99	4.25	239.24
Mass Grading Dust	0.00	0.00	1,125.00	0.00	1,125.00	234.95	0.00	234.95
Mass Grading Off Road Diesel	9.94	83.94	0.00	3.94	3.94	0.00	3.62	3.62
Mass Grading On Road Diesel	1.24	18.86	0.12	0.68	0.80	0.04	0.62	0.66
Mass Grading Worker Trips	0.08	0.14	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/1/2013-1/25/2013 Active Days: 19	10.75	95.46	1,125.13	4.24	1,129.37	234.99	3.90	238.88
Mass Grading 01/30/2011-12/31/2013	10.75	95.46	1,125.13	4.24	1,129.37	234.99	3.90	238.88
Mass Grading Dust	0.00	0.00	1,125.00	0.00	1,125.00	234.95	0.00	234.95
Mass Grading Off Road Diesel	9.53	78.62	0.00	3.63	3.63	0.00	3.34	3.34
Mass Grading On Road Diesel	1.14	16.72	0.12	0.60	0.72	0.04	0.55	0.59
Mass Grading Worker Trips	0.07	0.12	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 1/28/2013-12/31/2013 Active Days: 242	15.67	**127.05**	1,125.15	**6.38**	1,131.53	234.99	**5.87**	240.87
Asphalt 01/28/2013-06/30/2014	3.18	17.42	0.01	1.47	1.48	0.00	1.35	1.36
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.69	16.46	0.00	1.43	1.43	0.00	1.32	1.32
Paving On Road Diesel	0.06	0.90	0.01	0.03	0.04	0.00	0.03	0.03
Paving Worker Trips	0.04	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Mass Grading 01/30/2011-12/31/2013	10.75	95.46	1,125.13	4.24	1,129.37	234.99	3.90	238.88
Mass Grading Dust	0.00	0.00	1,125.00	0.00	1,125.00	234.95	0.00	234.95
Mass Grading Off Road Diesel	9.53	78.62	0.00	3.63	3.63	0.00	3.34	3.34
Mass Grading On Road Diesel	1.14	16.72	0.12	0.60	0.72	0.04	0.55	0.59
Mass Grading Worker Trips	0.07	0.12	0.01	0.01	0.02	0.00	0.01	0.01
Trenching 01/28/2013-06/30/2014	1.74	14.17	0.00	0.68	0.68	0.00	0.63	0.63
Trenching Off Road Diesel	1.72	14.12	0.00	0.68	0.68	0.00	0.62	0.62
Trenching Worker Trips	0.03	0.05	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/1/2014-1/10/2014 Active Days: 8	4.66	29.52	0.02	1.97	1.98	0.01	1.81	1.82
Asphalt 01/28/2013-06/30/2014	3.03	16.46	0.01	1.38	1.39	0.00	1.27	1.27
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.54	15.61	0.00	1.34	1.34	0.00	1.24	1.24
Paving On Road Diesel	0.06	0.79	0.01	0.03	0.03	0.00	0.03	0.03
Paving Worker Trips	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Trenching 01/28/2013-06/30/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 1/13/2014-6/30/2014 Active Days: 121	16.51	67.86	1.72	4.15	5.88	0.62	3.72	4.34
Asphalt 01/28/2013-06/30/2014	3.03	16.46	0.01	1.38	1.39	0.00	1.27	1.27
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.54	15.61	0.00	1.34	1.34	0.00	1.24	1.24
Paving On Road Diesel	0.06	0.79	0.01	0.03	0.03	0.00	0.03	0.03
Paving Worker Trips	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Building 01/11/2014-12/31/2018	11.85	38.34	1.71	2.18	3.89	0.61	1.91	2.53
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.50	6.02	0.07	0.23	0.30	0.02	0.21	0.23
Building Worker Trips	8.42	14.66	1.64	0.85	2.49	0.59	0.69	1.28
Trenching 01/28/2013-06/30/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 7/1/2014-12/31/2014 Active Days: 132	11.85	38.34	1.71	2.18	3.89	0.61	1.91	2.53
Building 01/11/2014-12/31/2018	11.85	38.34	1.71	2.18	3.89	0.61	1.91	2.53
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.50	6.02	0.07	0.23	0.30	0.02	0.21	0.23
Building Worker Trips	8.42	14.66	1.64	0.85	2.49	0.59	0.69	1.28
Time Slice 1/1/2015-12/31/2015 Active Days: 261	10.76	34.88	1.71	2.08	3.79	0.61	1.82	2.43
Building 01/11/2014-12/31/2018	10.76	34.88	1.71	2.08	3.79	0.61	1.82	2.43
Building Off Road Diesel	2.69	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	0.46	5.36	0.07	0.20	0.27	0.02	0.19	0.21
Building Worker Trips	7.60	13.35	1.64	0.85	2.49	0.59	0.69	1.28

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Time Slice 1/1/2016-1/7/2016 Active Days: 5	9.84	31.82	1.71	1.91	3.62	0.61	1.66	2.28
Building 01/11/2014-12/31/2018	9.84	31.82	1.71	1.91	3.62	0.61	1.66	2.28
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.43	4.77	0.07	0.18	0.25	0.02	0.17	0.19
Building Worker Trips	6.94	12.21	1.64	0.85	2.49	0.59	0.69	1.28
Time Slice 1/8/2016-12/30/2016 Active Days: 256	**43.35**	31.83	1.71	1.91	3.62	0.62	1.66	2.28
Building 01/11/2014-12/31/2018	9.84	31.82	1.71	1.91	3.62	0.61	1.66	2.28
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.43	4.77	0.07	0.18	0.25	0.02	0.17	0.19
Building Worker Trips	6.94	12.21	1.64	0.85	2.49	0.59	0.69	1.28
Coating 01/08/2016-12/31/2018	33.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/2/2017-12/29/2017 Active Days: 260	42.43	29.05	1.71	1.79	3.49	0.62	1.55	2.17
Building 01/11/2014-12/31/2018	8.93	29.03	1.71	1.78	3.49	0.61	1.55	2.16
Building Off Road Diesel	2.25	13.62	0.00	0.77	0.77	0.00	0.71	0.71
Building Vendor Trips	0.40	4.25	0.07	0.17	0.23	0.02	0.15	0.17
Building Worker Trips	6.28	11.17	1.64	0.85	2.49	0.59	0.69	1.28
Coating 01/08/2016-12/31/2018	33.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00

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Time Slice 1/1/2018-12/31/2018 Active Days: 261	41.64	26.48	1.71	1.67	3.38	0.62	1.44	2.06
Building 01/11/2014-12/31/2018	8.13	26.47	1.71	1.67	3.38	0.61	1.44	2.06
Building Off Road Diesel	2.03	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	0.37	3.80	0.07	0.15	0.22	0.02	0.14	0.16
Building Worker Trips	5.73	10.21	1.64	0.85	2.49	0.59	0.69	1.28
Coating 01/08/2016-12/31/2018	33.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Phase Assumptions

Phase: Mass Grading 1/30/2011 - 12/31/2013 - Mass site grading

Total Acres Disturbed: 225

Maximum Daily Acreage Disturbed: 56.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 838.79

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/28/2013 - 6/30/2014 - Trenching

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

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1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 1/28/2013 - 6/30/2014 - Default Paving Description

Acres to be Paved: 56.25

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/11/2014 - 12/31/2018 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 1/8/2016 - 12/31/2018 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5

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Time Slice 1/31/2011-12/30/2011 Active Days: 240	11.92	111.03	255.23	5.05	260.27	53.32	4.64	57.96
Mass Grading 01/30/2011-12/31/2013	11.92	111.03	255.23	5.05	260.27	53.32	4.64	57.96
Mass Grading Dust	0.00	0.00	255.10	0.00	255.10	53.27	0.00	53.27
Mass Grading Off Road Diesel	10.48	89.68	0.00	4.27	4.27	0.00	3.93	3.93
Mass Grading On Road Diesel	1.35	21.20	0.12	0.77	0.88	0.04	0.71	0.74
Mass Grading Worker Trips	0.09	0.15	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/2/2012-12/31/2012 Active Days: 261	11.26	102.93	255.23	4.62	259.85	53.32	4.25	57.57
Mass Grading 01/30/2011-12/31/2013	11.26	102.93	255.23	4.62	259.85	53.32	4.25	57.57
Mass Grading Dust	0.00	0.00	255.10	0.00	255.10	53.27	0.00	53.27
Mass Grading Off Road Diesel	9.94	83.94	0.00	3.94	3.94	0.00	3.62	3.62
Mass Grading On Road Diesel	1.24	18.86	0.12	0.68	0.80	0.04	0.62	0.66
Mass Grading Worker Trips	0.08	0.14	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/1/2013-1/25/2013 Active Days: 19	10.75	95.46	255.23	4.24	259.46	53.32	3.90	57.21
Mass Grading 01/30/2011-12/31/2013	10.75	95.46	255.23	4.24	259.46	53.32	3.90	57.21
Mass Grading Dust	0.00	0.00	255.10	0.00	255.10	53.27	0.00	53.27
Mass Grading Off Road Diesel	9.53	78.62	0.00	3.63	3.63	0.00	3.34	3.34
Mass Grading On Road Diesel	1.14	16.72	0.12	0.60	0.72	0.04	0.55	0.59
Mass Grading Worker Trips	0.07	0.12	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 1/28/2013-12/31/2013 Active Days: 242	15.67	**127.05**	255.24	**6.38**	261.63	53.32	**5.87**	59.20
Asphalt 01/28/2013-06/30/2014	3.18	17.42	0.01	1.47	1.48	0.00	1.35	1.36
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.69	16.46	0.00	1.43	1.43	0.00	1.32	1.32
Paving On Road Diesel	0.06	0.90	0.01	0.03	0.04	0.00	0.03	0.03
Paving Worker Trips	0.04	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Mass Grading 01/30/2011-12/31/2013	10.75	95.46	255.23	4.24	259.46	53.32	3.90	57.21
Mass Grading Dust	0.00	0.00	255.10	0.00	255.10	53.27	0.00	53.27
Mass Grading Off Road Diesel	9.53	78.62	0.00	3.63	3.63	0.00	3.34	3.34
Mass Grading On Road Diesel	1.14	16.72	0.12	0.60	0.72	0.04	0.55	0.59
Mass Grading Worker Trips	0.07	0.12	0.01	0.01	0.02	0.00	0.01	0.01
Trenching 01/28/2013-06/30/2014	1.74	14.17	0.00	0.68	0.68	0.00	0.63	0.63
Trenching Off Road Diesel	1.72	14.12	0.00	0.68	0.68	0.00	0.62	0.62
Trenching Worker Trips	0.03	0.05	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/1/2014-1/10/2014 Active Days: 8	4.66	29.52	0.02	1.97	1.98	0.01	1.81	1.82
Asphalt 01/28/2013-06/30/2014	3.03	16.46	0.01	1.38	1.39	0.00	1.27	1.27
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.54	15.61	0.00	1.34	1.34	0.00	1.24	1.24
Paving On Road Diesel	0.06	0.79	0.01	0.03	0.03	0.00	0.03	0.03
Paving Worker Trips	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Trenching 01/28/2013-06/30/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00

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Time Slice 1/13/2014-6/30/2014 Active Days: 121	16.51	67.86	1.72	4.15	5.88	0.62	3.72	4.34
Asphalt 01/28/2013-06/30/2014	3.03	16.46	0.01	1.38	1.39	0.00	1.27	1.27
Paving Off-Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.54	15.61	0.00	1.34	1.34	0.00	1.24	1.24
Paving On Road Diesel	0.06	0.79	0.01	0.03	0.03	0.00	0.03	0.03
Paving Worker Trips	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00
Building 01/11/2014-12/31/2018	11.85	38.34	1.71	2.18	3.89	0.61	1.91	2.53
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.50	6.02	0.07	0.23	0.30	0.02	0.21	0.23
Building Worker Trips	8.42	14.66	1.64	0.85	2.49	0.59	0.69	1.28
Trenching 01/28/2013-06/30/2014	1.63	13.06	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	1.61	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 7/1/2014-12/31/2014 Active Days: 132	11.85	38.34	1.71	2.18	3.89	0.61	1.91	2.53
Building 01/11/2014-12/31/2018	11.85	38.34	1.71	2.18	3.89	0.61	1.91	2.53
Building Off Road Diesel	2.93	17.65	0.00	1.11	1.11	0.00	1.02	1.02
Building Vendor Trips	0.50	6.02	0.07	0.23	0.30	0.02	0.21	0.23
Building Worker Trips	8.42	14.66	1.64	0.85	2.49	0.59	0.69	1.28
Time Slice 1/1/2015-12/31/2015 Active Days: 261	10.76	34.88	1.71	2.08	3.79	0.61	1.82	2.43
Building 01/11/2014-12/31/2018	10.76	34.88	1.71	2.08	3.79	0.61	1.82	2.43
Building Off Road Diesel	2.69	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	0.46	5.36	0.07	0.20	0.27	0.02	0.19	0.21
Building Worker Trips	7.60	13.35	1.64	0.85	2.49	0.59	0.69	1.28

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Time Slice 1/1/2016-1/7/2016 Active Days: 5	9.84	31.82	1.71	1.91	3.62	0.61	1.66	2.28
Building 01/11/2014-12/31/2018	9.84	31.82	1.71	1.91	3.62	0.61	1.66	2.28
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.43	4.77	0.07	0.18	0.25	0.02	0.17	0.19
Building Worker Trips	6.94	12.21	1.64	0.85	2.49	0.59	0.69	1.28
Time Slice 1/8/2016-12/30/2016 Active Days: 256	**43.35**	31.83	1.71	1.91	3.62	0.62	1.66	2.28
Building 01/11/2014-12/31/2018	9.84	31.82	1.71	1.91	3.62	0.61	1.66	2.28
Building Off Road Diesel	2.47	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	0.43	4.77	0.07	0.18	0.25	0.02	0.17	0.19
Building Worker Trips	6.94	12.21	1.64	0.85	2.49	0.59	0.69	1.28
Coating 01/08/2016-12/31/2018	33.51	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/2/2017-12/29/2017 Active Days: 260	42.43	29.05	1.71	1.79	3.49	0.62	1.55	2.17
Building 01/11/2014-12/31/2018	8.93	29.03	1.71	1.78	3.49	0.61	1.55	2.16
Building Off Road Diesel	2.25	13.62	0.00	0.77	0.77	0.00	0.71	0.71
Building Vendor Trips	0.40	4.25	0.07	0.17	0.23	0.02	0.15	0.17
Building Worker Trips	6.28	11.17	1.64	0.85	2.49	0.59	0.69	1.28
Coating 01/08/2016-12/31/2018	33.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00

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Time Slice 1/1/2018-12/31/2018 Active Days: 261	41.64	26.48	1.71	1.67	3.38	0.62	1.44	2.06
Building 01/11/2014-12/31/2018	8.13	26.47	1.71	1.67	3.38	0.61	1.44	2.06
Building Off Road Diesel	2.03	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	0.37	3.80	0.07	0.15	0.22	0.02	0.14	0.16
Building Worker Trips	5.73	10.21	1.64	0.85	2.49	0.59	0.69	1.28
Coating 01/08/2016-12/31/2018	33.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/30/2011 - 12/31/2013 - Mass site grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: U:\I&R Docs\2006\06-174 Newark Areas 3 and 4 SP\Area 4 2018construction.urb924

Project Name: Newark Area 4 Year 2018 Construction

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011 TOTALS (tons/year unmitigated)	1.27	10.78	135.00	0.51	135.52	28.19	0.47	28.67	1,091.74
2011 TOTALS (tons/year mitigated)	1.27	10.78	30.61	0.51	31.13	6.39	0.47	6.87	1,091.74
Percent Reduction	0.00	0.00	77.32	0.00	77.03	77.32	0.00	76.05	0.00
2012 TOTALS (tons/year unmitigated)	1.31	10.97	146.81	0.51	147.33	30.66	0.47	31.13	1,187.28
2012 TOTALS (tons/year mitigated)	1.31	10.97	33.29	0.51	33.81	6.95	0.47	7.43	1,187.28
Percent Reduction	0.00	0.00	77.32	0.00	77.05	77.32	0.00	76.15	0.00
2013 TOTALS (tons/year unmitigated)	1.85	14.10	146.82	0.73	147.55	30.66	0.68	31.34	1,616.14
2013 TOTALS (tons/year mitigated)	1.85	14.10	33.29	0.73	34.03	6.95	0.68	7.63	1,616.14
Percent Reduction	0.00	0.00	77.32	0.00	76.94	77.32	0.00	75.65	0.00
2014 TOTALS (tons/year unmitigated)	1.80	6.75	0.22	0.40	0.62	0.08	0.36	0.44	4,988.57

2014 TOTALS (tons/year mitigated)	1.80	6.75	0.22	0.40	0.62	0.08	0.36	0.44	4,988.57
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2015 TOTALS (tons/year unmitigated)	1.40	4.55	0.22	0.27	0.49	0.08	0.24	0.32	4,912.24
2015 TOTALS (tons/year mitigated)	1.40	4.55	0.22	0.27	0.49	0.08	0.24	0.32	4,912.24
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2016 TOTALS (tons/year unmitigated)	5.57	4.15	0.22	0.25	0.47	0.08	0.22	0.30	4,918.55
2016 TOTALS (tons/year mitigated)	5.57	4.15	0.22	0.25	0.47	0.08	0.22	0.30	4,918.55
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2017 TOTALS (tons/year unmitigated)	5.52	3.78	0.22	0.23	0.45	0.08	0.20	0.28	4,900.80
2017 TOTALS (tons/year mitigated)	5.52	3.78	0.22	0.23	0.45	0.08	0.20	0.28	4,900.80
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018 TOTALS (tons/year unmitigated)	5.43	3.46	0.22	0.22	0.44	0.08	0.19	0.27	4,920.42
2018 TOTALS (tons/year mitigated)	5.43	3.46	0.22	0.22	0.44	0.08	0.19	0.27	4,920.42
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2011	1.27	10.78	135.00	0.51	135.52	28.19	0.47	28.67	1,091.74
Mass Grading 01/30/2011-12/31/2013	1.27	10.78	135.00	0.51	135.52	28.19	0.47	28.67	1,091.74
Mass Grading Dust	0.00	0.00	135.00	0.00	135.00	28.19	0.00	28.19	0.00
Mass Grading Off Road Diesel	1.26	10.76	0.00	0.51	0.51	0.00	0.47	0.47	1,061.14
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	30.59
2012	1.31	10.97	146.81	0.51	147.33	30.66	0.47	31.13	1,187.28
Mass Grading 01/30/2011-12/31/2013	1.31	10.97	146.81	0.51	147.33	30.66	0.47	31.13	1,187.28
Mass Grading Dust	0.00	0.00	146.81	0.00	146.81	30.66	0.00	30.66	0.00
Mass Grading Off Road Diesel	1.30	10.95	0.00	0.51	0.51	0.00	0.47	0.47	1,153.99
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	33.29

2013	1.85	14.10	146.82	0.73	147.55	30.66	0.68	31.34	1,616.14
Mass Grading 01/30/2011-12/31/2013	1.25	10.28	146.81	0.47	147.29	30.66	0.44	31.10	1,187.30
Mass Grading Dust	0.00	0.00	146.81	0.00	146.81	30.66	0.00	30.66	0.00
Mass Grading Off Road Diesel	1.24	10.26	0.00	0.47	0.47	0.00	0.44	0.44	1,153.99
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	33.31
Asphalt 01/28/2013-06/30/2014	0.38	2.11	0.00	0.18	0.18	0.00	0.16	0.16	209.01
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.33	1.99	0.00	0.17	0.17	0.00	0.16	0.16	171.68
Paving On Road Diesel	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	21.90
Paving Worker Trips	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	15.44
Trenching 01/28/2013-06/30/2014	0.21	1.71	0.00	0.08	0.08	0.00	0.08	0.08	219.82
Trenching Off Road Diesel	0.21	1.71	0.00	0.08	0.08	0.00	0.08	0.08	207.47
Trenching Worker Trips	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	12.35

2014	1.80	6.75	0.22	0.40	0.62	0.08	0.36	0.44	4,988.57
Asphalt 01/28/2013-06/30/2014	0.20	1.06	0.00	0.09	0.09	0.00	0.08	0.08	111.42
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.16	1.01	0.00	0.09	0.09	0.00	0.08	0.08	91.51
Paving On Road Diesel	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	11.67
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.24
Trenching 01/28/2013-06/30/2014	0.11	0.84	0.00	0.04	0.04	0.00	0.04	0.04	117.18
Trenching Off Road Diesel	0.10	0.84	0.00	0.04	0.04	0.00	0.03	0.03	110.59
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.59
Building 01/11/2014-12/31/2018	1.50	4.85	0.22	0.28	0.49	0.08	0.24	0.32	4,759.97
Building Off Road Diesel	0.37	2.23	0.00	0.14	0.14	0.00	0.13	0.13	285.80
Building Vendor Trips	0.06	0.76	0.01	0.03	0.04	0.00	0.03	0.03	234.30
Building Worker Trips	1.07	1.85	0.21	0.11	0.31	0.07	0.09	0.16	4,239.87
2015	1.40	4.55	0.22	0.27	0.49	0.08	0.24	0.32	4,912.24
Building 01/11/2014-12/31/2018	1.40	4.55	0.22	0.27	0.49	0.08	0.24	0.32	4,912.24
Building Off Road Diesel	0.35	2.11	0.00	0.13	0.13	0.00	0.12	0.12	294.84
Building Vendor Trips	0.06	0.70	0.01	0.03	0.04	0.00	0.02	0.03	241.73
Building Worker Trips	0.99	1.74	0.21	0.11	0.32	0.08	0.09	0.17	4,375.67

2016	5.57	4.15	0.22	0.25	0.47	0.08	0.22	0.30	4,918.55
Building 01/11/2014-12/31/2018	1.28	4.15	0.22	0.25	0.47	0.08	0.22	0.30	4,913.43
Building Off Road Diesel	0.32	1.94	0.00	0.11	0.11	0.00	0.11	0.11	294.84
Building Vendor Trips	0.06	0.62	0.01	0.02	0.03	0.00	0.02	0.02	241.74
Building Worker Trips	0.91	1.59	0.21	0.11	0.32	0.08	0.09	0.17	4,376.86
Coating 01/08/2016-12/31/2018	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.11
Architectural Coating	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.11
2017	5.52	3.78	0.22	0.23	0.45	0.08	0.20	0.28	4,900.80
Building 01/11/2014-12/31/2018	1.16	3.77	0.22	0.23	0.45	0.08	0.20	0.28	4,895.60
Building Off Road Diesel	0.29	1.77	0.00	0.10	0.10	0.00	0.09	0.09	293.71
Building Vendor Trips	0.05	0.55	0.01	0.02	0.03	0.00	0.02	0.02	240.83
Building Worker Trips	0.82	1.45	0.21	0.11	0.32	0.08	0.09	0.17	4,361.06
Coating 01/08/2016-12/31/2018	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20
Architectural Coating	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20
2018	5.43	3.46	0.22	0.22	0.44	0.08	0.19	0.27	4,920.42
Building 01/11/2014-12/31/2018	1.06	3.45	0.22	0.22	0.44	0.08	0.19	0.27	4,915.20
Building Off Road Diesel	0.27	1.63	0.00	0.09	0.09	0.00	0.08	0.08	294.84
Building Vendor Trips	0.05	0.50	0.01	0.02	0.03	0.00	0.02	0.02	241.77
Building Worker Trips	0.75	1.33	0.21	0.11	0.32	0.08	0.09	0.17	4,378.59
Coating 01/08/2016-12/31/2018	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.22
Architectural Coating	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.22

Phase Assumptions

Phase: Mass Grading 1/30/2011 - 12/31/2013 - Mass site grading

Total Acres Disturbed: 225

Maximum Daily Acreage Disturbed: 56.25

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/28/2013 - 6/30/2014 - Trenching

Off-Road Equipment:

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 1/28/2013 - 6/30/2014 - Default Paving Description

Acres to be Paved: 56.25

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/11/2014 - 12/31/2018 - Default Building Construction Description

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Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 1/8/2016 - 12/31/2018 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2011	1.27	10.78	30.61	0.51	31.13	6.39	0.47	6.87	1,091.74
Mass Grading 01/30/2011-12/31/2013	1.27	10.78	30.61	0.51	31.13	6.39	0.47	6.87	1,091.74
Mass Grading Dust	0.00	0.00	30.61	0.00	30.61	6.39	0.00	6.39	0.00
Mass Grading Off Road Diesel	1.26	10.76	0.00	0.51	0.51	0.00	0.47	0.47	1,061.14
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	30.59

2012	1.31	10.97	33.29	0.51	33.81	6.95	0.47	7.43	1,187.28
Mass Grading 01/30/2011-12/31/2013	1.31	10.97	33.29	0.51	33.81	6.95	0.47	7.43	1,187.28
Mass Grading Dust	0.00	0.00	33.29	0.00	33.29	6.95	0.00	6.95	0.00
Mass Grading Off Road Diesel	1.30	10.95	0.00	0.51	0.51	0.00	0.47	0.47	1,153.99
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	33.29
2013	1.85	14.10	33.29	0.73	34.03	6.95	0.68	7.63	1,616.14
Mass Grading 01/30/2011-12/31/2013	1.25	10.28	33.29	0.47	33.77	6.95	0.44	7.39	1,187.30
Mass Grading Dust	0.00	0.00	33.29	0.00	33.29	6.95	0.00	6.95	0.00
Mass Grading Off Road Diesel	1.24	10.26	0.00	0.47	0.47	0.00	0.44	0.44	1,153.99
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	33.31
Asphalt 01/28/2013-06/30/2014	0.38	2.11	0.00	0.18	0.18	0.00	0.16	0.16	209.01
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.33	1.99	0.00	0.17	0.17	0.00	0.16	0.16	171.68
Paving On Road Diesel	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	21.90
Paving Worker Trips	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	15.44
Trenching 01/28/2013-06/30/2014	0.21	1.71	0.00	0.08	0.08	0.00	0.08	0.08	219.82
Trenching Off Road Diesel	0.21	1.71	0.00	0.08	0.08	0.00	0.08	0.08	207.47
Trenching Worker Trips	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	12.35

2014	1.80	6.75	0.22	0.40	0.62	0.08	0.36	0.44	4,988.57
Asphalt 01/28/2013-06/30/2014	0.20	1.06	0.00	0.09	0.09	0.00	0.08	0.08	111.42
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.16	1.01	0.00	0.09	0.09	0.00	0.08	0.08	91.51
Paving On Road Diesel	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	11.67
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.24
Trenching 01/28/2013-06/30/2014	0.11	0.84	0.00	0.04	0.04	0.00	0.04	0.04	117.18
Trenching Off Road Diesel	0.10	0.84	0.00	0.04	0.04	0.00	0.03	0.03	110.59
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.59
Building 01/11/2014-12/31/2018	1.50	4.85	0.22	0.28	0.49	0.08	0.24	0.32	4,759.97
Building Off Road Diesel	0.37	2.23	0.00	0.14	0.14	0.00	0.13	0.13	285.80
Building Vendor Trips	0.06	0.76	0.01	0.03	0.04	0.00	0.03	0.03	234.30
Building Worker Trips	1.07	1.85	0.21	0.11	0.31	0.07	0.09	0.16	4,239.87
2015	1.40	4.55	0.22	0.27	0.49	0.08	0.24	0.32	4,912.24
Building 01/11/2014-12/31/2018	1.40	4.55	0.22	0.27	0.49	0.08	0.24	0.32	4,912.24
Building Off Road Diesel	0.35	2.11	0.00	0.13	0.13	0.00	0.12	0.12	294.84
Building Vendor Trips	0.06	0.70	0.01	0.03	0.04	0.00	0.02	0.03	241.73
Building Worker Trips	0.99	1.74	0.21	0.11	0.32	0.08	0.09	0.17	4,375.67

2016	5.57	4.15	0.22	0.25	0.47	0.08	0.22	0.30	4,918.55
Building 01/11/2014-12/31/2018	1.28	4.15	0.22	0.25	0.47	0.08	0.22	0.30	4,913.43
Building Off Road Diesel	0.32	1.94	0.00	0.11	0.11	0.00	0.11	0.11	294.84
Building Vendor Trips	0.06	0.62	0.01	0.02	0.03	0.00	0.02	0.02	241.74
Building Worker Trips	0.91	1.59	0.21	0.11	0.32	0.08	0.09	0.17	4,376.86
Coating 01/08/2016-12/31/2018	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.11
Architectural Coating	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.11
2017	5.52	3.78	0.22	0.23	0.45	0.08	0.20	0.28	4,900.80
Building 01/11/2014-12/31/2018	1.16	3.77	0.22	0.23	0.45	0.08	0.20	0.28	4,895.60
Building Off Road Diesel	0.29	1.77	0.00	0.10	0.10	0.00	0.09	0.09	293.71
Building Vendor Trips	0.05	0.55	0.01	0.02	0.03	0.00	0.02	0.02	240.83
Building Worker Trips	0.82	1.45	0.21	0.11	0.32	0.08	0.09	0.17	4,361.06
Coating 01/08/2016-12/31/2018	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20
Architectural Coating	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20
2018	5.43	3.46	0.22	0.22	0.44	0.08	0.19	0.27	4,920.42
Building 01/11/2014-12/31/2018	1.06	3.45	0.22	0.22	0.44	0.08	0.19	0.27	4,915.20
Building Off Road Diesel	0.27	1.63	0.00	0.09	0.09	0.00	0.08	0.08	294.84
Building Vendor Trips	0.05	0.50	0.01	0.02	0.03	0.00	0.02	0.02	241.77
Building Worker Trips	0.75	1.33	0.21	0.11	0.32	0.08	0.09	0.17	4,378.59
Coating 01/08/2016-12/31/2018	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.22
Architectural Coating	4.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.22

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 1/30/2011 - 12/31/2013 - Mass site grading

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:

PM10: 69% PM25: 69%

Newark Area 3 & 4 Specific Plan
Newark, CA

Proposed Project

Using CAPCOA/CCAR method

Sq. Feet	Usage Rate		CO2 Emission Rate (lbs/Kw-hr)	Emissions (tpy)	Emissions (metric tpy)
SF Commercial					
40000 square feet	16.75	kwh/year	0.456	153	139
SF Residential					
1260 units	8117	kwh/year	0.456	2332	2115
MF Residential					
0 units	3451	kwh/year	0.456	0	0
Water Conveyance					
356 million gallons	3950	kwh/mg	0.456	321	291
				2,805	2,545

Land Use	Number		Gallons per day	Gallons per year
Single Family	1071	units	380	148.5477
Multifamily	189	units	150	10.34775
School	600	students	15.7	3.4383
Golf Course	130	acres	3371	159.95395
Parks/Open space	24.78	acres	849	7.6789503

330 Million Gallons

+ 8% unaccounted water 26

356 Million Gallons per year