APPENDIX I

AIR QUALITY TECHNICAL REPORT FOR SHIPYARD SEDIMENT SITE PROJECT – CONVAIR LAGOON ALTERNATIVE

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Air Quality Technical Report for the Shipyard Sediment Site Project Convair Lagoon Alternative

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1.0 Executive Summary

1.1 Introduction

This air quality technical report was prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) to assess if any potentially significant air quality impacts would occur in conjunction with implementation of the Convair Lagoon Alternative to the Shipyard Sediment Site Project herein referred to as the proposed alternative. The Convair Lagoon Alternative site consists of an approximately 15-acre water and land area located within the San Diego Bay (bay) in the City of San Diego, California. Figure 1 illustrates the regional location of the Convair Lagoon Alternative site. Figure 2 provides a more detailed map of the alternative site and its vicinity. The site is bounded by the San Diego Bay to the south, North Harbor Drive and the San Diego International Airport to the north, the North Harbor Drive Coast Guard Facility to the east and a rental car parking lot to the west. A bicycle path is adjacent to the northern boundary of the site, parallel to North Harbor Drive. The site is under the jurisdiction of the San Diego Unified Port District (District) and is located within Planning District 2 (Harbor Island/Lindberg Field), Planning Subarea 24 (East Basin Industrial) of the 2010 certified Port Master Plan. This report is intended to satisfy the District's requirement for a project-level air quality impact analysis by examining the impacts of the proposed alternative on air quality, and proposing mitigation measures where feasible to address significant air quality impacts.

1.2 Findings

Construction of the Convair Lagoon Alternative would not conflict with or obstruct implementation of the Regional Air Quality Strategy (RAQS) or State Implementation Plan (SIP), expose sensitive receptors to substantial pollutant concentrations, or generate substantial odors. No construction activities would exceed the significance thresholds for criteria pollutants with the exception of the transport of sediment from the Shipyard Sediment Site to the proposed confined disposal facility (CDF). Transport and placement activities would exceed the significance threshold for nitrogen oxides. This phase of construction would also take place concurrently with construction activities at the Shipyard Sediment Site, which results in additional nitrogen oxide emissions. Implementation of the Shipyard Sediment Site Project mitigation measures and the alternative-specific mitigation measure would reduce nitrogen oxide emissions, but not to a less than significant level. This impact would be a temporary significant and unavoidable impact. As a result, construction of the proposed alternative would also result in a temporary cumulatively considerable net increase in emissions of nitrogen oxides. Dewatering activities would also result in a temporary significant and unavoidable impact related to objectionable odors.

Following construction, the CDF would consist of an asphalt-paved, undeveloped, above-ground parcel of land. It would not conflict with or obstruct implementation of the RAQS or SIP, violate any air quality standard, expose sensitive receptors to substantial pollutant concentrations, generate odors, or result in a cumulatively considerable net increase in emissions of a criteria pollutant. All impacts would be less than significant.

2.0 Project Description

The proposed Shipyard Sediment Site project is the dredging of sediment adjacent to the shipyards in the San Diego Bay and the transport of the removed material to an appropriate site for disposal. The purpose of the project is to implement a Tentative Cleanup and Abatement Order issued by the California Regional Water Quality Control Board, San Diego Region (hereinafter the San Diego Water Board). The sediment removal site is located along the eastern shore of central San Diego Bay, extending approximately from the Sampson Street Extension on the northwest to Chollas Creek on the southeast, and from the shoreline out to the San Diego Bay main shipping channel to the west. The Shipyard Sediment Site alternative would entail preparation of the Shipyard Sediment Site for dredging, dredging operations, and construction of a landside pad for dewatering operations. Sediment would be dredged then transported by barge to the pad for dewatering. Following dewatering, all sediment would be hauled to a landfill for disposal. Most (85 percent) of the sediment would be transported to Otay Landfill; however, it is assumed that 15 percent of sediment would require disposal in the Kettleman Hills Landfill, a Class III landfill in Kings County, California, due to the presence of hazardous material. The Shipyard Sediment Site is located in an area of the bay with a shoreline that has elevated levels of copper, mercury, zinc, polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) (LSA 2011). All emissions associated with these construction phases have previously been quantified by LSA Associates, Inc in the *Air Quality Analysis, Shipyard Sediment Project, California Regional Water Quality Control Board, San Diego Region* (2011). The assumptions and calculated emissions for the construction phases associated with the Shipyard Sediment Site Project are incorporated into this report by reference.

Under the Convair Lagoon Alternative, the dredged sediment that would be transported to Otay landfill under the Shipyard Sediment Site Project would instead be disposed of in a CDF. The proposed alternative consists of the construction of a CDF, transport of the dredged sediments from the Shipyard Sediment Site, and placement of the contaminated marine sediment into the CDF in Convair Lagoon. A cross section view of the CDF is shown in Figure 3. The construction activities that would be required for implementation of the Alternative and post-construction operations that are not part of the Proposed Project are described below. Shipyard Sediment Site preparation and dredging activities that would be required under the Proposed Project would also be required for the Convair Lagoon Alternative. Under this alternative, 15 percent of the contaminated sediment would still require disposal at the Kettleman Hills Landfill. This sediment would require truck transport and would be handled in the same manner as the Shipyard Sediment Site Project. This sediment would be dredged, dewatered, and hauled to the landfill. Therefore, construction of a landside pad, pad operations, and covering of sediment would also occur under this Alternative, similar to the Proposed Project.

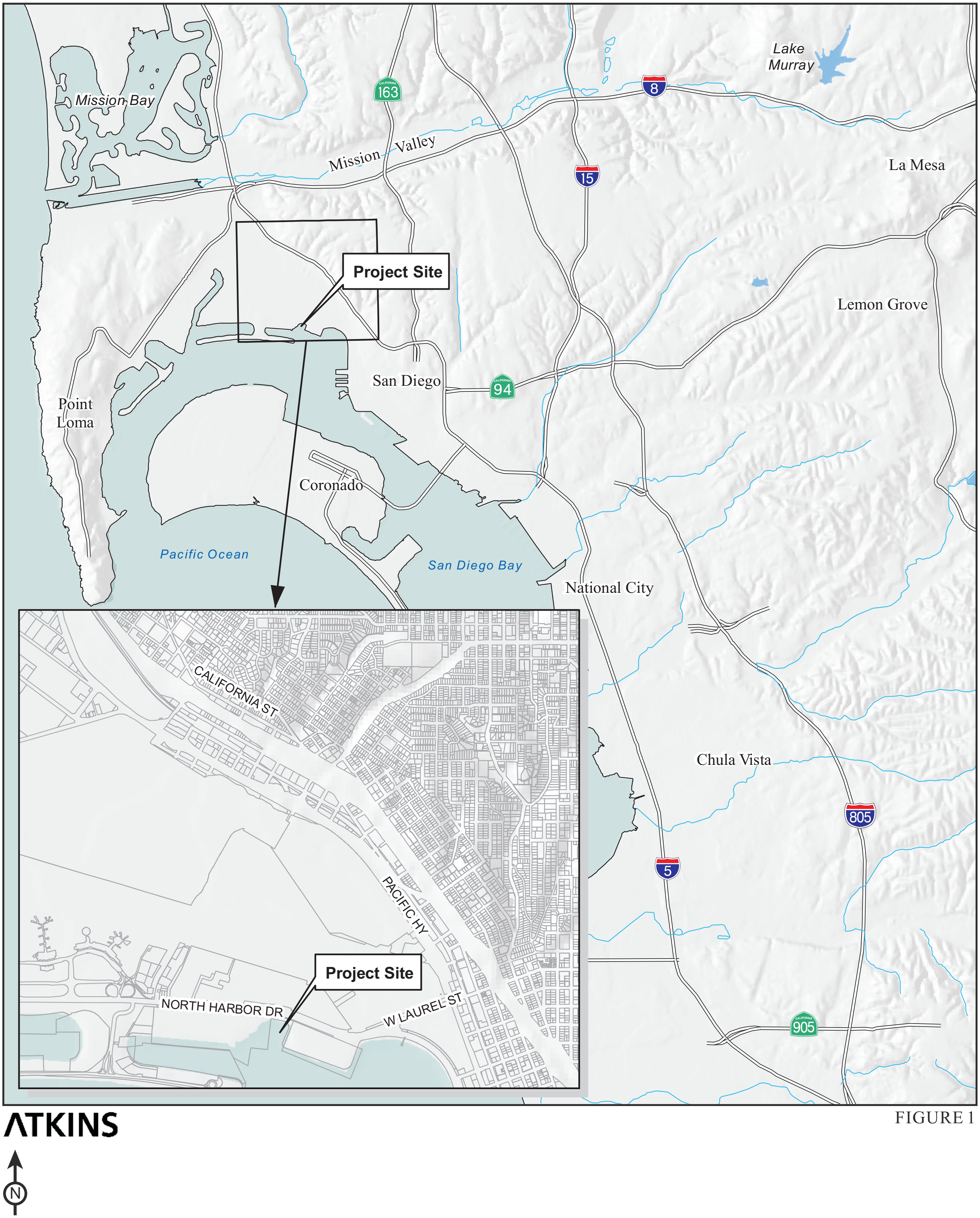

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FIGURE 1

SOURCE: SanGIS 2011

Convair Lagoon Alternative

Regional Location

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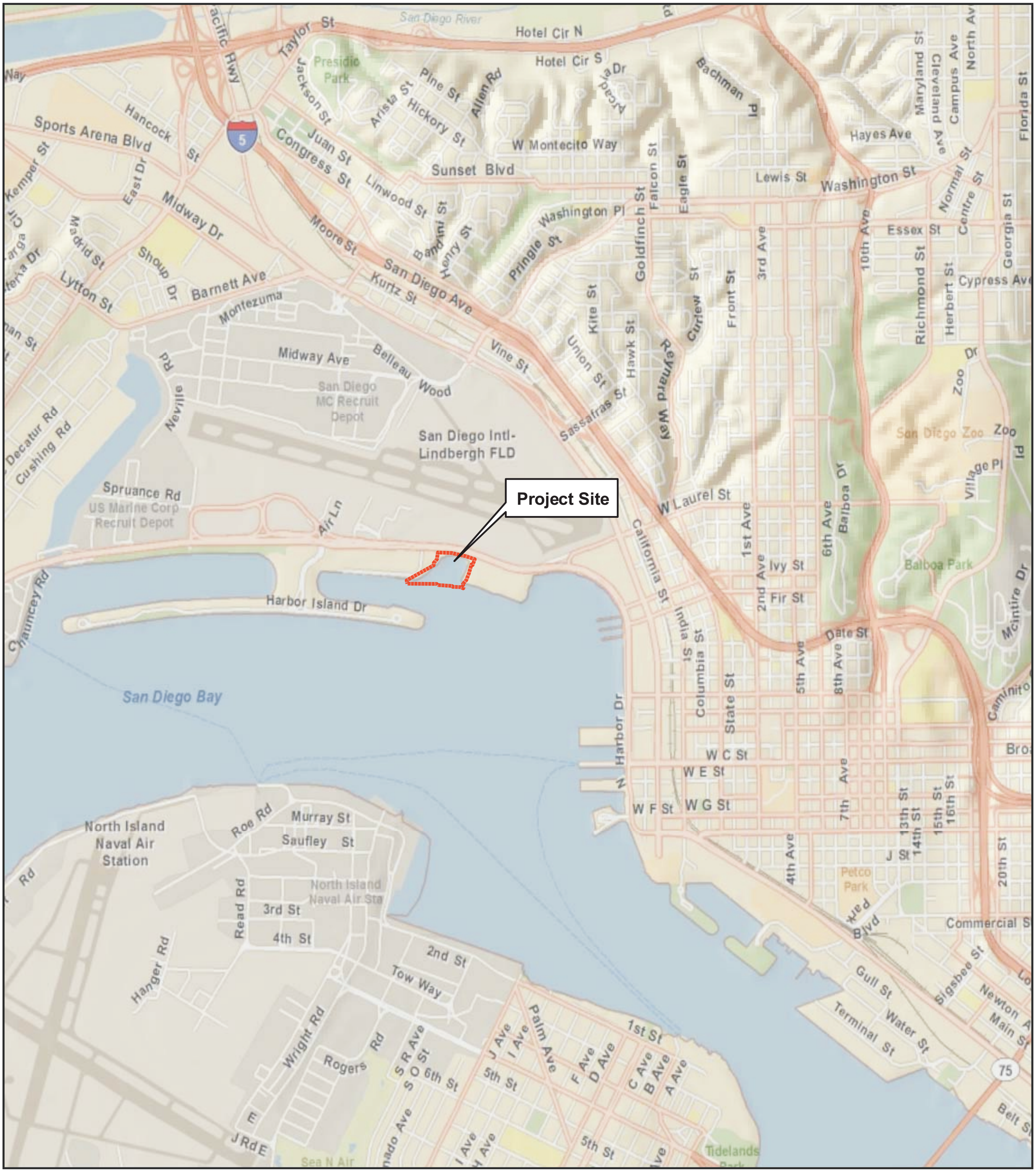

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FIGURE 2

SOURCE: SanGIS 2011

Convair Lagoon Alternative

Site Location

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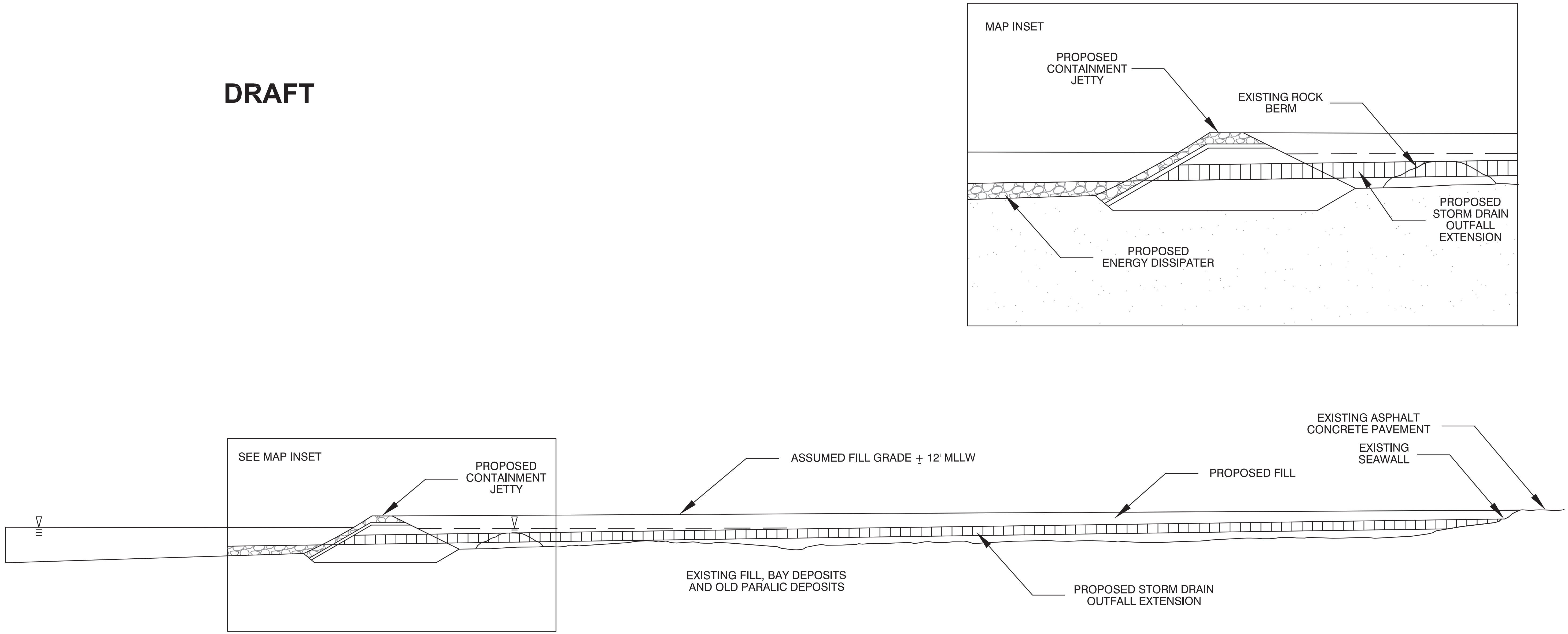

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FIGURE 3

N

Not to Scale

SOURCE: USGS 7.5' Quad - El Toro ('88)

Convair Lagoon Alternative

Containment Barrier Cross Section

Convair Lagoon Alternative Construction Activities

Construction of the CDF and placement of dredged fill is estimated to take approximately 15 months. This schedule represents the shortest possible construction duration. For modeling purposes the construction schedule assumes that dredging and transport of sediment would take only six months while construction estimates provide a range of 6 to 18 months for this phase of development. Construction of the Convair Lagoon Alternative would consist of five phases: 1) Site Preparation; 2) Containment Barrier Construction; 3) Storm Drain Outlet Extension; 4) Sediment Transport and Placement; and 5) Containment Cap Installation. Construction staging areas would be located and at a rental car facility west of the lagoon. The rental car facility would also provide inland access to the CDF. Construction would be performed during normal working hours. The five construction phases are described in detail below.

Phase 1, Site Preparation. Phase 1 of construction would involve initial site preparation activities. This phase of includes the demolition of the existing concrete pier, riprap, concrete mattress energy dissipaters, and the abandoned seaplane marine ramp. Removal of the pier would involve cutting the existing support piles to the approximate existing mud-level. The existing sub surface rock berm would remain undisturbed. Demolished facilities would be reused on-site as fill material.

In addition to demolition activities, the site would require the excavation of existing sediment in the area proposed for the containment barrier (Phase 2). To prepare the site for construction of the containment barrier, approximately three feet of existing sediment would be excavated within the footprint of the proposed barrier. This excavated material would be re-used as fill material in shallow water portions of the site. Excavation activities would occur concurrently with Phase 2.

Phase 2, Containment Barrier Construction. Phase 2 of construction would involve the installation of a rock jetty containment barrier to contain the dredged fill material from the Shipyard Sediment Site and prevent the migration of contaminated fill material into the bay. The barrier would extend an estimated 1,100 feet from the southwest corner of the site to the southeast corner of the site. The containment barrier would be constructed prior to the placement of the dredged fill (Phase 4) and would be designed to resist marine and earth forces. The containment barrier would be constructed with a 2:1 (horizontal: vertical) slope gradient.

The containment barrier would consist of three layers (core, underlayer and armor). The core layer of the containment barrier would consist of quarry-run aggregate or similar material. The underlayer would consist of small rock and would support the armor layer. The armor rock layer would be located on the bay-side of the barrier to protect the outside of the containment barrier from wave action, boat wakes and other erosional forces and would include an engineered filter on the north face, consisting of graded rock or geotextile fabric. This filter would mitigate migration of fill particles into the bay due to tidal fluctuations. A weir would be constructed on or near the containment barrier to provide a method to release site water displaced during the placement of fill. The weir would consist of a low crest in the containment barrier or a pipe in the structural fill of the barrier. The weir would employ a method for sediment management, such as a turbidity curtain.

Construction of the containment barrier would either occur by a placement or end dumping method. Placement construction would occur from a crane located on land adjacent to the site or at the crest of the containment barrier. Armor rock layers would require individual rock placement, using a crane mounted on a barge, to promote stress distribution and uniform coverage. The placement of core rock may include bottom dumping. Alternatively, the containment barrier could be constructed using an end dumping method. End dumping would involve pushing or dumping rock materials from the western shoreline to progressively build the containment barrier eastward without the use of a barge or crane. The end dumping construction method would also require individual rock placement for armor rock.

Phase 3. Storm Drain Outlet Extension. Phase 3 of construction activities would involve the extension of an existing 60-inch diameter storm drain and the extension of an existing 54-inch diameter storm drain to the face of the containment barrier. Extension would require installation of gravel rock bed to support the storm drains. A total of 2,000 cy of material would be imported and placed using an end dumping construction method. Material would be dumped from the same trucks used to import the material. Each extended storm drain would be installed with an energy dissipater apron at the mouth. Construction of these energy dissipaters would be part of construction of the containment barrier (Phase 2). Material for the new energy dissipaters would include various rock material sizes (similar to those used for the containment barrier), as well as a geotextile fabric or graded rock filter medium. Each energy dissipater would require approximately 150 cy of imported rock.

Phase 4, Sediment Transport and Placement. Phase 4 of construction would involve the transport and placement of approximately 121,890 cy of contaminated marine sediment dredged from the Shipyard Sediment Site Project at the Convair Lagoon Alternative site. Dredged contaminated marine sediment from the Shipyard Sediment Site would be transported approximately 5 miles to the Convair Lagoon Alternative site via barges and placed within the submerged areas of the lagoon as hydraulic fill. The lagoon would be filled in and become the CDF. The barge would be towed by a tug boat from the shipyard area to the Convair Lagoon, a distance of approximately five miles. The contaminated sediment would be transferred from the barges to the CDF through the use of cranes, or by pumps, pipelines and hoses.

Phase 4 of the Convair Lagoon Alternative would occur concurrently with all phases of construction at the Shipyard Sediment Site, including site preparation, dredging operations, and pad construction and operation. Similar to the Proposed Project, under this alternative, approximately 15 percent of the contaminated dredged sediment from the Shipyard Sediment Site would not qualify for placement in the CDF because of high contamination levels. This sediment would require dewatering and transportation off-site. Dewatering activities would increase the bulk of the sediment by 15 percent to 24,737 CY because the sediment would be mixed with a cement-based reagent (pozzilonics) to accelerate the drying. Dewatering activities would be the same as the dewatering activities that would occur under the Shipyard Sediment Site Project. After drying, all dredged and dewatered material would be loaded directly onto trucks for disposal at Kettleman Hills Landfill.

Phase 5, Containment Cap Installation. Phase 5 of construction would involve the importation and installation of an engineered containment cap. The engineered cap would consist of approximately nine inches of clean sand placed over the contaminated fill material, and a three inch layer of asphalt pavement over the clean sand to isolate the contaminated material from the community. Cap material is anticipated to be transported and placed conventionally by truck and earthwork equipment. Upon completion of the containment cap, the site would be relatively level and would consist of approximately 20 feet of new fill material. The top 12 inches of material would be clean, compacted, imported fill material and asphalt, whereas the underlying material would consist of contaminated dredge fill. The elevation of the site would be 10 feet above the mean lower low water (MLLW) level and a portion of the dredge fill would remain saturated beneath sea level.

Post-Construction Operation

Upon completion of construction, the site would consist of undeveloped land with an elevation approximately 10 feet MLLW. Additionally, the site would be designated Harbor Services in the Port Master Plan. Harbor Services is a use category that identifies land and water areas devoted to maritime services and harbor regulatory activities of the District, including remediation and monitoring. The Convair Lagoon Alternative does not include the construction or development of any buildings or structures on the converted site and no permanent dewatering would be required.

3.0 Regulatory Framework

3.1 Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that greenhouse gases (GHGs), including carbon dioxide, are air pollutants covered by the CAA; however, no NAAQS have been established for GHGs.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those “sensitive receptors” most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Current NAAQS are listed in Table 1. Areas that meet the ambient air quality standards are classified as “attainment” areas while areas that do not meet these standards are classified as “non-attainment” areas.

Table 1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1] Concentration[3]	Federal Standards [2] Primary [3, 4]	Federal Standards [2] Secondary [3, 5]
Ozone (O_3)	1-hour	0.09 ppm (180 μg/m^3)	--	Same as Primary Standards
	8-hour	0.070 ppm (137 μg/m^3)	0.075 ppm (147 μg/m^3)	
Respirable Particulate Matter (PM_{10})	24 Hour	50 μg/m^3	150 μg/m^3	Same as Primary Standards
	Annual Arithmetic Mean	20 μg/m	--	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	35 μg/m^3	Same as Primary Standards
	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3	
Carbon Monoxide (CO)	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	53 ppm (100 μg/m^3)[6]	Same as Primary Standard
	1-hour	0.18 ppm (470 mg/m^3)	100 ppb (188 μg/m^3)[6]	None
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 μg/m^3)	--	--
	3 Hour	--	--	0.5 ppm (1300 μg/m^3)[7]
	1-hour	0.25 ppm (655 μg/m^3)	75 ppb (196 μg/m^3)[7]	--
Lead[8]	30 Day Average	1.5 μg/m^3	--	--
	Calendar Quarter	--	1.5 μg/m^3	Same as Primary Standard
	Rolling 3-Month Average[9]	--	0.15 μg/m^3	
Visibility Reducing Particles	8-hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more due to particles.	No Federal Standards	
Sulfates	24 Hour	25 μg/m^3	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 μg/m^3)	No Federal Standards	
Vinyl Chloride[8]	24 Hour	0.01 ppm (26 μg/m^3)	No Federal Standards	

(1) California standards for ozone, carbon monoxide, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.

(2) National standards, other than 1-hour ozone, 8-hour ozone, 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages, are not to be exceeded more than once a year. The 1-hour 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. The 8-hour ozone standard is attained when the 3-year average of the annual fourth-highest daily maximum 8-hour concentrations is below 0.08 ppm. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile 24-hour concentrations is below 150 μg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile 24-hour concentrations is below 65 μg/m^3.

(3) Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based on a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar). All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

(4) National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

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

(6) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the EPA standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

(7) On June 2, 2010, the U.S. EPA established a new 1-hour SO2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA also proposed a new automated Federal Reference Method (FRM) using ultraviolet technology, but will retain the older pararosaniline methods until the new FRM have adequately permeated state monitoring networks. The EPA also revoked both the existing 24-hour SO2 standard of 0.14 ppm and the annual primary SO2 standard of 0.030 ppm, effective August 23, 2010. The secondary SO2 standard was not revised at that time; however, the secondary standard is undergoing a separate review by EPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

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

(9) National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: CARB, 2010a.

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP, or State Implementation Plan. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The SIP is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The EPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

Resource Conservation and Recovery Act (RCRA) of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984

Federal hazardous waste laws are generally promulgated under the RCRA. These laws provide for the "cradle to grave" regulation of hazardous wastes. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed. DTSC is responsible for implementing the RCRA program as well as California's own hazardous waste laws, which are collectively known as the Hazardous Waste Control Law.

3.2 State

California Clean Air Act

The CAA allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. The California Clean Air Act (CCAA) was signed into law in 1988 and spelled out in statute California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress. The CCAA provides the state with a comprehensive framework for air quality planning regulation. Prior to passage of the CCAA, federal law contained the only comprehensive planning framework. The CAA requires attainment of state ambient air quality standards by the earliest practicable date (CARB, 2003). The California Air Resources Board (CARB), a part of the California EPA (CalEPA) is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California ambient air quality standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The CARB has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

In addition to standards set for the six criteria pollutants, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles (see Table 1). These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Further, in addition to primary and secondary AAQS, the state has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter.

These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health.

3.3 Local

San Diego County Regional Air Quality Strategy and State Implementation Plan

The San Diego Air Pollution Control District (SDAPCD) is the local agency responsible for the administration and enforcement of air quality regulations for the San Diego Air Basin (SDAB), which includes all of San Diego County. The SDAPCD regulates most air pollutant sources, except for motor vehicles, marine vessels, aircrafts, and agricultural equipment, which are regulated by the CARB or the EPA. State and local government projects, as well as projects proposed by the private sector, are subject to SDAPCD requirements if the sources are regulated by the SDAPCD. Additionally, the SDAPCD, along with the CARB, maintains and operates ambient air quality monitoring stations at numerous locations throughout San Diego County. These stations are used to measure and monitor ambient criteria and toxic air pollutant levels.

The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County RAQS was initially adopted in 1991, and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, 2004, and most recently in April 2009. The RAQS outlines the SDAPCD's plans and control measures designed to attain the state air quality standards for ozone. The SDAPCD has also developed the SDAB's input to the SIP, which is required under the CAA for pollutants that are designated as being in non-attainment of national air quality standards for the basin.

The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the county, to project future emissions and then establish the strategies necessary for the reduction of emissions through regulatory controls. The CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County of San Diego as part of the development of their general plans. As such, projects that propose development consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development which is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the general plan and SANDAG's growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.

The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The SIP also includes rules and regulations that have been adopted by the SDAPCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for ozone.

In addition to the RAQS and SIP, the SDAPCD adopted the *Measures to Reduce Particulate Matter in San Diego County* report in December 2005. This report is based on particulate matter reduction measures adopted by CARB. SDAPCD evaluated CARB's list of measures and found that the majority were already being implemented in San Diego County. As a result of the evaluation SDAPCD proposed measures for further evaluation to reduce particulate matter emissions from residential wood combustion and from fugitive dust from construction sites and unpaved roads.

Clean Air Program

The District implements a Clean Air Program, the goal of which is to voluntarily reduce air emissions from current District operations in advance of regulatory action through the identification and evaluation of feasible and effective control measures for each category of District operations. This comprehensive program provides a framework for reducing air emissions at the Cruise Ship Terminal, Tenth Avenue Marine Terminal and National City Marine Terminal. The 2007 Clean Air Program Report identifies control measures that can be implemented in the near-term and measures that are part of a long-term strategy to reduce air emissions, building upon regulatory and voluntary efforts. This program applies only to the operations of the District.

San Diego Air Pollution Control District Rule 55, Fugitive Dust Control

The SDAPCD requires that construction activities implement the measures listed in Rule 55 to minimize fugitive dust emissions. Rule 55 requires the following:

1) No person shall engage in construction or demolition activity in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60 minute period; and

2) Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall be minimized by the use of any of the equally effective trackout/carry-out and erosion control measures listed in Rule 55 that apply to the project or operation. These measures are: track-out grates or gravel beds at each egress point; wheel-washing at each egress during muddy conditions; soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and using secured tarps or cargo covering, watering, or treating of transported material for outbound transport trucks. Erosion control measures must be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations.

Title 22 of the California Code of Regulations & Hazardous Waste Control Law, Chapter 6.5

The DTSC regulates the generation, transportation, treatment, storage and disposal of hazardous waste under RCRA and the California Hazardous Waste Control Law. Both laws impose “cradle to grave” regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

4.0 Existing Conditions

4.1 Climate

Regional climate and local meteorological conditions influence ambient air quality. Convair Lagoon is located in the SDAB. The climate of the SDAB is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. It also drives the dominant onshore circulation and helps create two types of temperature inversions, subsidence and radiation, that contribute to local air quality degradation.

Subsidence inversions occur during warmer months, as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the two layers of air represents a temperature inversion that traps pollutants below it. Radiation inversions typically develop on winter nights with low wind speeds, when air near the ground cools by radiation, and the air aloft remain warm. A shallow inversion layer that can trap pollutants is formed between the two layers.

In the vicinity of the alternative site, the nearest climatological monitoring station is located at San Diego International Airport, which is located at 3665 North Harbor Drive, adjacent to the northern border of Convair Lagoon, across Harbor Drive. Climatological monitoring stations collect temperature and precipitation data. The normal daily maximum temperature is 76 degrees Fahrenheit (°F) in August, and the normal daily minimum temperature is 48 °F in January, according to the Western Regional Climate Center (WRCC, 2011). The normal precipitation in the project area is 10 inches annually, occurring primarily from December through March.

The nearest National Oceanic and Atmospheric Administration (NOAA) meteorological monitoring station to the alternative site is also located at the San Diego International Airport. Meteorological monitoring stations collect data such as wind direction and wind speed, as well as air temperature and precipitation. The prevailing wind direction at this monitoring station is from the west (NOAA, 2004).

4.2 Health Effects Related to Air Pollutants

Federal and state laws regulate the air pollutants emitted into the ambient air by stationary and mobile sources. These regulated air pollutants are known as "criteria air pollutants" and are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide, volatile organic compounds (VOC), nitrogen oxides, sulfur dioxide, and most fine particulate matter including lead and fugitive dust (PM_{10} and $PM_{2.5}$) are primary air pollutants. Of these, carbon monoxide, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. VOCs and nitrogen oxides are criteria pollutant precursors that go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone and nitrogen dioxide (NO_2) are the principal secondary pollutants. Diesel particulate matter is a mixture of particles and is a component of diesel exhaust. The EPA lists diesel exhaust as a mobile source air toxic due to the cancer and non-cancer health effects associated with exposure to whole diesel exhaust.

Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects.

Carbon Monoxide (CO) is an odorless, colorless, and toxic gas. Because it is impossible to see, taste, or smell the toxic fumes, carbon monoxide can kill people before they are aware that it is in their homes. At lower levels of exposure, carbon monoxide causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea, and fatigue. The effects of carbon monoxide exposure can vary greatly from person to person depending on age, overall health, and the concentration and length of exposure (EPA, 2010). The major sources of carbon monoxide in the Basin are on-road vehicles, aircraft, and off-road vehicles and equipment.

Volatile Organic Compounds (VOCs) are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. VOCs consist of non-methane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. Non-methane hydrocarbons are hydrocarbons that do not contain the un-reactive hydrocarbon, methane. Oxygenated hydrocarbons are hydrocarbons with oxygenated functional groups attached.

It should be noted that there are no state or national ambient air quality standards for VOCs because they are not classified as criteria pollutants. They are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} levels and lower visibility. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, higher concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, kidneys, and central nervous system (EPA, 1999).

The major sources of VOCs in the SDAB are on-road motor vehicles and solvent evaporation. Benzene, a VOC and known carcinogen, is emitted into the air from gasoline service stations (fuel evaporation), motor vehicle exhaust, tobacco smoke, and from burning oil and coal. Benzene is also sometimes used as a solvent for paints, inks, oils, waxes, plastic, and rubber. It is used in the extraction of oils from seeds and nuts. It is also used in the manufacture of detergents, explosives, dyestuffs, and pharmaceuticals. Short-term (acute) exposure of high doses of benzene from inhalation may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract irritation. At higher levels, unconsciousness can occur. Long-term (chronic) occupational exposure of high doses by inhalation has caused blood disorders, including aplastic anemia and lower levels of red blood cells (EPA, 1999).

Nitrogen Oxides (NO_x) serve as integral participants in the process of photochemical smog production. The two major forms of nitrogen oxides are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown, irritating gas formed by the combination of NO and oxygen. Nitrogen oxide acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens. Nitrogen oxide is also an ozone precursor. A precursor is a directly emitted air contaminant that, when released into the atmosphere, forms, causes to be formed, or contributes to the formation of a secondary air contaminant for which a NAAQS has been adopted, or whose presence in the atmosphere will contribute to the violation of one or more NAAQS. When nitrogen oxides and VOCs are released in the atmosphere, they chemically react with one another in the presence of sunlight to form ozone.

Ozone (O_3) is one of a number of substances called photochemical oxidants that are formed when VOCs and nitrogen oxides (both byproducts of the internal combustion engine) react with sunlight. Ozone is present in relatively high concentrations in the SDAB, and the damaging effects of photochemical smog are generally related to ozone concentrations. Ozone may pose a health threat to those who already suffer from respiratory diseases as well as healthy people. Additionally, ozone has been tied to crop damage, typically in the form of stunted growth and pre-mature death. Ozone can also act as a corrosive, resulting in property damage such as the embitterment of rubber products.

Lead (Pb) is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Lead was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. The exclusion of lead from gasoline helped to decrease emissions of lead in the United States from 219,000 to 4,000 tons per year between 1970 and 1997. Even though leaded gasoline has been phased out in most countries, some, such as Egypt and Iraq, still use at least some leaded gasoline (United Nations Environment Programme, 2010). Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and physical weathering of surfaces containing lead. The mechanisms by which lead can be removed from the atmosphere (sinks) include deposition to soils, ice caps, oceans, and inhalation.

Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. The more serious effects of lead poisoning include behavioral disorders, mental retardation, and neurological impairment. Low levels of lead in fetuses and young children can result in nervous system damage, which can cause learning deficiencies and low intelligence quotients (IQs). Lead may also contribute to high blood pressure and heart disease. Lead concentrations once exceeded the state and national air quality standards by a wide margin but have not exceeded these standards at any regular monitoring station since 1982. Lead is no longer an additive to normal gasoline, which is the main reason that concentration of lead in the air is now much lower. The proposed alternative would not emit lead; therefore, lead has been eliminated from further review in this analysis.

Sulfur Dioxide (SO_2) is a colorless, pungent gas. At levels greater than 0.5 parts per million (ppm), the gas has a strong odor, similar to rotten eggs. Sulfuric acid is formed from SO_2 and is an aerosol particle component that may lead to acid deposition. Acid deposition into water, vegetation, soil, or other materials can harm natural resources and materials. Although SO_2 concentrations have been reduced to levels well below state and national standards, further reductions are desirable because SO_2 is a precursor to sulfates. Sulfates are a particulate formed through the photochemical oxidation of SO_2. Long-term exposure to high levels of SO_2 can cause irritation of existing cardiovascular disease, respiratory illness, and changes in the defenses in the lungs. When people with asthma are exposed to high levels of SO_2 for short periods of time during moderate activity, effects may include wheezing, chest tightness, or shortness of breath.

Particulate Matter (PM) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate, also known as fugitive dust, are now recognized. Course particles, or PM_{10}, include that portion of the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 one-millionths of a meter or 0.0004 inch) or less. Fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns, that is 2.5 one-millionths of a meter or 0.0001 inch or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities; however, wind action on the arid landscape also contributes substantially to the local particulate loading. Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems.

Fugitive dust poses primarily two public health and safety concerns. The first concern is that of respiratory problems attributable to the suspended particulates in the air. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions. Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent (similar to sandblasting activities). Finally, fugitive dust can result in a nuisance factor due to the soiling of proximate structures and vehicles.

Diesel particulate matter is a mixture of many exhaust particles and gases that is produced when an engine burns diesel fuel. Many compounds found in diesel exhaust are carcinogenic, including 16 that are classified as possibly carcinogenic by the International Agency for Research on Cancer. Diesel particulate matter includes the particle-phase constituents in diesel exhaust. Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation and exposure can cause coughs, headaches, light-headedness, and nausea. Diesel exhaust is a major source of ambient fugitive dust pollution as well, and numerous studies have linked elevated fugitive dust levels in the air to increased hospital admission, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems (OEHHA, 2001) diesel particulate matter in the SDAB poses the greatest cancer risk of all the toxic air pollutants.

4.3 Historical Air Pollutant Levels

The SDAPCD operates a network of ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of air pollutants and determine whether the ambient air quality meets the NAAQS and the CAAQS. The closest ambient monitoring station to the alternative site is the San Diego (Beardsley Street) station. Table 2 presents a summary of the ambient pollutant concentrations monitored at the San Diego station during the most recent three years for which data available (2007 through 2009). The corresponding NAAQS and CAAQS are also presented in Table 2. The SDAB is currently designated as a nonattainment area for the state standard for PM_{10}, $PM_{2.5}$, 1-Hour and 8-Hour ozone, and the Federal 8-Hour Standard for ozone.

Table 2 Air Quality Monitoring Data

Pollutant	Monitoring Station	2007	2008	2009
Ozone				
Maximum 1-hour concentration (ppm)	1110 Beardsley Street, San Diego	0.087	0.087	0.085
Days above 1-hour state standard (>0.09 ppm)		0	0	0
Maximum 8-hour concentration (ppm)		0.073	0.073	0.063
Days above 8-hour state standard (>0.07 ppm)		1	1	0
Days above 8-hour federal standard (>0.075 ppm)		0	0	0
Carbon Monoxide				
Maximum 8-hour concentration (ppm)	1110 Beardsley Street, San Diego	3.01	2.6	2.77
Days above state or federal standard (>9.0 ppm)		0	0	0
Respirable Particulate Matter (PM_{10})				
Peak 24-hour concentration ($\mu g/m^3$)	1110 Beardsley Street, San Diego	111	59	60
Days above state standard (>50 $\mu g/m^3$)		24	24	18
Days above federal standard (>150 $\mu g/m^3$)		0	0	0
Fine Particulate Matter ($PM_{2.5}$)				
Peak 24-hour concentration ($\mu g/m^3$)	1110 Beardsley Street, San Diego	69.6	42	52.1
Days above federal standard (>35 $\mu g/m^3$)		9	4	3
Nitrogen Dioxide				
Peak 1-hour concentration (ppm)	1110 Beardsley Street, San Diego	0.098	0.091	0.078
Days above state 1-hour standard (0.18 ppm)		0	0	0
Sulfur Dioxide				
Maximum 24-hour concentration (ppm)	1110 Beardsley Street, San Diego	0.006	0.007	0.006
Days above 24-hour state standard (>0.04 ppm)		0	0	0
Days above 24-hour federal standard (>0.14 ppm)		0	0	0

PPM = parts per million, $\mu g/m^3$ = micrograms per cubic meter
Source: CARB, 2011

As shown in Table 2, the 8-hour ozone concentration exceeded the state standard in 2007 and 2008. The federal standard was not exceeded during this period. The federal 24-hour $PM_{2.5}$ standard was violated nine days during 2007, four days in 2008, and three days in 2009. Neither the state nor federal standards for CO, PM_{10}, NO_2, or SO_2 were exceeded at any time between 2007 and 2009. The federal annual average NO_2 standard has not been exceeded since 1978 and the state one-hour standard has not been exceeded since 1988 (SDAPCD, 2007). With one exception during October 2003, the SDAB has not violated the state or federal standards for CO since 1990 (SDAPCD, 2007).

4.4 Attainment Status

The classifications for ozone non-attainment include and range in magnitude from marginal, moderate, serious, severe, and extreme. The SDAB is currently designated as a nonattainment area for the state standard for PM_{10}, $PM_{2.5}$, 1-Hour and 8-Hour ozone, and the Federal 8-Hour Standard for ozone, as shown in Table 3.

Table 3 Attainment Status for the San Diego Air Basin

Pollutant	State Status	Federal Status
Ozone (1-hour)	Non-attainment	Note (1)
Ozone (8-hour)	Non-Attainment	Non-attainment(2)
Respirable Particulate Matter (PM_{10})	Non-attainment	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Non-attainment	Attainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead (Pb)	Attainment	Attainment

Note (1) The federal 1-hour ozone standard was revoked in 2005 and is no longer in effect for the state of California.
Source: CARB, 2010b

4.5 Sensitive Receptors and Locations

CARB defines sensitive receptors as residences, schools, day care centers, playgrounds, and medical facilities, or other facilities that may house individuals with health conditions that would be adversely affected by changes in air quality. Land uses surrounding Convair Lagoon generally consist of the San Diego International Airport, airport-related commercial and industrial land uses, and Coast Guard operations. These land uses are not sensitive receptors. The sensitive land uses closest to the alternative area are the residences located near the intersection of Kettner Boulevard and West Laurel Street, approximately 0.8 mile from the alternative site, and Spanish Landing Park, approximately 0.9 mile west of Convair Lagoon. Harbor Island Park is approximately 1.1 miles southwest of Convair Lagoon, but does not include play equipment and is not considered a sensitive land use. .

5.0 Methodology and Significant Criteria

5.1 Methodology

Construction Emissions

Construction emissions for the Convair Lagoon Alternative construction phases are assessed using the Urban Emissions Model (URBEMIS, 2007, version 9.2.4) distributed by the CARB, with the exception of emissions from the tug boats required for barge transport. The URBEMIS 2007 model uses EMFAC 2007 emissions factors for vehicle traffic and Off-Road 2007 for construction equipment. Emissions from the Shipyard Sediment Site construction activities and tug boat emissions factors were provided by LSA Associates, Inc. in the Air Quality Analysis for the Shipyard Sediment Project (LSA, 2011). The construction analysis included modeling of the projected construction equipment that would be required during each phase of construction for the CDF and quantities or materials to be imported on site and exported off site. The analysis assesses maximum daily emissions from each individual phase of construction, including site preparation, jetty construction, sediment transportation and placement, and containment cap installation. To be conservative, where several construction options are being considered, the most conservative is assumed in order to analyze the worst case scenario. A complete listing of the assumptions used in the model and model output is provided in Appendix A of this report. When construction at the Shipyard Sediment Site and Convair Lagoon construction activities are projected to overlap, construction emissions from both sites are added together to determine the total maximum daily emissions.

Operational Emissions

Operational impacts are discussed qualitatively due to the lack of operational emission sources associated with the proposed alternative.

5.2 Significance Criteria

Based on Appendix G of the CEQA Guidelines, an impact related to consistency with applicable air quality plans would be considered significant if implementation of the proposed alternative would result in a conflict with, or obstruct implementation of, the RAQS or SIP.

Based on Appendix G of the CEQA Guidelines, an impact would be considered significant if the proposed alternative would violate any air quality standard or contribute substantially to an existing or projected air quality violation. The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related projects. Therefore, the following thresholds established in the *City of San Diego California Environmental Quality Act Significance Determination Thresholds* (January 2011) were used. The thresholds listed in the City's Guidelines are based on the SDAPCD's stationary source emission thresholds. Based on the criteria set forth in the City Guidelines, a project would have a significant impact with regard to construction or operational emissions if it would exceed any of the thresholds listed in Table 4. The City of San Diego does not have a threshold for $PM_{2.5}$; therefore, the EPA "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published in 2005, which quantifies significant emissions as approximately 55 pounds per day, is used as the threshold.

Additionally, based on Appendix G of the CEQA Guidelines, the proposed alternative would result in a significant air quality impact if any of the following were to occur as result of the proposed alternative:

- Exposure of sensitive receptors to substantial pollutant concentrations;
- Creation of objectionable odors that would affect a substantial number of people; or
- A cumulatively considerable net increase of any criteria pollutant which the SDAB is in non-attainment.

Table 4 City of San Diego Pollutant Thresholds

Pollutant	Pounds Per Day
Carbon monoxide (CO)	550
Nitrogen Oxides (NO_X)	250
Respirable Particulate Matter (PM_{10})	100
Fine Particulate Matter ($PM_{2.5}$)	55[1]
Oxides of Sulfur (SO_X)	250
Volatile Organic Compounds (VOC)	137

(1) USEPA "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published September 2005.

Source: City of San Diego, 2011

6.0 Impact Analysis and Mitigation Measures

6.1 Consistency with Regional Plans

The air quality plans relevant to this discussion are the SIP and RAQS. As discussed above, the SIP includes strategies and tactics to be used to attain and maintain acceptable air quality in the Basin; this list of strategies is called the RAQS. Consistency with the RAQS is typically determined by two standards. The first standard is whether the Convair Lagoon Alternative would exceed assumptions contained in the RAQS. The second standard is whether the Convair Lagoon Alternative would increase the frequency or severity of existing air quality violations, contribute to new violations, or delay the timely attainment of air quality standards or interim reductions as specified in the RAQS.

The RAQS rely on information from the CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to forecast future emissions and then determine the strategies necessary for the reduction of emissions through regulatory controls. The CARB mobile source emissions projections and the SANDAG growth projections are based on population and vehicle use trends and land use plans developed by the cities and the County as part of the development of the County's and cities' general plans. As such, projects that propose development consistent with, or less than, the growth projections anticipated by a general plan would be consistent with the RAQS. For this alternative the Port Master Plan is the document governing future land use that was considered as part of SANDAGs projections.

The proposed Port Master Plan Amendment (PMPA) would result in changes to the 10 acres of water use designations on the site. Under the proposed PMPA, all existing water areas of the Convair Lagoon Alternative site would change their use designation to Harbor Services (land). The Harbor Services use category in the PMP identifies land and water areas devoted to maritime services and harbor regulatory activities of the District, including remediation and monitoring. The area within the proposed PMPA boundary would be designated as Harbor Services (water)(5 acres), Industrial Specialized Berthing (water) (4.5 acres), and Boat Navigation Corridor (water) (0.5 acre). The following provides a discussion of each of the land use designation changes and their consistency with the RAQS.

The change is land use designation from Harbor Services (water) to Harbor Services (land) would not result in a change that would affect SANDAG growth projections, because the description of uses allowed for this designation is the same whether it applies to water or land uses in the Port Master Plan.

The change in designation from Industrial Specialized Birthing (water) to Harbor Services (land) would change the allowable uses for this 4.5 acre area of the Port Master Plan from a variety of marine related commercial and industrial uses, such as ship building and repair, water taxi, excursion and ferry craft, commercial fishing boat berthing, and other marine-related uses, to the proposed Harbor Services (land) designation which would only allow maritime services and harbor regulatory activities of the District, including remediation and monitoring. The proposed land use designation would therefore allow less intense development because marine services under the proposed Harbor Services designation would only allow service related activities, whereas the Industrial Specialized Birthing would allow more intense industrial and commercial related water uses. Therefore this change in land use designation would not result in development that would be greater than the growth projections developed by SANDAG.

The last land use designation that would be changed as part of the project would be the change from the 0.5-acre Boat Navigation Corridor designation (water) to Harbor Services (land). The existing designation is a water category for those water areas delineated by navigational channel markers or by conventional waterborne traffic movements. This category does not allow any land use development that would be part of the SANDAG's growth projections, whereas the proposed Harbor Services (land) designation would allow marine services development. However, the marine services use is less intense than the Industrial Specialized Birthing (water) designation that will also be changed to Harbor Services (land). Therefore the 0.5 acre increase in development intensity associated with the change from Boat Navigation Corridor is offset by the less intense development associated with the change from Industrial Specialized Birthing (water). The end result is that the proposed PMPA would be consistent with the SANDAG growth projections used in developing the RAQS.

The second standard is whether the Convair Lagoon Alternative would increase the frequency or severity of existing air quality violations, contribute to new violations, or delay the timely attainment of air quality standards or interim reductions as specified in the RAQS. This standard applies to long-term project operational emissions. Because nearly all of the Convair Lagoon Alternative generated air pollutant emissions are associated with short-term construction activities, this standard would not apply to this alternative.

Mitigation Measures

The proposed alternative would not conflict with, or obstruct implementation of applicable air quality plans; therefore, no mitigation measures are required.

6.2 Conformance to Federal and State Ambient Air Quality Standards

Impact Analysis

Construction

Air pollutant emission sources during CDF construction would include exhaust and particulate emissions generated from construction equipment, tug boat operations during sediment transport, and truck trips to transport imported material from the Convair Lagoon site. As discussed above, construction of the Convair Lagoon Alternative is estimated to occur over a duration of approximately 15 months and would consist of five phases: 1) Site Preparation; 2) Containment Barrier Construction; 3) Storm Drain Outlet Extension; 4) Sediment Transport and Placement; and 5) Containment Cap Installation. Dump trucks with a capacity of 12.22 cubic yards (CY) were assumed for the importation and exportation of materials for all phases of construction (LSA 2011). During each construction phase, the Convair Lagoon Alternative would employ approximately ten construction workers. It is assumed that each worker would generate four trips per day, for a total of 40 average daily worker trips. Construction would occur Monday through Friday for eight hours during normal working hours. The phase-specific assumptions used to determine the emissions of each of these five construction phases are described below.

As discussed in the Project Description, the Convair Lagoon Alternative would also require the construction activities associated with the preparation of the Shipyard Sediment Site for dredging, and dredging operations. Additionally, construction of a landside pad, pad operations, and covering of sediment would occur under this Alternative to prepare a portion of the sediment for disposal at the Kettleman Hills Landfill. All emissions associated with these construction phases have previously been quantified by LSA Associates, Inc in the *Air Quality Analysis, Shipyard Sediment Project, California Regional Water Quality Control Board, San Diego Region* (2011). The assumptions and calculated emissions for the construction phases associated with the Shipyard Sediment Site project are incorporated herein by reference.

Phase 1: Site Preparation. This phase of construction would include the demolition of the existing concrete pier, riprap, concrete mattress energy dissipaters, and the abandoned seaplane marine ramp. Excavation for the containment barrier is part of site preparation; however, it would occur concurrently with containment barrier construction. Therefore, emissions from excavation activities are addressed below under Phase 2. Removal of the pier would involve cutting the existing support piles to the approximate existing mud-level. In total, approximately 500 CY of materials would be demolished. Demolished facilities would be reused on-site as fill material. Demolition would take approximately two months to complete. Demolition would be conducted from the existing shoreline using tracked excavators with breaker hammers, and loaders. Table 5 shows the maximum daily emissions that would occur from site preparation in comparison with the thresholds of significance. As shown in Table 5, site preparation related emissions would be below the significance thresholds.

Table 5 Site Preparation Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Site Preparation	19	38	5	0	2	2
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	No	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007. See Appendix A for data sheets.

Phase 2: Containment Barrier Construction. Excavation and construction of the containment barrier jetty would take approximately four months and would occur concurrently. To prepare the site for construction of the containment barrier, approximately three feet of existing sediment would be excavated within the footprint of the proposed barrier for a total of approximately 13,000 CY of excavated material. This excavated material would be stockpiled on the adjacent rental car parking lot and re-used on-site as fill material in shallow water portions of the site. The excavated material would be removed by dredging equipment from the shoreline, either hydraulically by pumped pressure, or by crane and clamshell. Based on the air quality analysis prepared for the Port of Los Angeles Channel Deepening project (Port of Los Angeles, 2009), use of a crane and clamshell would be the worst-case scenario in this situation and is assumed for this analysis. Equipment would consist of a main hoist that consists of the crane and clamshell, and two large generators to remove the material and stockpile it in the rental car parking lot. Subsequent to completion of the containment barrier this material would moved to the CDF.

Rock and aggregate material used to construct the containment barrier would be imported from a nearby quarry located approximately 15 miles from the alternative site. In total, the containment barrier would require the import of approximately 49,000 CY of materials, including: 8,000 CY of armor rock material, 3,000 CY of underlayer rock material, and 38,000 CY of core aggregate material. The containment barrier would include an engineered filter on the north face, consisting of graded rock or geotextile fabric. This filter would mitigate migration of fill particles into the bay due to tidal fluctuations. The filter would be approximately 7,000 square yards and would be anchored to the containment barrier with 2,000 CY of imported rock. The jetty would also include two energy dissipaters for the extended storm drains, which would require 150 CY of imported material each. Therefore, a total of 51,300 CY would be imported during this phase. A weir would be constructed and would consist of a low crest in the containment barrier or a pipe in the structural fill of the barrier.

Construction of the containment barrier would occur using either the placement method or the end dumping method. Placement construction is considered the worst case scenario because it would require use of a barge and a crane, which would require towing by a tug boat. The crane would be used from both the land side for movement of material into a barge and from the barge for placement of rock and other material associated with the confinement barrier. Armor rock layers would require individual rock placement, using a crane mounted on a barge, to promote stress distribution and uniform coverage. The placement of core rock may include bottom dumping. It is assumed one barge would be used and the tug boat would operate for eight hours.

Other construction equipment required for the construction of the containment barrier would include a front loader, hydraulic pumps, and cranes.

Table 6 shows the maximum daily emissions that would occur from excavation and jetty construction in comparison with the thresholds of significance. As shown in Table 6, related emissions would be below the significance thresholds.

Table 6 Barrier Construction Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Excavation and Import and Export of Material	30	92	7	0	23	7
Installation of Jetty	22	28	4	0	2	1
Tug Boat Operation	15	81	3	1	3	2
Sum of Barrier Construction Emissions	*67*	*201*	*14*	*1*	*28*	*10*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	No	No	No	No	No

CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007, and LSA, 2011 See Appendix A for data sheets.

Excavation and construction of the containment barrier may overlap with site preparation at the Convair Lagoon. Table 7 shows the maximum daily emissions that would occur from concurrent site preparation and containment barrier construction at Convair Lagoon. As shown in this table, simultaneous site preparation, excavation, and construction of the containment barrier at the Convair Lagoon would not exceed any significance thresholds.

Table 7 Convair Lagoon Site Preparation and Containment Barrier Construction Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Site Preparation	19	38	5	0	2	2
Containment Barrier Construction	67	201	14	1	28	10
Total Phase 1 and Phase 2 Emissions	*86*	*239*	*19*	*1*	*30*	*12*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	No	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007. See Appendix A for data sheets.

Phase 3: Storm Drain Outlet Extension. Extension of two existing on-site storm drains to the face of the containment barrier would take two months and would occur concurrently with construction of the jetty. Extension would require installation of a gravel rock bed to support the storm drains. A total of 2,200 CY of material is assumed to be imported and placed using the end dumping construction method. The extension of storm drains and construction of energy dissipaters would require earthwork or marine machinery, including cranes and an excavator. According to the EPA, Category 1 marine equipment, which typically includes non-locomotive engines such as construction equipment, uses engines that are similar to land-based large earth moving machines (EPA, 1999). Therefore, land-based construction equipment including a grader and backhoe are used to estimate marine equipment emissions. Table 8 shows the maximum daily emissions that would occur from extension of the storm drains in comparison with the thresholds of significance. As shown in Table 8, storm drain extension emissions would be below the significance thresholds.

Table 8 Storm Drain Extension Construction Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Material Import	1	3	0	0	1	1
Construction of Rock Containments	22	28	4	0	2	1
Sum of Storm Drain Extension Emissions	*23*	*31*	*4*	*0*	*3*	*2*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	No	No	No	No	No

CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007. See Appendix A for data sheets.

Storm drain extension may occur concurrently with the end of excavation and construction of the containment barrier at the Convair Lagoon. Table 9 shows the maximum daily emissions that would occur from concurrent storm drain extension and containment barrier construction at Convair Lagoon. As shown in this table, simultaneous excavation and construction of the containment barrier and storm drain extension would not exceed any significance thresholds.

Table 9 Storm Drain Extension and Containment Barrier Construction Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Storm Drain Extension	23	31	4	0	3	2
Containment Barrier Construction	67	201	14	1	28	10
Total Phase 2 and Phase 3 Emissions	*90*	*232*	*18*	*1*	*31*	*12*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	No	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: LSA, 2011

Phase 4: Sediment Transport and Placement. Phase 4 of construction would involve the transport and placement of approximately 121,890 CY of contaminated marine sediment dredged from the Shipyard Sediment Site. It is assumed that the transport and placement phase would take six months. Dredged contaminated marine sediment from the Shipyard Sediment Site Project would be transported to the Convair Lagoon Alternative site via barges and placed within the submerged areas of the lagoon as hydraulic fill. The contaminated marine sediment would be transported via barges towed by 1,650 horsepower tug boats from the shipyard area to the Convair Lagoon Alternative site. It is assumed that a maximum of four tug boats and barges would be required per day and that each of the tug boats would be operating for eight hours per day, which is consistent with the assumptions used for the proposed Shipyard Sediment Site Project. The contaminated sediment would be transferred from the barges to the CDF through the use of pumps, pipelines and hoses, or clamshell cranes. For this phase of construction the use of pumps represents the worst case scenario based on information provided in the *Final EIS for the Proposed Homeporting of Additional Surface Ships at Naval Station Mayport, Florida*. This EIS identified offloading dredged sediment from barges, using pumps that would be powered by a 50 horsepower diesel engine, with two pumps required per barge (NAVFAC, 2008). In addition to the sediment placed in the CDF, this alternative includes approximately 24,737 CY of sediment that would be hauled by truck from the Shipyard Sediment Site dewatering area to Kettleman Hills Landfill, located approximately 480 miles round trip from the dewatering area.

The sediment from the Shipyard Sediment Site may include elevated levels of copper, mercury, zinc, PAHs, and PCBs (LSA 2011). PAHs are not VOCs (ATSDR 1996); therefore, heavy metals and PAHs in the sediment are not criteria pollutants. Some PCBs may exist as vapor; however, in water PCBs bind strongly to organic particles and bottom sediments (ATSDR, 2001). Therefore, the PCBs associated with the wet shipyard sediment would be bound to the sediment and would not result in additional VOC emissions. The potential for sensitive receptors to be exposed to these pollutants is discussed below in Section 6.3.

Table 10 shows the maximum daily emissions that would occur from the transfer and placement of sediment in comparison with the thresholds of significance. As shown in Table 10, all emissions would be below the significance thresholds, with the exception of emissions of nitrogen oxides.

Table 10 Sediment Transport and Placement Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Tug Boat Operations	61	325	13	5	10	10
Material Placement	35	40	7	0	3	2
Kettleman Hills Landfill Disposal Truck Trips	54	155	11	0	7	6
Sum of Phase 4 Emissions	*150*	***520***	*31*	*5*	*20*	*18*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	**Yes**	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007, and LSA, 2011. See Appendix A for data sheets.

Sediment transport and placement of the contaminated sediment in the CDF would occur concurrently with construction activities at the Shipyard Sediment Site. Site preparation would occur prior to dredging and pad construction activities. However, dredging would potentially overlap with landside pad construction and operation, and covering of the sediment near structures. The total maximum daily emissions that would result from sediment transport and placement in the CDF concurrently with the Shipyard Sediment Site preparation are shown in Table 11. The total maximum daily emissions that would result from sediment transport and placement concurrently with Shipyard Sediment Site dredging, pad construction and operation, and covering of sediment are shown in Table 12. As shown in these tables, emissions of nitrogen oxides would exceed significance thresholds during any phase of Shipyard Sediment Site construction concurrent with sediment transfer and placement in the CDF.

Table 11 Convair Lagoon Sediment Transfer and Placement and Shipyard Sediment Site Debris and Pile Removal Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Sediment Transport and Placement	150	**520**	31	5	20	18
Debris and Pile Removal	54	148	8	5	5	5
Total Emissions	*204*	***668***	*39*	*10*	*25*	*23*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	**Yes**	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007, and LSA, 2011 See Appendix A for data sheets.

Table 12 Sediment Transport and Placement and Shipyard Sediment Site Construction Maximum Daily Emissions

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Sediment Transport and Placement	150	**520**	31	5	20	18
Dredging of Shipyard Sediment Site(1)	10	16	1	4	1	1
Landside Operations – Pad Construction	83	164	14	20	9	8
Landside Operations – Operation(1)	20	39	3	7	2	2
Covering Sediment Near Structures	31	105	6	4	4	4
Total Emissions	*294*	***844***	*55*	*40*	*36*	*33*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	**Yes**	No	No	No	No

(1) These emissions do not include the tug boat emissions and truck trips associated with sediment transport for the Shipyard Sediment Site Project because these trips would not occur under the Convair Lagoon Alternative. Barge and truck haul trip emissions that would occur under the Alternative are included in the emissions in Table 10.
Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: LSA, 2011

Phase 5: Containment Cap Construction. Containment cap construction would involve the import and installation of a one-foot thick containment cap consisting of sand and asphalt. This construction phase would have a duration of approximately four months. The engineered cap would consist of clean sand placed over the contaminated fill material, then paved with asphalt, to isolate the contaminated material from the community. During this phase of construction, approximately 12,000 CY of sand 4,000 CY of asphalt would be imported to the site and placed above the contaminated sediment by unloading the sand directly from the trucks. Construction equipment required for Phase 5 would include trucks and earthwork equipment such as a graders and loaders. Following placement of the sand cap, the cap would be paved with asphalt. Table 13 shows the maximum daily emissions that would occur from the construction of the cap in comparison with the thresholds of significance. As shown in Table 13, all cap construction emissions would be below the significance thresholds.

Table 13 Containment Cap Construction Maximum Daily Emissions

	Pollutant Emissions (pounds/day)					
Construction Phase	**CO**	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Import of Material	3	9	1	0	1	1
Construction of Cap	25	30	4	0	2	2
Paving	15	11	3	0	1	1
Sum of Emissions	*43*	*50*	*8*	*0*	*4*	*4*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	No	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007. See Appendix A for data sheets.

Summary. None of the individual phases of construction would exceed the significance thresholds for any pollutant, with the exception of the sediment transfer and placement phase. Sediment transfer and placement would exceed the significant thresholds for nitrogen dioxide. Additionally, this phase of construction would occur concurrently with construction activities at the Shipyard Sediment Site, which would result in additional nitrogen oxide emissions. Therefore, this impact would be potentially significant.

Operational

Upon completion of construction, the site would consist of undeveloped land with an elevation of approximately 10 feet MLLW. The Convair Lagoon Alternative does not include the development of any buildings or structures on the converted site and no permanent dewatering would be required. Therefore, the CDF does not propose any stationary sources of criteria air pollutants. Occasional vehicle trips may be required for monitoring, maintenance, and, repair of the cap, which would require minimal vehicles trips and equipment. Therefore, these activities would not result in emissions that would exceed significance thresholds. Operational emissions associated with the CDF would be less than significant.

Mitigation Measures

Mitigation Measure 1 through Mitigation Measure 9 described in the Air Quality Analysis for the Shipyard Sediment Project would also be required for the Convair Lagoon Alternative. Additionally, mitigation measure AQ-1 would reduce impacts related to emissions of nitrogen oxides during the barge transfer of shipyard sediment to the CDF. The proposed alternative would not exceed the significant thresholds during any other phase of construction, or during operation; therefore, no mitigation measures are required for the other phases of construction or operational emissions.

AQ-1 **Prohibit Tug Boat Idling**. The applicant responsible for the tug boat operation shall ensure that tug boats not be allowed to idle during any barge loading and unloading activities, unless the tug boat is actively engaged in operations.

Significance after Mitigation

No quantification for the emissions reduction associated with Mitigation Measures 1 through 9 is provided in the Air Quality Analysis for the Shipyard Sediment Project; however, these measures would minimize nitrogen oxide emissions by requiring the use of high-efficiency equipment, proper maintenance of equipment, shutting off engines when not in use, timing construction activities to not coincide with peak-hour traffic, and encouraging ridesharing and transit use. In addition, mitigation measure AQ-1 would limit tug boat operation to four hours per day per tug boat. The maximum daily emissions during sediment transport and Shipyard Sediment Site construction activities with implementation of mitigation measure AQ-1 are shown in Table 14. As shown in this table, implementation of mitigation measure AQ-1 would reduce emissions of nitrogen oxides during Phase 4 of Alternative construction, but not to a less than significant level. Since it is unknown whether the Shipyard Sediment Site mitigation measures would reduce this impact to a less than significant level, this temporary impact would remain significant and unavoidable.

6.3 Impacts to Sensitive Receptors

CARB defines sensitive receptors as residences, schools, day care centers, playgrounds, and medical facilities, or other facilities that may house individuals with health conditions that would be adversely affected by changes in air quality. The two primary emissions of concern regarding health effects for land development are carbon monoxide and diesel particulates.

Impact Analysis

Carbon Monoxide Hotspots

Carbon monoxide is the criteria pollutant that is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere. Long-term adherence to ambient air quality standards is typically demonstrated through an analysis of localized carbon monoxide concentrations. Areas of vehicle congestion have the potential to create carbon monoxide hot spots. These hot spots typically occur at intersections where vehicle speeds are reduced and idle time is increased. Intersections that tend to exhibit a significant carbon monoxide concentration typically operate at level of service (LOS) D or worse.

Table 14 Sediment Transfer Daily Maximum Emissions with Implementation of Mitigation Measure AQ-1

Construction Phase	Pollutant Emissions (pounds/day)					
	CO	**NO_X**	**VOC**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Tug Boat Operations	61	325	13	5	10	10
Material Placement	35	40	7	0	3	2
Kettleman Hills Landfill Disposal Truck Trips	54	155	11	0	7	6
Dredging of Shipyard Sediment Site(1)	10	16	1	4	1	1
Landside Operations – Pad Construction	83	164	14	20	9	8
Landside Operations – Operation(1)	20	39	3	7	2	2
Covering Sediment Near Structures	31	105	6	4	4	4
Total Unmitigated Emissions	*294*	***844***	*55*	*40*	*36*	*33*
Reduction in Tug Boat Emissions from Implementation of Mitigation Measure AQ-1	(- 31)	(-163)	(-7)	(-2)	(-5)	(-5)
Total Emissions with Mitigation Measure AQ-1	*263*	***681***	*48*	*38*	*31*	*28*
Significance Threshold	**550**	**250**	**137**	**250**	**100**	**55**
Significant Impact?	No	**Yes**	No	No	No	No

Bold = Exceeds threshold
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compounds; SO_x = sulfur oxides
PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter
Source: URBEMIS, 2007, and LSA, 2011. See Appendix I for data sheets.

The Convair Lagoon alternative would result in a temporary increase in vehicle trips on local roads during construction. However, similar to the Shipyard Sediment Site Project, construction of the Convair Lagoon Alternative would not change the number of long-term off-site vehicle trips. Upon completion of construction, the Convair Lagoon Alternative would consist of an undeveloped, above-ground parcel of land. No permanent traffic would occur from operation of the Convair Lagoon Alternative. Occasional vehicle trips for monitoring, maintenance, or repair of the cap would not impact the level of service of local intersections and would not result in a carbon monoxide hotspot. Therefore, no significant CO contributions would occur in the project vicinity.

Toxic Air Contaminants

Diesel Particulate Matter. Diesel trucks and other diesel engines are sources of diesel particulate matter. Similar to the Shipyard Sediment Site Project, construction of the CDF would require the use of heavy construction equipment and up to approximately 100 one-way diesel truck trips per day. Construction emissions would be temporary and would not result in a long-term increase in exposure to TAC emissions. Additionally, the LSA report included a health risk assessment of truck trips associated with the Shipyard Sediment Site Project. The Proposed Project would also result in a maximum of 100 truck trips per day and would result in greater total truck trips than the Convair Lagoon Alternative because all of the contaminated sediment would be transported by truck. The health risk assessment results indicated that the truck trips associated with the Shipyard Sediment Site project would not substantially increase cancer, chronic or acute health risks (LSA 2011). Following construction, the sand cap would not require diesel trucks for maintenance of the cap. Therefore, because the Proposed Project does not represent a health risk with respect to diesel particulate matter and the Convair Lagoon

Alternative will result in fewer truck trips than the Proposed Project, diesel particulate matter emissions would be a less than significant health risk.

Contaminated Sediment. Mercury, zinc, copper, PAHs and PCBs bind to sediment and may be introduced to the air as part of dust (NOAA, 1996; ATSDR, 1996, 2001, 2004, and 2005). Therefore, if the contaminated sediment would be disturbed so that fugitive dust particles would be released into the air, exposure to these pollutants may occur. However, similar to construction activities for the proposed project, the Alternative would involve transport and placement of wet material. Similar to the Proposed Project, up to 15 percent of the dredged contaminated sediments would require dewatering prior to being transported to a landfill. The drying area would be surrounded by k-rails and sealed with foam and impervious fabric to form a confined area. As a result, little fugitive dust is expected to be generated by these operations (LSA 2011). In addition, the Convair Lagoon Alternative CDF includes a sand and asphalt cap to prevent contaminated sediment near the surface from becoming fugitive dust particles that would be released into the air following construction.

Additionally, construction activities would include several safeguards intended to protect water quality that would also minimize the potential release of contaminants during activities that would disturb the sediment. Silt and/or air curtains would be placed around the barges during barge loading operations, and unloading activities would utilize enclosed pipes or clamshell cranes to unload the sediment into the CDF. These measures would minimize the potential for sediment to be released into an area where the sediments have the potential to dry and become airborne. Transport and handling of the contaminated sediment would also be required to comply with numerous federal, state and local regulations that require strict adherence to specific guidelines regarding the use, transportation, and disposal of hazardous materials, including RCRA, which provides the 'cradle to grave' regulation of hazardous wastes, and CCR Title 22, which regulates the generation, transportation, treatment, storage and disposal of hazardous wastes. Therefore, potential exposure of sensitive receptors to pollutants from transportation and handling of the contaminated sediment would be less than significant.

Stationary Sources. Stationary sources of TAC emissions identified in CARB's Air Quality and Land Use Handbook (2005) are freeways, rail yards, ports, refineries, dry cleaners, and large gas dispensing facilities. The Convair Lagoon Alternative would consist of an undeveloped, above-ground parcel of land. It would not result in a source of stationary TAC emissions. Additionally, the Convair Lagoon Alternative does not propose any new sensitive land uses. Therefore, the Convair Lagoon Alternative would not expose any sensitive receptors to a substantial pollutant concentration and impacts would be less than significant.

Mitigation Measures

Implementation of the alternative would result in a less than significant impact with respect to the exposure of sensitive receptors to excessive carbon monoxide hotspots and toxic air contaminants. No mitigation is required.

Significance after Mitigation

No mitigation measures are required. This impact would be less than significant.

6.4 Objectionable Odors

Impact Analysis

Construction associated with implementation of the Convair Lagoon Alternative could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. According to the Ventura County Air Pollution Control District (VCAPCD), stationary land uses that generate objectionable odors may create a nuisance to receptors up to two miles away from the source (VCAPCD 2003) include wastewater treatment plants, petroleum refineries, and dairy and feed lots, among other industrial and agricultural uses. Construction emissions do not result in odors nearly as strong as these land uses; therefore, a two mile screening threshold is conservative for this analysis. The nearest existing sensitive receptor to the construction site are the residences located approximately 0.8 mile from the Alternative site, and the Spanish Landing Park, located approximately 0.9 mile west of Convair Lagoon, that may be exposed to temporary nuisance odors from construction. Not all construction equipment would be operating at once, and would be located throughout the construction and staging areas, so that the potential for a particular receptor to be exposed to odors during construction may not occur. Therefore, nuisance odors would be intermittent and would cease upon the completion of construction. Additionally, visitors to the park would only be exposed to odors for the short period of time while they are using the park facilities. The residences are currently exposed to sources of exhaust odors from the major roadways between the residences and the Alternative site, including Pacific Highway and Interstate 5. Therefore, construction would not expose a substantial number of people to new nuisance odors. Land uses immediately surrounding the construction area are the San Diego International Airport, the United States North Harbor Drive Coast Guard Facility, and a rental car parking lot. These land uses would not be sensitive to intermittent diesel odors because they are not considered sensitive receptors. Therefore, similar to the Proposed Project, impacts associated with nuisance odors from diesel exhaust would not be significant under the Convair Lagoon Alternative.

Similar to the proposed project, approximately 15 percent of dredged contaminated sediment would require dewatering as part of the Convair Lagoon Alternative. Additionally, dredged sediment from the Convair Lagoon Site for containment barrier construction would be stockpiled during construction of the barrier. It is anticipated that the dredged sediment from both sites will contain organic materials and that the decomposition of the organic matter may generate unpleasant odors. Therefore, similar to the Proposed Project, the dredged material may result in a significant temporary odor impact in the vicinity of the dredging and dredge drying operations.

The CARB's Air Quality and Land Use Handbook identifies a list of the most common sources of odor complaints received by local air districts. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The alternative proposes the development of a CDF. The contaminated sediment contains organic matter that may emit odors if it would be exposed to the air and allowed to decay. However, upon completion of CDF construction, the sediment would be completely contained within an asphalt-paved, undeveloped parcel of land located approximately 10 feet MLLW. Paved lots do not generate objectionable odors. Therefore, the alternative would not generate objectionable odors and odor impacts would be less than significant.

Mitigation Measures

Implementation of Shipyard Sediment Site Mitigation Measure 10 described in the Air Quality Analysis for the Shipyard Sediment Project would require the application of a mixture of Simple Green and water to the excavated sediment as part of odor management to accelerate the decomposition process and shorten the duration of odor emissions. Dewatering would take place in the same location as the Proposed Project; therefore, potential odor impacts as a result of the Convair Lagoon Alternative are also expected to be less than significant due to the distance between the proposed dewatering pad areas from the nearest sensitive receptors. However, similar to the Proposed Project, this impact would remain a temporary significant and unavoidable impact because it is difficult to predict the nature and duration of odor emissions from decomposition.

Significance after Mitigation

Similar to the Proposed Project, Shipyard Sediment Site Project Mitigation Measure 10 would reduce the duration of odor impacts, but not to a less than significant level. This impact would be a temporarily significant and unavoidable.

6.5 Cumulative Impacts

Consistency with Applicable Air Quality Plans

The geographic context for the analysis of cumulative impacts relative to criteria air pollutants is the SDAB. The RAQS and SIP are intended to address cumulative impacts in the SDAB based on future growth predicted by SANDAG in the 2030 Regional Growth Forecast Update. SANDAG uses growth projections from the local jurisdictions' adopted general plans; therefore, development consistent with the applicable general plan would be generally consistent with the growth projections in the air quality plans. Cumulative development would generally not be expected to result in a significant impact in terms of conflicting with RAQS because the cumulative projects would be required to demonstrate that the proposed development is consistent with local planning documents. However, some projects would involve plan amendments that would exceed the growth assumptions in the planning document and RAQS. For example, the North Embarcadero Port Master Plan Amendment, listed in Table 5.7.3-1, Cumulative Projects in the Vicinity of the Convair Lagoon Alternative, is a Port Master Plan Amendment that proposes a variety of land uses changes. Therefore, cumulative development in the SDAB would have the potential to exceed the growth assumptions in the RAQS and result in a conflict with applicable air quality plans. The Convair Lagoon Alternative includes a PMPA amendment that would change the land uses over the 10-acre water portion of the site. However, the analysis of the PMPA, described above under Section 6.1, concluded that it would not exceed the SANDAG growth projections. Therefore, the Convair Lagoon Alternative would not result in a cumulatively considerable contribution to a potentially significant cumulative impact.

Consistency with Air Quality Standards

The geographic context for the analysis of cumulative impacts relative to criteria air pollutants is the SDAB. As noted within Section 4.4, the SDAB is designated as being in non-attainment for PM_{10}, $PM_{2.5}$, and ozone. Therefore, the baseline cumulative impact to the SDAB due to air pollution from stationary and mobile source emissions associated with basin-wide polluting activities is significant.

The San Diego Water Board does not have thresholds for air quality standards and therefore, thresholds from the City of San Diego were considered. The City of San Diego recommends applying the CAAQS as the significance threshold for cumulative impacts where accepted methodology exists. However, the City has no accepted methodology, nor has the District or the San Diego Water Board recommended a methodology for determining a project's impacts related to the CAAQS. However, the County of San Diego has adopted a methodology for addressing cumulative impacts in its Guidelines for Determining Significance – Air Quality, which will be used for this analysis. The County's cumulative impact methodology states that a project's construction emissions would be considered cumulatively considerable if the project would result in significant direct emissions of PM_{10}, $PM_{2.5}$, VOCs, or NO_x, or if the proposed project's emissions would combine with emissions from a nearby simultaneous construction project to exceed the direct impact significance thresholds for these pollutants. The significance thresholds for PM_{10}, $PM_{2.5}$, VOCs, and NO_x are listed in above in Table 4.

Based on the Localized Significance Thresholds (LST) established by the SCAQMD (SCAQMD 2009), NO_x emissions decrease approximately 95 percent beyond approximately 675 meters (2,195 feet). Therefore, cumulative projects 2,195 feet from Convair Lagoon are excluded from the cumulative NO_x analysis. According to the LSTs, $PM_{2.5}$ and PM_{10} decrease approximately 95 percent by 500 meters (1,625 feet). SCAQMD has not established an LST for VOCs. However, VOCs disperse quickly (California Indoor Air Quality 2011); therefore, it is assumed that VOC emissions would decrease by 95 percent beyond 500 meters, similar to PM_{10} and $PM_{2.5}$. Therefore, cumulative projects 1,625 feet from Convair Lagoon are excluded from the cumulative PM_{10}, $PM_{2.5}$, and VOC analysis. As a result, cumulative projects within 675 meters (2,195 feet) of Convair Lagoon are considered in the analysis of cumulative construction emissions. During operation, a project would result in a significant cumulative impact if it would conflict with the RAQS or SIP during operation, or exceed the significance thresholds listed in Table 4.

The projects that are located within 2,195 feet of the Convair Lagoon Site are the North Side - Airfield Project 5 and West Side - Ground Transportation Project 5 at the San Diego International Airport, the Teledyne Ryan Demolition Project, and the Sunroad Harbor Island Hotel. The cumulative projects would require the use of heavy construction equipment and truck trips throughout the duration of the construction that would result in emissions of NOx, VOCs, PM_{10}, and $PM_{2.5}$. The proposed Alternative's direct impact would exceed the significance threshold for NO_x during the sediment transport and placement phase. Therefore, the proposed Alternative, individually and in combination with the proposed cumulative projects, would result in cumulatively considerable NO_x emissions.

Two cumulative projects are located within 1,625 feet of the Convair Lagoon Site: the Teledyne Ryan Demolition Project and the Sunroad Harbor Island Hotel. As discussed in Section 6.2, none of the phases of Alternative construction would exceed the significance thresholds for PM_{10}, $PM_{2.5}$, or VOCs. However, due to the heavy equipment and truck trips that would be required at the cumulative project sites, if construction of either project would occur simultaneously with the Convair Lagoon Alternative, PM_{10}, $PM_{2.5}$, and VOC emissions in the area between the sites, where emissions from both projects would combine, would have the potential to exceed the significance thresholds for PM_{10}, $PM_{2.5}$, or VOCs and result in a significant cumulative impact.

Shipyard Sediment Site Mitigation Measures 1 through 9 and mitigation measure AQ-1 would reduce criteria pollutant emissions, but not to a level less than cumulatively considerable. Therefore, similar to the Proposed Project, the Convair Lagoon Alternative would result in a cumulatively considerable contribution to a significant cumulative construction impact related to emissions of PM_{10}, $PM_{2.5}$, VOC, and NO_x emissions.

As discussed in Section 6.2, operational emissions associated with the Convair Lagoon Alternative would be negligible and would not violate any air quality standard. Additionally, as discussed in Section 6.1, the proposed alternative would not conflict with the RAQS or the SIP. Therefore, the Convair Lagoon Alternative would comply with the applicable air quality standards and air quality plans. The potential air emissions associated with operation of the proposed alternative would not adversely impact the ability of the SDAB to meet the CAAQS and NAAQS. Therefore, the Convair Lagoon Alternative would not result in a cumulatively considerable operational contribution to the local cumulative impact area.

Sensitive Receptors

Carbon Monoxide Hotspots

The geographic context for the analysis of cumulative impacts relative to exposure of sensitive receptors to carbon monoxide hot spots would be the nearby intersections along Harbor Drive. The Convair Lagoon site and most of the cumulative projects would be located on or close to Harbor Drive. Therefore, cumulative project traffic would generally be concentrated on Harbor Drive. Implementation of the cumulative projects would have the potential to reduce intersection operations on Harbor Drive to an LOS D or worse. However, as discussed in Section 6.3, the Convair Lagoon Alternative would only result in a temporary increase in traffic on Harbor Drive and would not contribute to long-term carbon monoxide levels. Similar to the Proposed Project, the Convair Lagoon Alternative would not result in a cumulatively considerable contribution to cumulative impact related to carbon monoxide hot spots.

Toxic Air Contaminants

The cumulative projects in the Convair Lagoon vicinity include hotels and expansion of the Convention Center, which would require diesel truck trips to deliver supplies such as food for hotel restaurants. Expanded operational capacity at the airport may also result in an increase in truck trips. However, truck trips to hotel and convention center uses would be intermittent and would not substantially increase diesel particulate emissions. The airport improvements do include new gates, but generally consist of demolition of facilities and providing new access routes and parking facilities. These improvements would not substantially increase truck trips above existing conditions. Construction of the CDF and construction activities at the Shipyard Sediment Site would require diesel equipment and truck trips during construction only. A maximum of 100 daily truck trips would be required during construction at the Convair Lagoon and Shipyard Sediment Sites. However, construction emissions would be temporary and would not result in a long term increase in exposure to TAC emissions. Additionally, the HRA prepared for the Proposed Project determined that a temporary increase of 100 daily truck trips would not exceed the SDAPCD criterion for cancer or chronic or acute health risks. Therefore, a cumulative impact to sensitive receptors from diesel particulate emissions would not occur.

Stationary sources of TAC emissions identified in CARB's Air Quality and Land Use Handbook (2005) are freeways, rail yards, ports, refineries, dry cleaners, and large gas dispensing facilities. Projects at the San Diego International Airport include expansion of a utility plant and co-generation facility. Several cumulative projects would also increase operations in the District, including the Commercial Fisheries Revitalization Plan and Port Pavilion on Broadway Pier Project. Therefore, the cumulative projects would have the potential to result in an increase in TAC emissions and a potentially significant cumulative impact would occur. However, the Convair Lagoon Alternative would consist of an undeveloped, above-ground parcel of land. It would not result in a new source of stationary TAC emissions. Therefore, the Convair Lagoon Alternative would not result in a cumulatively considerable contribution to a significant cumulative impact.

Objectionable Odors

Similar to the Proposed Project, odors resulting from the treatment of decomposing sediments under the proposed Alternative could result in temporary odor impacts. However, impacts relative to objectionable odors are limited to the area immediately surrounding the odor source and are not cumulative in nature because the air emissions that cause odors disperse beyond their source. As the emissions disperse, the odor becomes less and less detectable. Additionally, as discussed above in Section 6.4, following construction the CDF would consist of undeveloped land and would not result in a source of odors. None of the proposed cumulative projects propose development that is a typical source of odor complaints. Therefore, the Convair Lagoon Alternative, in combination with other cumulative projects, would not result in a cumulatively significant impact associated with objectionable odors.

6.6 Mitigation Measures

Mitigation Measures 1 through 10 identified for the Shipyard Sediment Site Project would also be implemented under the Convair Lagoon Alternative to reduce nitrogen oxide emissions and shorten the duration of exposure to odors. Additionally, mitigation measure AQ-1 would be implemented to reduce nitrogen oxide emissions during Phase 4 of Alternative construction.

AQ-1 **Prohibit Tug Boat Idling**. The applicant responsible for the tug boat operation shall ensure that tug boats not be allowed to idle during any barge loading and unloading activities. Tug boat engines shall be shut off once the barge is in place for sediment loading and unloading.

6.7 Level of Significance After Mitigation

Implementation of Mitigation Measures 1 though 10 and Mitigation Measure AQ-1 would reduce temporary impacts related to nitrogen oxide emissions and odors during Phase 4 of Alternative construction, but not to a less than significant level. These temporary impacts would be significant and unavoidable.

7.0 Conclusions

7.1 Construction

Construction of the Convair Lagoon Alternative would not conflict with or obstruct implementation of the RAQS or SIP or expose sensitive receptors to substantial pollutant concentrations. With the exception of transport of sediment from the Shipyard Sediment Site to the CDF, no construction activities would exceed the significance thresholds for criteria pollutants. Phase 4 of the Alternative, which would include transport and placement activities at the CDF and construction activities at the Shipyard Sediment Site, would exceed the significance threshold for nitrogen oxides. Implementation of Shipyard Sediment Site Mitigation Measures 1 though 9 and Mitigation Measure AQ-1 would reduce nitrogen oxide emissions, but not to below the significance threshold. Dewatering activities would have the potential to expose nearby sensitive receptors to objectionable odors. Mitigation Measure 10 identified for the Shipyard Sediment Site Project would reduce impacts, but not to a less than significant level.

7.2 Operation

Following construction, the CDF would consist of an undeveloped, above-ground parcel of land. It would not conflict with or obstruct implementation of the RAQS or SIP, violate any air quality standard, expose sensitive receptors to substantial pollutant concentrations, generate odors, or result in a cumulatively considerable net increase in emissions of a criteria pollutant. All impacts would be less than significant.

8.0 References

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Air Quality Data

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\22242\Desktop\Shipyard\Shipyard 05 27 11.urb924

Project Name: Shipyard

Project Location: California State-wide

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	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5	PM2.5	CO2
2013 TOTALS (lbs/day unmitigated)	18.87	194.99	88.91	0.31	20.38	8.19	26.40	4.30	7.53	9.83	36,726.38
2014 TOTALS (lbs/day unmitigated)	3.86	35.32	27.08	0.05	0.19	1.74	1.93	0.07	1.60	1.66	7,209.77

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2013-1/31/2013 Active Days: 23	4.67	38.41	19.36	0.00	0.57	1.66	2.22	0.12	1.52	1.64	5,529.18
Demolition 01/01/2013-02/28/2013	4.67	38.41	19.36	0.00	0.57	1.66	2.22	0.12	1.52	1.64	5,529.18
Fugitive Dust	0.00	0.00	0.00	0.00	0.56	0.00	0.56	0.12	0.00	0.12	0.00
Demo Off Road Diesel	4.63	38.34	18.05	0.00	0.00	1.65	1.65	0.00	1.52	1.52	5,375.79
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.04	0.07	1.31	0.00	0.01	0.00	0.01	0.00	0.00	0.01	153.39
Time Slice 2/1/2013-2/28/2013 Active Days: 20	15.78	158.32	72.12	0.09	20.38	6.02	26.40	4.30	5.53	9.83	24,116.27
Building 02/01/2013-05/31/2013	3.81	27.89	22.47	0.03	0.13	1.38	1.51	0.04	1.26	1.31	5,299.49
Building Off Road Diesel	2.72	15.81	9.50	0.00	0.00	0.91	0.91	0.00	0.83	0.83	1,881.67

Building Vendor Trips	0.98	11.89	9.38	0.03	0.11	0.46	0.57	0.04	0.42	0.46	2,996.67
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.15
Demolition 01/01/2013-02/28/2013	4.67	38.41	19.36	0.00	0.57	1.66	2.22	0.12	1.52	1.64	5,529.18
Fugitive Dust	0.00	0.00	0.00	0.00	0.56	0.00	0.56	0.12	0.00	0.12	0.00
Demo Off Road Diesel	4.63	38.34	18.05	0.00	0.00	1.65	1.65	0.00	1.52	1.52	5,375.79
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Worker Trips	0.04	0.07	1.31	0.00	0.01	0.00	0.01	0.00	0.00	0.01	153.39
Fine Grading 02/01/2013-05/31/2013	7.30	92.02	30.28	0.06	19.69	2.99	22.67	4.14	2.75	6.88	13,287.61
Fine Grading Dust	0.00	0.00	0.00	0.00	19.48	0.00	19.48	4.07	0.00	4.07	0.00
Fine Grading Off Road Diesel	5.08	61.29	18.82	0.00	0.00	1.84	1.84	0.00	1.69	1.69	7,236.49
Fine Grading On Road Diesel	2.20	30.70	10.80	0.06	0.21	1.14	1.35	0.07	1.05	1.12	5,974.42
Fine Grading Worker Trips	0.02	0.03	0.66	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.69
Time Slice 3/1/2013-4/1/2013 Active Days: 22	11.11	119.91	52.76	0.09	19.82	4.36	24.18	4.18	4.01	8.19	18,587.10
Building 02/01/2013-05/31/2013	3.81	27.89	22.47	0.03	0.13	1.38	1.51	0.04	1.26	1.31	5,299.49
Building Off Road Diesel	2.72	15.81	9.50	0.00	0.00	0.91	0.91	0.00	0.83	0.83	1,881.67
Building Vendor Trips	0.98	11.89	9.38	0.03	0.11	0.46	0.57	0.04	0.42	0.46	2,996.67
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.15
Fine Grading 02/01/2013-05/31/2013	7.30	92.02	30.28	0.06	19.69	2.99	22.67	4.14	2.75	6.88	13,287.61
Fine Grading Dust	0.00	0.00	0.00	0.00	19.48	0.00	19.48	4.07	0.00	4.07	0.00
Fine Grading Off Road Diesel	5.08	61.29	18.82	0.00	0.00	1.84	1.84	0.00	1.69	1.69	7,236.49
Fine Grading On Road Diesel	2.20	30.70	10.80	0.06	0.21	1.14	1.35	0.07	1.05	1.12	5,974.42
Fine Grading Worker Trips	0.02	0.03	0.66	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.69
Time Slice 4/2/2013-5/31/2013 Active Days: 44	15.11	150.39	76.14	0.12	19.96	5.84	25.80	4.23	5.36	9.60	24,389.83
Building 02/01/2013-05/31/2013	3.81	27.89	22.47	0.03	0.13	1.38	1.51	0.04	1.26	1.31	5,299.49
Building Off Road Diesel	2.72	15.81	9.50	0.00	0.00	0.91	0.91	0.00	0.83	0.83	1,881.67

Building Vendor Trips	0.98	11.89	9.38	0.03	0.11	0.46	0.57	0.04	0.42	0.46	2,996.67
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.15
Building 04/02/2013-05/31/2013	3.81	27.89	22.47	0.03	0.13	1.38	1.51	0.04	1.26	1.31	5,299.49
Building Off Road Diesel	2.72	15.81	9.50	0.00	0.00	0.91	0.91	0.00	0.83	0.83	1,881.67
Building Vendor Trips	0.98	11.89	9.38	0.03	0.11	0.46	0.57	0.04	0.42	0.46	2,996.67
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.15
Fine Grading 02/01/2013-05/31/2013	7.30	92.02	30.28	0.06	19.69	2.99	22.67	4.14	2.75	6.88	13,287.61
Fine Grading Dust	0.00	0.00	0.00	0.00	19.48	0.00	19.48	4.07	0.00	4.07	0.00
Fine Grading Off Road Diesel	5.08	61.29	18.82	0.00	0.00	1.84	1.84	0.00	1.69	1.69	7,236.49
Fine Grading On Road Diesel	2.20	30.70	10.80	0.06	0.21	1.14	1.35	0.07	1.05	1.12	5,974.42
Fine Grading Worker Trips	0.02	0.03	0.66	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.69
Fine Grading 04/02/2013-05/31/2013	0.19	2.59	0.91	0.00	0.02	0.10	0.11	0.01	0.09	0.09	503.25
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading On Road Diesel	0.19	2.59	0.91	0.00	0.02	0.10	0.11	0.01	0.09	0.09	503.25
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 6/3/2013-11/29/2013 Active Days: 130	**18.87**	**194.99**	**88.91**	**0.31**	1.18	**8.19**	9.37	0.39	**7.53**	7.92	**36,726.38**
Building 06/03/2013-11/29/2013	7.81	40.39	34.50	0.03	0.13	2.43	2.55	0.04	2.23	2.27	6,634.56
Building Off Road Diesel	6.72	28.30	21.52	0.00	0.00	1.95	1.95	0.00	1.80	1.80	3,216.75
Building Vendor Trips	0.98	11.89	9.38	0.03	0.11	0.46	0.57	0.04	0.42	0.46	2,996.67
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.15
Fine Grading 06/03/2013-11/29/2013	11.06	154.61	54.41	0.28	1.05	5.76	6.82	0.35	5.30	5.65	30,091.82
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading On Road Diesel	11.06	154.61	54.41	0.28	1.05	5.76	6.82	0.35	5.30	5.65	30,091.82

Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/2/2013-12/31/2013 Active Days: 22	4.18	39.02	28.46	0.05	0.19	1.98	2.17	0.07	1.82	1.88	7,209.46
Building 12/02/2013-03/31/2014	3.50	29.57	25.14	0.03	0.13	1.63	1.76	0.04	1.49	1.54	5,370.61
Building Off Road Diesel	2.41	17.49	12.16	0.00	0.00	1.15	1.15	0.00	1.06	1.06	1,952.80
Building Vendor Trips	0.98	11.89	9.38	0.03	0.11	0.46	0.57	0.04	0.42	0.46	2,996.67
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.15
Fine Grading 12/02/2013-03/31/2014	0.68	9.45	3.32	0.02	0.06	0.35	0.42	0.02	0.32	0.35	1,838.85
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading On Road Diesel	0.68	9.45	3.32	0.02	0.06	0.35	0.42	0.02	0.32	0.35	1,838.85
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/1/2014-3/31/2014 Active Days: 64	3.86	35.32	27.08	0.05	0.19	1.74	1.93	0.07	1.60	1.66	7,209.77
Building 12/02/2013-03/31/2014	3.25	27.02	24.10	0.03	0.13	1.43	1.56	0.04	1.32	1.36	5,370.92
Building Off Road Diesel	2.25	16.38	12.11	0.00	0.00	1.02	1.02	0.00	0.94	0.94	1,952.80
Building Vendor Trips	0.89	10.47	8.67	0.03	0.11	0.41	0.51	0.04	0.37	0.41	2,996.84
Building Worker Trips	0.10	0.17	3.33	0.00	0.02	0.01	0.03	0.01	0.01	0.02	421.28
Fine Grading 12/02/2013-03/31/2014	0.61	8.30	2.97	0.02	0.06	0.31	0.37	0.02	0.28	0.30	1,838.85
Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading On Road Diesel	0.61	8.30	2.97	0.02	0.06	0.31	0.37	0.02	0.28	0.30	1,838.85
Fine Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 4/1/2014-4/29/2014 Active Days: 21	3.48	14.86	10.50	0.01	0.03	1.12	1.15	0.01	1.03	1.04	1,904.84
Asphalt 04/01/2014-04/29/2014	3.48	14.86	10.50	0.01	0.03	1.12	1.15	0.01	1.03	1.04	1,904.84
Paving Off-Gas	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.99	12.21	7.96	0.00	0.00	1.02	1.02	0.00	0.94	0.94	1,131.92

Paving On Road Diesel	0.19	2.56	0.92	0.01	0.02	0.09	0.11	0.01	0.09	0.09	568.34
Paving Worker Trips	0.05	0.08	1.62	0.00	0.01	0.01	0.02	0.00	0.00	0.01	204.58

Phase Assumptions

Phase: Demolition 1/1/2013 - 2/28/2013 - Demolition of existing lagoon features

Building Volume Total (cubic feet): 0

Building Volume Daily (cubic feet): 0

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (350 hp) operating at a 0.57 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (300 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 2/1/2013 - 5/31/2013 - Dredging for jetty construction and import of material for construction

Total Acres Disturbed: 2.27

Maximum Daily Acreage Disturbed: 0.03

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 162.5 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1483.96

Off-Road Equipment:

1 Cranes (1200 hp) operating at a 0.5 load factor for 8 hours per day

2 Generator Sets (570 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Fine Grading 4/2/2013 - 5/31/2013 - Dredging for storm drains

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 125

Off-Road Equipment:

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Phase: Fine Grading 6/3/2013 - 11/29/2013 - Export of Dredged sediment to Kettleman

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 7474.35

Off-Road Equipment:

Phase: Fine Grading 12/2/2013 - 3/31/2014 - Used to estimate import for cap. Equipment list is split between this and the construction phase.

Total Acres Disturbed: 0

Maximum Daily Acreage Disturbed: 0

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 456.74

Off-Road Equipment:

Phase: Paving 4/1/2014 - 4/29/2014 - Type Your Description Here

Acres to be Paved: 10

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

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

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 2/1/2013 - 5/31/2013 - Construction of Jetty

Off-Road Equipment:

2 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Pumps (50 hp) operating at a 0.6 load factor for 8 hours per day

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

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Phase: Building Construction 4/2/2013 - 5/31/2013 - Construction of storm drain extensions

Off-Road Equipment:

2 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Pumps (50 hp) operating at a 0.6 load factor for 8 hours per day

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

Phase: Building Construction 6/3/2013 - 11/29/2013 - Placement of fill

Off-Road Equipment:

2 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

8 Pumps (50 hp) operating at a 0.6 load factor for 8 hours per day

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

Phase: Building Construction 12/2/2013 - 3/31/2014 - Construction of cap

Off-Road Equipment:

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

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

Unmitigated Emmissions

Construction Phase	Hours/Day	Number of Boats	CO		VOC		NOx		SOx		PM10		PM2.5	
			Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)
Installation of Jetty	8	1	1.899	15.192	0.413	3.304	10.141	81.128	0.158	1.264	0.326	2.608	0.3	2.4
Transport of Sediment	8	4	1.899	60.768	0.413	13.216	10.141	324.512	0.158	5.056	0.326	10.432	0.3	9.6

*All based on a 1,650 HP tug boat

Sediment Transport With Implementation of Mitigation Measure AQ-1

Construction Phase	Hours/Day	Number of Boats	CO		VOC		NOx		SOx		PM10		PM2.5	
			Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)	Emissions Factor (lbs/hour)	Emissions (lbs/day)
Transport of Sediment	4	4	1.899	30.384	0.413	6.608	10.141	162.256	0.158	2.528	0.326	5.216	0.3	4.8