APPENDIX O

WATER QUALITY TECHNICAL STUDY SHIPYARD SEDIMENT ALTERNATIVE ANALYSIS CONVAIR LAGOON

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WATER QUALITY TECHNICAL STUDY
SHIPYARD SEDIMENT
ALTERNATIVE ANALYSIS
CONVAIR LAGOON
SAN DIEGO, CALIFORNIA

PREPARED FOR:
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May 27, 2011
Project No. 106997003

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Ms. Wentzelee Botha
Brown & Winters
120 Birmingham Drive, Suite 110
Cardiff By The Sea, California 92007

Subject: Water Quality Technical Study
Shipyard Sediment Alternative Analysis
Convair Lagoon
San Diego, California

Dear Ms. Botha:

At your request, we have prepared this Water Quality Technical Report for the above-referenced project. The report has been prepared in accordance with applicable portions of our proposal, P-20189, dated March 11, 2011. This report presents our findings and conclusions regarding overall water quality conditions at the site, significance of potential impacts, potential mitigation measures, and constraints potentially affecting the project.

We appreciate the opportunity to be of service to you on this project.

Sincerely,
NINYO & MOORE

Lisa Bestard, REA
Senior Project Environmental Scientist

Stephan A. Beck, PG 4375
Manager, Environmental Sciences Division

LB/SB/gg

Distribution: (1) Addressee

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1. INTRODUCTION

This Water Quality Technical Report (WQTR) has been prepared as part of the Shipyard Sediment Alternative Analysis, Convair Lagoon, San Diego, California (Figure 1). Convair Lagoon Alternative involves the construction and filling of a confined disposal facility (CDF) for the placement of contaminated marine sediment dredged from the Shipyard Sediment Site. For a detailed project description, please reference the Alternative Description section in the Administrative Draft Program Environmental Impact Report (EIR), Shipyard Sediment Remediation Project, San Diego Bay.

The purpose of this WQTR is to evaluate overall water quality conditions at the site, identify potential significant impacts to water quality from the project, describe potential mitigation measures, and identify constraints that may potentially affect the project (e.g., permitting, dredge material effluent quality). The report document, with respect to the California Environmental Quality Act (CEQA), the significance of impacts from the proposed project with respect to water quality, and to discuss measures that can be implemented to reduce or mitigate the potential impacts.

A Draft EIR is currently being prepared by others to evaluate the proposed dredging and capping project at the Shipyard Sediment Site (LSA, 2011). The Draft WQTR prepared for the Shipyard Sediment Site EIR provides a detailed description of the regulatory setting and regional site conditions (Geosyntec, 2011). This WQTR provides a summary of the applicable information presented in the Geosyntec WQTR; therefore, for a more detailed description, please refer to the Geosyntec WQTR.

2. SCOPE OF WORK

Ninyo & Moore's scope of work for this WQTR included the activities listed below.

- Review physical setting information (e.g., topographic, geologic maps, groundwater data) pertaining to the project area.
- Review of readily available maps, reports, and other water quality documents pertaining to the project area, including, but not limited to, clean up and abatement orders (CAOs), waste discharge requirements (WDRs), and technical reports prepared by others.
- Perform a site reconnaissance.

- Prepare this WQTR report presenting a summary of our findings and conclusions regarding overall water quality conditions at the site, significance of potential impacts, potential mitigation measures, and constraints potentially affecting the project.

3. SITE LOCATION, DESCRIPTION, AND HISTORY

The following sections summarize the sit location, description, and background:

3.1. Site Location

The Convair Lagoon Alternative site consists of approximately 15 acres of water and land located within the San Diego Bay in the City of San Diego, California. The site is bounded by the San Diego Bay to the south; North Harbor Drive, a greenway, and the San Diego International Airport to the north; the United States North Harbor Drive Coast Guard Facility (U.S. Coast Guard Station) to the east; and a rental car parking lot to the west (Figure 1). The site is within the jurisdiction of the San Diego Unified Port District (District) and is located in Planning District 2 (Harbor Island/Lindbergh Field), Planning Subarea 24 (East Basin Industrial) of the 2010 Port Master Plan.

3.2. Site Description

The Convair Lagoon Alternative site is an area of the San Diego Bay that consists of open water, submerged facilities, and land. The land facilities on the Convair Lagoon Alternative site are located along the periphery, with the exception of the southern boundary, which is San Diego Bay. Land facilities include an asphalt paved area along the northern boundary, parallel to North Harbor Drive; a concrete seawall or rip-rap located along the north, east, and west shorelines; and an abandoned concrete sea plane marine ramp located along the southwesterly interface between the land and water. The western and northwestern part of the site is a rental car parking lot.

The submerged facilities on the Convair Lagoon Alternative site include a sand cap, rock berm, and storm drains. The submerged area of the site includes an approximate 7-acre sand cap that was designed to isolate sediment contamination associated with former Teledyne

Ryan (TDY) Aeronautical operations. In addition to the sand cap, submerged facilities on the site include a subsurface rock berm and multiple submerged storm drains. The submerged rock berm transects the site from the northwest corner to the southeast corner in an "L" shape to contain the existing sand cap. On the northern shoreline, a 60-inch diameter storm drain, a 54-inch diameter storm drain, and two 30-inch diameter storm drains outlet into the lagoon. The two 30-inch diameter storm drains, which served the former TDY facility, are abandoned in place or discharge runoff from Harbor Drive. On the western shoreline, three smaller storm drains outlet into the lagoon.

The adjacent surrounding areas consist of a greenway with a bicycle path is located to the north, parallel to North Harbor Drive. Directly west of the site is a rental car parking lot, while to the east is the U.S. Coast Guard Station. The San Diego Bay and a boat anchorage area (Anchorage A-9) are located to the south of the site.

3.3. Background

The surrounding shoreline of Convair Lagoon was previously shallow portions of the San Diego Bay that were filled with dredge sediment. The earliest information regarding dredging and fill operations in the vicinity of the alternative site is from 1921, when the northeastern shoreline of the bay was between present-day Pacific Highway and California Street. In the 1920s and 1930s, the area north of present-day West Laurel Street and North Harbor Drive, encompassing the eastern portion of the present-day San Diego Airport, was filled with material dredged from the bay. A dredging pipeline, (later converted to a 54-inch reinforced concrete storm drain), extended from the northern portion of the filled land, south to the bay, and discharged into the Convair Lagoon. In the mid-1930s, dredging operations filled the area where the U.S. Coast Guard Station is located east and adjacent to the alternative site. By 1939, a concrete pier was constructed above the previously mentioned storm drain on the site. In the early 1940s, dredging operations filled the area west of the site. Convair Lagoon is the unfilled area between the U.S. Coast Guard Station and the filled area to the west of the site. Throughout the years, multiple improvements to the site have been constructed and removed, including additional storm drains and other piers.

On October 17, 1986, the San Diego Regional Water Quality Control Board (San Diego Water Board) Executive Officer issued "*Cleanup and Abatement Order No. 86-92 for Teledyne Ryan Aeronautical near Lindbergh Field, San Diego County*" for the discharge of polychlorinated biphenyl (PCBs), several trace metals, and volatile organic compounds to the storm drains on TDY property and to the Convair Lagoon portion of the San Diego Bay. CAO 86-92, as amended, required TDY to construct a sand cap on the San Diego Bay bottom in Convair Lagoon to isolate the existing sediment contamination within the lagoon from the environment.

In 1996, the PCB contamination in Convair Lagoon was remediated by the Convair Lagoon Capping Project. During the PCB remediation, the existing subsurface rock berm was constructed (Figure 2) and a sand cap was placed behind the rock berm. The majority of the existing sand cap is submerged, although construction of the cap converted approximately 1,400 square feet of an intertidal area to upland.

Recent bay deposits underlie the sand cap and PCB contaminated sediment. Bay deposit materials typically consist of interlayered dark gray, wet, loose, fine silty sand and silt and soft, sandy clay. Old paralic deposits underlie the bay deposits and typically consist of medium dense sand and stiff clay.

Subsequent to installation of the sand cap over the PCB contaminated sediments in Convair Lagoon, monitoring has discovered PCB contamination on top of the cap, presumably the result of contaminated sediment coming from the 60-inch storm drain. In response to this discovery, the San Diego Water Board issued CAO R9-2004-0258, as amended, which addresses the cleanup and abatement of wastes discharged to land at the former TDY site. According to the CAO, significant wastes discharged to soil and groundwater at the site must be identified and cleaned up, and the discharge of any wastes to Convair Lagoon and San Diego Bay must be abated. A subsequent enforcement order will be necessary to assess and cleanup wastes discharged from landside sources to the marine sediments in Convair Lagoon and San Diego Bay. The CAO states that soil and groundwater must be cleaned up and waste discharges abated prior to conducting remedial actions in Convair Lagoon and

San Diego Bay to prevent potential recontamination of the marine sediments in the bay. Therefore, the Convair Lagoon Alternative would commence construction once the PCB source is eliminated.

Convair Lagoon is associated with two active CAOs, 86-92 and R9-2004-0258, and WDR Order No. 98-21. A brief summary of these documents is provided below.

- **CAO 86-92 and Amendments:** The CAO was issued on October 17, 1986 to TDY for the discharge of PCBs, metals, and volatile organic compounds (VOCs) into the storm water conveyance system (SWCS) on the facility that discharged into Convair Lagoon (Figure 2). Sediments in the lagoon were found to contain PCBs at concentrations ranging from 1 to 1,800 milligrams per kilogram (mg/kg) as dry weight from the surface to depths of 10 feet. Between 1986 and 1998, PCB wastes were removed from the SWCS at the facility. The CAO required a sand cap be constructed to isolate the contaminated sediments from the environment. An approximately 7-acre sand cap was completed at the site in 1998 that covered areas where sediments contained PCBs at concentrations exceeding 4.6 mg/kg as dry weight. As part of the capping project, approximately 1,400 square feet of intertidal land was converted to upland.

- **WDR 98-21:** Subsequent to the construction of the sand cap under CAO 86-92, the Regional Water Quality Control Board (RWQCB) issued WDR 98-21, Closure and Post-Closure maintenance of the Convair Lagoon Sand Cap, which regulates the sand cap and associated monitoring, maintenance, and, repairs. The WDR states that the action level to trigger repair and or investigation of the cap or cleaning of the SWCS at the TDY facility is 4.6 mg/kg dry weight in the sediments. The document also provides a list of water quality objectives that apply to the water within Convair Lagoon. Some of objectives provided are for dissolved oxygen, pH, oil and grease, suspended sediment load/discharge rate, turbidity, and toxicity.

- **CAO R9-2004-0258 and Amendments:** The CAO states that PCBs, VOCs, and heavy metals from the former manufacturing activities at the TDY facility have, "caused and threaten to cause conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants to San Diego Bay." The document also states that PCB concentrations have continued to be found in the SWCS at the TDY facility even after clean out and replacement of portions of the system. In addition, PCBs discharged from the SWCS are being deposited on the surface of the sand cap at Convair Lagoon. PCBs have been detected on the surface of the sand cap at concentrations ranging from 1.77 to 20.44 mg/kg.

  A tentative addendum (number 4) to the CAO was issued on April 13, 2011, which states that there are three areas of concern with regard to the transport of wastes from the TDY facility to Convair Lagoon: 1) Convair Lagoon shoreline groundwater, 2) sediment in the

SWCS that empties into Convair Lagoon/San Diego Bay, and 3) VOC-impacted groundwater seeping into the 54-inch and 60-inch storm drains. Although sediment transport to the lagoon is a concern, the storm drain inlets and laterals on the TDY facility were capped with concrete; therefore, no additional input of sediment to the SWCS from the TDY facility is known to be occurring. However, there is the potential for PCB impacted sediments to be transported to Convair Lagoon from sites upgradient of the TDY facility that continue to discharge into the SWCS. In addition, there is a potential risk to human health associated with the incidental ingestion of or contact with the sediments in the lagoon. The addendum requires that visible sediment should be removed from within the 60-inch storm drain and associated energy dissipater.

4. HYDROGRAPHIC SETTING

This section summarizes the regional hydrogeologic setting and site hydrogeologic conditions.

4.1. Topography

The landside portions of the site are located at approximately 10 feet above mean sea level (United States Geological Survey [USGS], 1996) or approximately 12 feet mean lower low water (MLLW). The floor of the lagoon ranges in elevation from approximately 10 feet above MLLW to -15 feet MLLW (Ninyo & Moore, 2011).

4.2. Surface Waters

A portion of the site is within the San Diego Bay. According to the State Water Resources Control Board (SWRCB) Water Quality Control Plan for the San Diego Basin (Basin Plan), the San Diego Bay has been assigned beneficial uses for industrial service supply, navigation, contact and non-contact water recreation, commercial and sport fishing, preservation of biological habitats of special significance, estuarine habitat, wildlife habitat, rare/threatened/endangered species, marine habitat, migration of aquatic organisms, spawning/reproduction/early development, and shellfish harvesting (SWRCB, 1994).

The SWRCB's California Ocean Plan states that the beneficial uses of ocean waters of the state include the same beneficial uses listed in the Basin Plan with the addition of mariculture and excluding estuarine and wildlife habitats (SWRCB, 2005).

4.3. Groundwater

According to the SWRCB Water Quality Control Plan for the San Diego Basin, the project area is located within the Lindbergh Hydrologic Sub Area (908.21) of the San Diego Mesa Hydrologic Area within the Pueblo San Diego Hydrologic Unit (907.00). Groundwater in this hydrologic subarea has been excepted from municipal supply and does not currently have existing or potential beneficial uses (SWRCB, 1994).

There are eight groundwater monitoring wells located on the landside portion of the site (MWCL-1 through MWCL-8R). The monitoring wells are currently being monitored under CAO R9-2004-0258, associated with former TDY located adjacent to the north of the site beyond Harbor Drive (2701 North Harbor Drive). Based on a review of the October 2010 monitoring report on file on the SWRCB GeoTracker database, depth to groundwater at the site generally ranges from 6 to 11 feet below ground surface and generally flows south toward Convair Lagoon (Geosyntec Consultants, 2010).

5. REGULATORY SETTING

The following provides a summary of water-quality related regulations that apply to the site. For a more detailed description see Geosyntec's WQTR for the Shipyard Sediment Site (Geosyntec, 2011).

- **Clean Water Act (CWA):** The CWA is a piece of Federal legislation that protects the waters of the U.S. from pollution by setting water quality standards for surface water and limiting discharge of effluents into those waters.
    - Section 404 of the CWA is the primary Federal statute regulating the discharge of dredged and/or fill material into waters of the U.S. This project will require a 404 permit from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged sediments and fill to San Diego Bay.
    - Section 401 of the CWA requires certification from the State agency that the project will comply with water quality standards. This project will require a 401 permit from the RWQCB before a 404 permit can be obtained from the USACE.
    - Section 303(d) requires that impaired water bodies are identified and listed, after which a total maximum daily load (TMDL) must be developed for each contaminant. Convair Lagoon is within San Diego Bay, which is listed as a 303(d) impaired water body for PCBs. A TMDL for PCBs in San Diego is projected to be completed in 2019.

- **Rivers and Harbors Act, Section 10**: Requires USACE approval prior to the construction of a structure in or over navigable waters of the U.S. This project will require a Section 10 permit for the construction of the CDF.

- **Marine Protection, Research, and Sanctuaries Act of 1972, Section 103:** Requires authorization from the USACE for the transportation of dredged material for the purpose of dumping into ocean waters, where the dumping will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological system, or economic potentialities. A Section 103 permit will not be required because the site is landward of the California Territorial Sea Baseline (USGS/Boemre, 2011).

- **Porter-Cologne Water Quality Control Act:** The Porter-Cologne Act gives the SWRCB and RWQCB authority to protect water quality and also established reporting requirements for unintended discharges of hazardous substance, sewage, or petroleum products.

- **California Ocean Plan:** The SWRCB's California Ocean Plan identifies beneficial uses for ocean waters of the State (see Section 5.2), establishes water quality objectives for bacterial, physical, chemical, and biological characteristics and radioactivity, and provides general requirements for the management of waste discharged to the ocean (SWRCB, 2005).

- **Basin Plan:** The SWRCB's Basin Plan is the State's implementation of the CWA through the Porter-Cologne Water Quality Control Act. The plan identifies beneficial uses (see Section 5) and water quality goals for waters of State, including ocean waters, enclosed bays and estuaries, and coastal lagoons (SWRCB, 1994).

- **National Pollutant Discharge Elimination System (NPDES) Program:** The CWA Section 402(p) establishes a framework for regulating municipal and storm water discharges under the NPDES program and requires that storm water associated with industrial activity that discharges directly to surface waters or indirectly through storm drains must be regulated by an NPDES permit. The site may be subject to two NPDES permits, as described below, or the site/project may be issued an individual permit by the RWQCB.

    - **Industrial Storm Water General Permit, Order 97-03-DWQ:** This NPDES permit regulates discharges associated with 10 categories of industrial activities. The permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP) and monitoring plan, which identifies potential sources of pollutants and the means to manage or reduce the storm water pollution from these sources (e.g., best management practices [BMPs]).

      The Unified Port District of San Diego (District) Environmental Services Department has prepared a Jurisdictional Urban Runoff Management Program Document (JURMP) for all areas under the jurisdiction of the District, in accordance with the requirements of San Diego Water Board Order No. 2007-0001 (NPDES Permit #CAS0108758), and serves as the District's Municipal Storm Water Permit. This document describes the activities that the District has undertaken, is undertaking, or will undertake, to reduce discharges of pol-

lutants and urban runoff flow to the municipal separate storm sewer system to the maximum extent practicable. The JURMP was developed to assist the District in identifying causes or contributions to water quality impacts, tracking urban runoff related activities, and to implement to the maximum extent practicable BMPs to reduce or eliminate pollutants from reaching receiving waters within the District's jurisdiction.

One component of the JURMP is to prepare and implement Jurisdictional Standard Urban Storm water Mitigation Plan (SUSMP). The SUSMP has been developed by the District to address post-construction urban runoff pollution from new development and redevelopment projects that fall under "priority development project" categories. The goal of the District's SUSMP is to develop and implement practicable policies to ensure to the maximum extent practicable that development does not increase pollutant loads from a project site and considers urban runoff flow rates, velocities and durations. This goal may be achieved through site-specific controls and/or drainage area-based or shared treatment controls. The SUSMP was developed to meet the requirements of the Countywide Model SUSMP, which was approved by the RWQCB on January 2, 2009.

- **Construction General Permit, Order 2009-0009-DWQ:** This NPDES permit is required for construction sites with total disturbed areas of 1 or more acres. Construction activities subject to the permit include grading, stockpiling, and excavation. The permit requires a SWPPP that must include a visual monitoring program, a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan, if the site discharges directly to a water body listed on the 303(d) list for sediment (e.g., San Diego Bay). The District's JURMP may satisfy the requirements for the Construction General Permit.

- **WDR 98-21:** WDR 98-21, Closure and Post-Closure maintenance of the Convair Lagoon Sand Cap, regulates the sand cap and associated monitoring, maintenance, and repairs. The WDR states that the action level to trigger repair and or investigation of the cap or cleaning of the SWCS at the TDY facility is 4.6 mg/kg dry weight in the sediments. The document also provides a list of water quality objectives that apply to the water within Convair Lagoon. Some of objectives provided are for dissolved oxygen, pH, oil and grease, suspended sediment load/discharge rate, turbidity, and toxicity. Although this WDR is currently in place for the site; however, the RWQCB may elect to issue an additional WDR for the site.

- **General WDRs for Construction Non-Storm Water Discharges:** The RWQCB may issue general WDRs to regulate the non-storm water, construction-related discharges from activities such as dewatering. The permit will include requirements for notifications, testing, and reporting of dewatering and testing-related discharges.

6. IMPACT ANALYSIS AND MITIGATION MEASURES

Sediments may be resuspended during dredging, fill placement, and barge loading/unloading operations, as well as through spillage, prop wash, and vessel anchoring. The sediments at the site are documented to contain PCBs and the dredged sediments from the Shipyard Sediment Site are documented to contain copper mercury, zinc, organotins, high molecular weight polynuclear aromatic hydrocarbons (PAHs), and PCBs (i.e., COCs). Therefore, potentially significant, but temporary impacts to benenficial uses in San Diego Bay may occur as a result of the resuspension of sediments that may be re-deoposited outside of the CDF area, conatimants that may dissolve into the water column and be available for uptake by marine organisms, and increased turbidity. The potential impacts to water quality include low dissolved oxygen, changes in pH, increased turbidity, and toxicity (i.e., from COCs). If one or more of the impacts described above occur during the project, it may impact the beneficial uses of San Diego Bay.

The filling operations will result in the conversion of approximatley 10 acres of intertidal and submerged lagoon areas into upland areas, which will alter the drainage patterns at the site and potentially increase the amount of surface run-off.

The potential impacts to water quality and mitigation measures are described below. Although a final project design has not yet been selected, the project description provides sufficient information to evaluate the impacts typical of proposed demolition, dredging, and filling activities.

6.1. Demolition Activities

Demolition of existing improvements (i.e., existing concrete pier, riprap and concrete mattress energy dissipaters, and concrete seaplane ramp) is anticipated as part of the project. The improvements are will be removed from the site or reused as fill material in deeper fill areas. Demolition will be conducted from the existing shoreline using tracked excavators with breaker hammers, loaders, and dump trucks and demolition debris will be removed from waters daily and stockpiled until disposal. However, sediments may be disturbed during the removal of submerged or partially submerged structures. Impacts and mitigations associated with the resuspension of sediments are discussed in Section 7.2.

Sediments may also be disturbed during the placement of debris as fill material. If the debris is utilized as fill material, the placement will occur after the construction of the containment barrier, which will minimize the potential impacts to water quality. Additional impacts and mitigation measures associated with the placement of fill is discussed in Section 7.5.

In addition to the mitigation measures discussed in Section 7.2 and 7.5, demolition activities will be scheduled during low tides, if feasible, to expose as much of the submerged structures as possible. The potentially significant impacts associated with the demolition activities are considered less than significant with the implementation of the SOPs, mitigation measures, permit requirements, and regulations described above and in Sections 7.2 and 7.5.

6.2. Dredging Activities

Dredging may be performed during construction of the containment barrier foundation. Dredged sediments may be utilized as fill material within the CDF area or it may be stored and dried on site prior to off-site disposal. If dredging is performed, the sediment will be dredged using an environmental clamshell bucket and either placed into sealed barges on the waterside or transported hydraulically (i.e., by pumped pressure) or by crane and clamshell from the adjacent shoreline into sediment containment areas. Barges would be unloaded using a crane-based clamshell bucket and transferred to a sediment containment area. If the dredged sediment requires off-site disposal, the material may be mixed with a drying agent to facility dewatering and drying. Once the material is sufficiently dry, the material would be loaded into covered trucks and hauled to the appropriate disposal facility.

Water quality may be temporarily impacted during dredging activities due to increased turbidity from sediment resuspension caused by the dredge bucket or spillage during loading/unloading and leaking/spilling of turbid water from the dredge bucket or barge barriers back into the bay. In addition, water quality impacts related to contaminated suspended sediments could be associated with the remobilization of contaminants bonded to the sediments. COCs may be released into the water column and be transported out of the CDF area

by waves, currents, or tides. However, the potential for COCs to dissolve into the water column is considered minimal.

Dredging operations will be designed to minimize the turbidity caused during sediment removal. In addition, permitting from the USACE may require the use of a silt curtain to contain suspended solids during containment barrier construction. A reduction in the turbidity generated during dredging will subsequently reduce the water quality impacts that may be associated with COCs bound to the sediments. It is assumed that the impacts to water quality from dredging can be controlled without the use of a slit curtain; however, there is the potential that permitting may require a silt curtain be utilized and it is therefore evaluated in this document.

The potentially significant impacts to water quality during dredging operations are:

- Spills/leaks of fuels, oils, or other hazardous fluids from equipment;
- Operator overfilling the dredge bucket, barges, or trucks;
- Debris preventing closure of the dredge bucket;
- Spillage during loading/unloading;
- Vessel propeller wash; and,
- Damage to silt curtain (if required).

The potential significant impacts associated with dredging operations are considered less than significant with the implementation of standard operating procedures (SOPs), mitigation measures, permit requirements, and regulations described in this section.

6.2.1. Standard Operating Procedures

The WQTR prepared by Geosyntec for the Shipyard Sediment Site EIR provides a detailed description of SOPs that will be implemented during dredging activities to minimize the impacts to water quality (Geosyntec, 2011). A brief summary of the SOPs is provided below:

- Equipment Selection: The dredge bucket should be equipped with vertical side plates to reduce sediment loss, flatter cut edges to reduce resuspension caused by potholes, indicator switches to inform the operator if the bucket is not completely closed, and automatic monitoring systems. This will minimize the loss of sedi-

ments; however, minimal releases of resuspended sediments are anticipated to occur during dredging.

- Monitoring: A system for automatic monitoring of turbidity and other water quality parameters in the water column in the vicinity of dredging activities should be utilized to facilitate the operator to quickly adjust or modify operations to control temporary water quality impacts. The system should be equipped with an alarm system that can be set to notify the operator when specific thresholds have been exceeded. A water quality monitoring plan should also be prepared that describes the methods and documentation for the monitoring of water quality parameters. Section 7.2.3 provides additional discussion of water quality monitoring.

- Dredging BMPs: BMPs will be implemented to minimize the resuspension or spillage of sediments to minimize increase in turbidity. The BMPs will include:

    - Not stockpiling of sediments on the bay floor,

    - Ensuring the dredge bucket is fully closed before withdrawing from the water or during loading activities,

    - Rinsing the dredge bucket in, or into, a wash tank to remove sediment adhered to the bucket and confirming the bucket is clean prior to being moved back into the bay water (may not be necessary if a silt curtain is utilized),

    - Not overfilling the dredge bucket (i.e., utilizing software to provide real-time data regarding the position of the bucket and depth of cut) or the barge (i.e., utilize visual markings on the barge to indicate limits of fill),

    - Limiting multiple bites with the dredge bucket,

    - Placing dredged material carefully and limiting the bucket drop height to minimize splashing or sloshing,

    - Not using weirs to dewater the barges, and

    - Controlling barge/boat movement and speeds.

- Spills/Leaks BMPs: Spills/leads of fuel, oil, or other hazardous fluids could impair or degrade the water quality of San Diego Bay, depending on the degree of the spill. Spills are likely to be localized spills of fuel (diesel and gasoline) and lubricating oils that are toxic to marine organisms. Although the potential for the spills is low, the potential for a significant, long-term effect on marine life is moderate to high. The following BMPs will be implemented to minimize the potential for accidental spills/leaks to occur and to for the fluids to enter the bay :

- Oils and fuels will be housed in secondary containment structures.
- Spill clean up kits will be available at various locations on site. Personnel will be trained on the locations of the kits and their proper use and disposal.
- Personnel will be trained on the potential hazards from accidental spills and leaks to increase awareness of the materials being handled and the potential impacts.
- Routine maintenance and inspections of equipment containing oil, fuel, or other hazardous fluids will be performed to identify worn or faulty parts and needed repairs.
- During dredging operations, personnel will perform visual monitoring for spills or leaks. If a spill/leak is observed, the equipment will be immediately shut down, the source of the spill/leak will be identified, and the spill/leak will be contained.
- If a barge is utilized, an oil boom will be deployed in the vicinity of the barge to facility the containment of a spill/leak; however, the boom will be considered a last line of defense against spills/leaks.

6.2.2. Silt Curtain

It is assumed that the impacts to water quality from dredging can be mitigated to less than significant levels using the SOPs and mitigation measures described above; however, there is the potential that permitting may require the use of a silt curtain. If required, a single or double floating silt curtain will be installed around the dredging area from the water surface down to near the bay bottom to assist in containing suspended sediments and minimizing the potential for migration outside of the dredging area.

The curtain will be made of a continuous length of geotextile fabric that will enclose the dredging area and the barge. The curtain will be supported by a floating boom in open water areas and will be connected to landside structures at the shoreline. The bottom of the silt curtain will be weighted at the base of the fabric, which will minimize the movement of the curtain in response to currents. The silt curtain will not be extended to the bay bottom because a lower tides the curtain may fold up on the bay floor and cause sediments to be resuspended when the curtain is lifted by a higher tide or currents. The silt curtain will be continuously monitored for damage, dislocation, or gaps during dredging activities and will be routinely inspected for wear and tear. Any locations

where the curtain is damaged, no longer continuous, or has been loosened from the supports will be quick

6.2.3. Water Quality Monitoring

Water quality monitoring will be performed during in-water activities (e.g., demolition, dredging, rock placement, filling) to obtain real-time data so that potential impacts to water quality can be quickly detected and activities modified to avoid impairing or degrading water quality. A water quality monitoring plan will be prepared prior to implementation of the alternative, which will include the evaluation of turbidity levels and dissolved oxygen. Monitoring will be performed in at least four locations outside of the active work areas. The monitoring stations will be located immediately outside the work area, approximately 250 and 500 feet down current from the work area, and at a location evaluated to represent ambient bay water conditions. The station immediately next to the work area will be visually monitored. If a turbidity plume is observed at the station adjacent to the work area, then monitoring of the 250-foot, 500-foot, and ambient water stations will begin. Samples collected at the 250-foot station are intended to be a screening tool to warn of potential impacts that may reach the 500-foot station. If the water quality samples at the 250-foot station indicate levels exceed the levels measured at the ambient station, then additional BMPs will be implemented. If water quality samples at the 500-foot station indicate levels exceed the levels at the ambient station, then the in-water activities will stop while alternative BMPs are evaluated.

6.3. Unloading Operations

After the material has been loaded onto the barge, the barges would transport the dredged material to the landside area near the sediment containment barrier. Barges would be unloaded using a crane-based clamshell bucket either directly into the sediment containment area or be transferred to a sediment containment area using trucks. During barge unloading operations, potential impacts to water quality may be occur as a result of over-

filling of the crane bucket and movement of the crane bucket between the barge and the truck or containment area.

Overfilling of the unloading bucket can result in spillage of sediments into the water column while the bucket is swinging between the barge and the truck/containment area. Spillage of the sediment into the bay water can result in a short-term increase in suspended sediments, decreased dissolved oxygen, increased turbidity, changes in pH, and increase the potential for COCs in the sediments to reenter the water column, which will degrade or impair water quality.

The WQTR prepared by Geosyntec for the Shipyard Sediment Site EIR provides a detailed description of the impacts and potential mitigation measures to be implemented during unloading operations (Geosyntec, 2011). A brief summary is provided below:

- A spill plate should be placed between the barge and the landside to prevent spillage from falling into the bay water.
- The operator should ensure the unloading bucket is fully closed before moving from the barge to the truck/containment area.
- The operator should ensure the unloading bucket is fully empty before moving form the truck/containment area to the barge.

Therefore, the potential significant impacts associated with unloading operations are considered less than significant with the implementation of the mitigation measures described above.

6.4. Dewatering Operations

Sediments will require dewatering if they are to be shipped off site for disposal. Water quality in the bay may potentially be impacted during dewatering operations if the sediment containment area or containers holding decanted water from sediments are breached and the water flows back into the bay, which may result in increased turbidity, changes in pH, low dissolved oxygen, and increased suspension of contaminated sediments.

6.4.1. Breach in Containment Area

To mitigate a potential breach in the containment area, the containment area will be adequately designed and constructed to hold the volume and weight of dredged sediments. The containment will be constructed with berms around the perimeter to minimize the potential for decanted water/storm water from entering the bay should a breach occur. In addition, a salvaging layer of sand will be placed on the bottom of the containment are to act as a visual indicator to the excavator operator of the proximity to the containment liner or closely spaced k-rails/dry dock blocks will be placed at key points (e.g., corners) to minimize the potential that the excavator will come in contact with the containment liner. These methods will mitigate the potential significant impacts associated with a breach in the containment area to less than significant levels.

6.4.2. Discharge of Waste Water

To mitigate the potential discharge of wastewater (i.e., decanted water from sediments) from either the containment area or other containers holding wastewater is to properly design and construct the units to hold an adequate volume of water. The containment area should be capable of holding volume from a 50-year storm event and be surrounded by berms to prevent potential runoff of wastewater into the bay. An alternative mitigation measure is to pump wastewater into aboveground storage tanks with adequate design capacity.

Wastewater will be sampled, analyzed, and either disposed of off site at a facility permitted to receive wastewater or treated and discharged into the sanitary sewer in accordance with the City of San Diego discharge permit. In addition, a SWPPP will be prepared in accordance with the NPDES permit, which will outline means and methods for storm water control and containment and appropriate BMPs. These methods will mitigate the potential significant impacts associated with a breach in the containment area to less than significant levels.

6.5. Containment Barrier Construction and Filling Operations

Construction of the containment barrier (after dredging) and placement of dredged fill within the CDF may result in potentially significant impacts through improper placement methods. Improper placement methods could result in an increase in suspended sediments, decreased dissolved oxygen, increased turbidity, changes in pH, and increase the potential for COCs in the sediments to reenter the water column, which will degrade or impair water quality.

6.5.1. Containment Barrier Construction

The containment barrier will comprise three layers placed upon the surface of the bay bottom. The core of the containment jetty would consist of quarry-run aggregate or similar material. An underlayer consisting of small rock would support an armor layer that will protect the outside of the barrier from wave action, boat wakes and other erosional forces. A filter (e.g., geotextile filter fabric or graded rock) would be constructed inside the face of the containment barrier to mitigate migration of fill particles into the bay due to tidal fluctuations. It is expected that the rock and aggregate material composing of the containment jetty would be imported by trucks from a nearby quarry.

Rock may be transported by barge or by land using a crane from land or at the crest of the structure. Placement of material transported by barge might include bottom dumping of core rock where water depths allow or by operation of a crane mounted on a barge for armor rock. Alternatively, rock materials may be end-dumped or pushed from the western shoreline to progressively build the rock jetty eastward without the use of a barge or crane for placement.

An increase in suspended sediments, decrease in dissolved oxygen, increase in turbidity, changes in pH, and an increase in the potential for COCs in the sediments to reenter the water column may occur during rock placement. However, these impacts would be short-term and localized to the immediate vicinity of the rock placement. Monitoring of water quality parameters will take place during rock placement activities, as described in Section 7.2.3., to minimize to potential impacts outside of the CDF area. If monitor-

ing indicates that the rock placement activities are resulting in an unacceptable level of impacts, the rock placement activities will stop or be modified until monitoring indicates the water quality parameters have returned to acceptable levels. A reduction in the turbidity generated during rock placement will subsequently reduce the water quality impacts associated with COCs bound to the sediments.

If bottom-dumping barges are being utilized, then the placement method may be altered to placement using a crane-mounted bucket. If a crane-mounted bucket is being utilized, the drop height and velocity of the bucket can be reduced. In addition, permitting from the USACE may require the use of a silt curtain to contain suspended solids during containment barrier construction. These methods will mitigate the potential significant impacts associated with the construction of the containment jetty to less than significant levels.

6.5.2. Filling Operations

The sediment will be placed by hydraulic methods, which means that the dredge fill material would be transferred from barges into the CDF through the use of pumps, pipelines, and hoses. The impacted sediments are most likely to travel out of the CDF area when they are suspended in the water column (i.e., observed as increased turbidity). To mitigate the migration of suspended sediments outside of the CDF, the following methods will be implemented:

- The containment barrier will be constructed prior to the placement of the fill material, which will include a filter inside the face of the containment barrier. Fill material will be placed behind the containment barrier. The filter will mitigate migration of fill particles into the bay due to permeation through the containment barrier as a result of water placement during filling activities or tidal fluctuations.

- Water outside of the CDF will be monitored as described in Section 7.2.3. If an exceedance occurs, then hydraulic placement of the fill would be slowed to allow sediments to settle out of suspension. If this modification is not sufficient to control the turbidity, then a floating silt curtain will be installed around the discharge area to contain the turbidity plum and prevent migration out of the CDF area.

- In addition, a weir may be constructed on or near the containment jetty to provide a method to release site water displaced during the placement of fill at the site. The

weir may consist of a low crest in the containment jetty or a pipe in the structural fill of the barrier. The weir outflow will be monitored as described in Section 7.2.3. If an exceedance occurs, a filter fabric barrier of floating silt curtain will be installed across or just outside of the weir outflow to minimize the potential for suspended sediments to enter the water outside of the CDF.

These methods will mitigate the potential significant impacts associated with the filling operations to less than significant levels.

6.6. Post-Construction Release of Sediments

There is the potential that sediments from within the CDF may migrate into the bay through tidal fluctuations. However, the potential for this migration is low and the filter within the containment barrier will mitigate migration of fill particles into the bay to less than significant levels. The solubility of COCs in the sediments within the CDF (e.g., PCBs, metals) is inherently low due to their chemical characteristics. This solubility likely has been further reduced by having been exposed to the environment for decades. Therefore, besides monitoring the integrity of the CDF after a significant seismic or related event, post-construction monitoring does not appear to be warranted.

6.7. Drainage and Flooding

The filling operations will result in the conversion of approximatley 10 acres of intertidal and submerged lagoon areas into upland areas, which will alter the drainage patterns of the site. However, the upland surface will be paved with asphalt concrete post-construction; therefore, the potential for increased erosion or siltation is less than significant.

The addition of land area that will be paved will potentially alter the amount of surface runoff generated at the site. However, the project will not likely increase the potential for flooding on- or off-site because the area will be designed to properly drain (e.g., drainage slopes, swales, SWCS, etc.). In addition, the site will likely be subject to the Industrial Stormwater General Permit, which will require a SWPPP be prepared for the site that will identify potential sources of pollutants and the means to manage or reduce the storm water

pollution from these sources (e.g., BMPs). Based on this information, the potential impacts related to changes in the drainage patterns at the site are less than significant.

The site is currently located within a 100-year floodplain; however, the landside areas adjacent to the site are not located within the floodplain. Since the surface elevation of the site after construction will be similar to the elevation of the surrounding properties, it is anticipated that the area will not be located within the 100-year floodplain after construction is complete. In addition, the project does not propose to construct homes or other structures on the site; therefore, there will not be impacts related to flooding.

6.8. Summary of Impacts

The potential significant impacts identified as associated with the proposed project include impacts to water quality from suspended sediments, which may result in low dissolved oxygen, changes in pH, increased turbidity, and toxicity. A copy of the CEQA Initial Study Checklist for Hydrology and Water Quality is provided in Appendix A.

The final mitigation measure utilized may be modified based on the final project design details; however, the potential mitigation measures described above are capable of mitigating the potential impacts to less than significant levels.

7. LIMITATIONS

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard-of-care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report. Please note that this study did not include an evaluation of geotechnical conditions or potential geologic hazards.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore

should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions and the referenced literature. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

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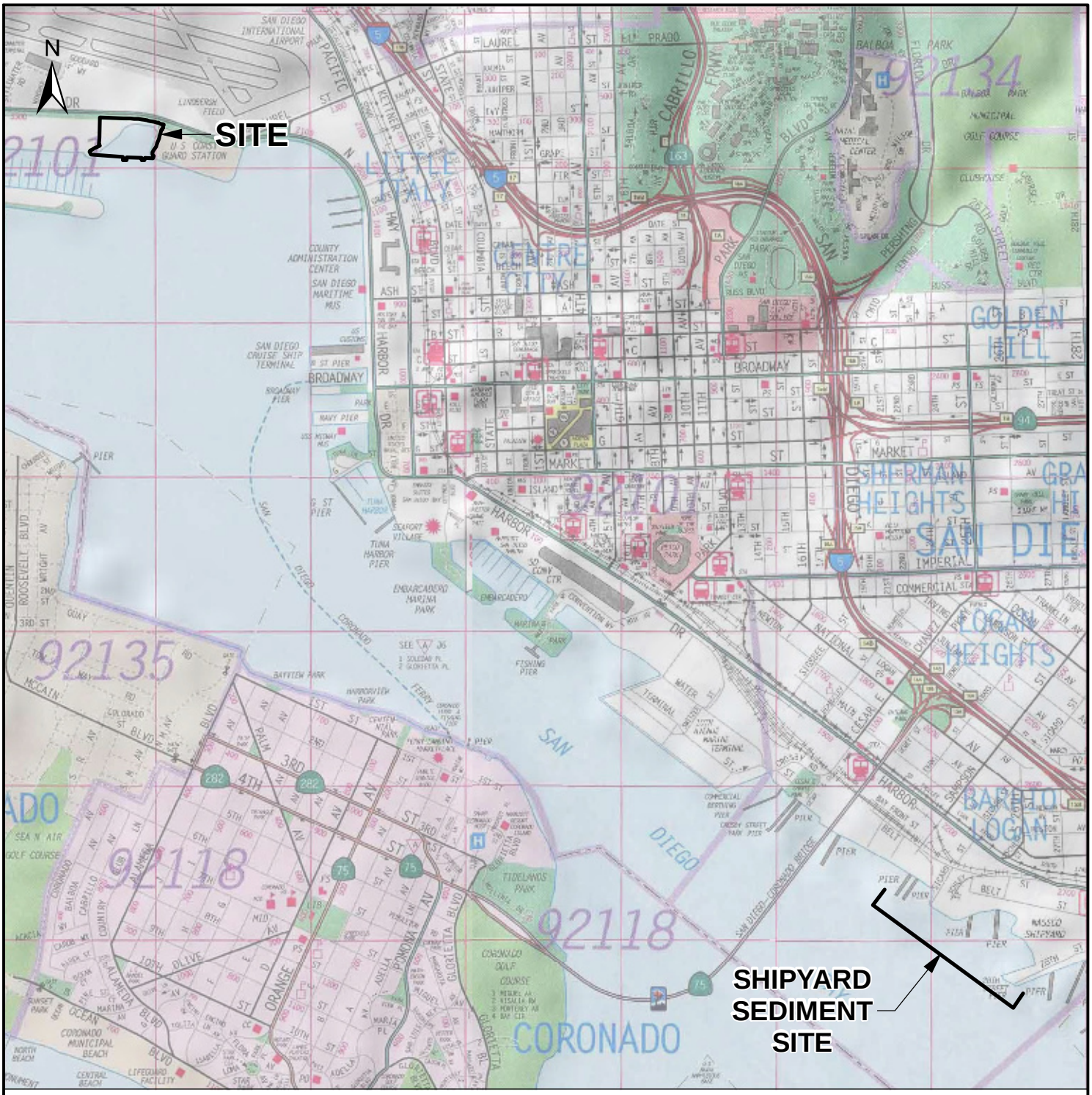

SOURCE: 2008 Thomas Guide for San Diego County, Street Guide and Directory; Map © Rand McNally, R.L.07-S-129

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

SCALE IN FEET

0 1,200 2,400 4,800

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. / 106997003	DATE / 5/11	SHIPYARD SEDIMENT ALTERNATIVE CONVAIR LAGOON SAN DIEGO, CALIFORNIA	1

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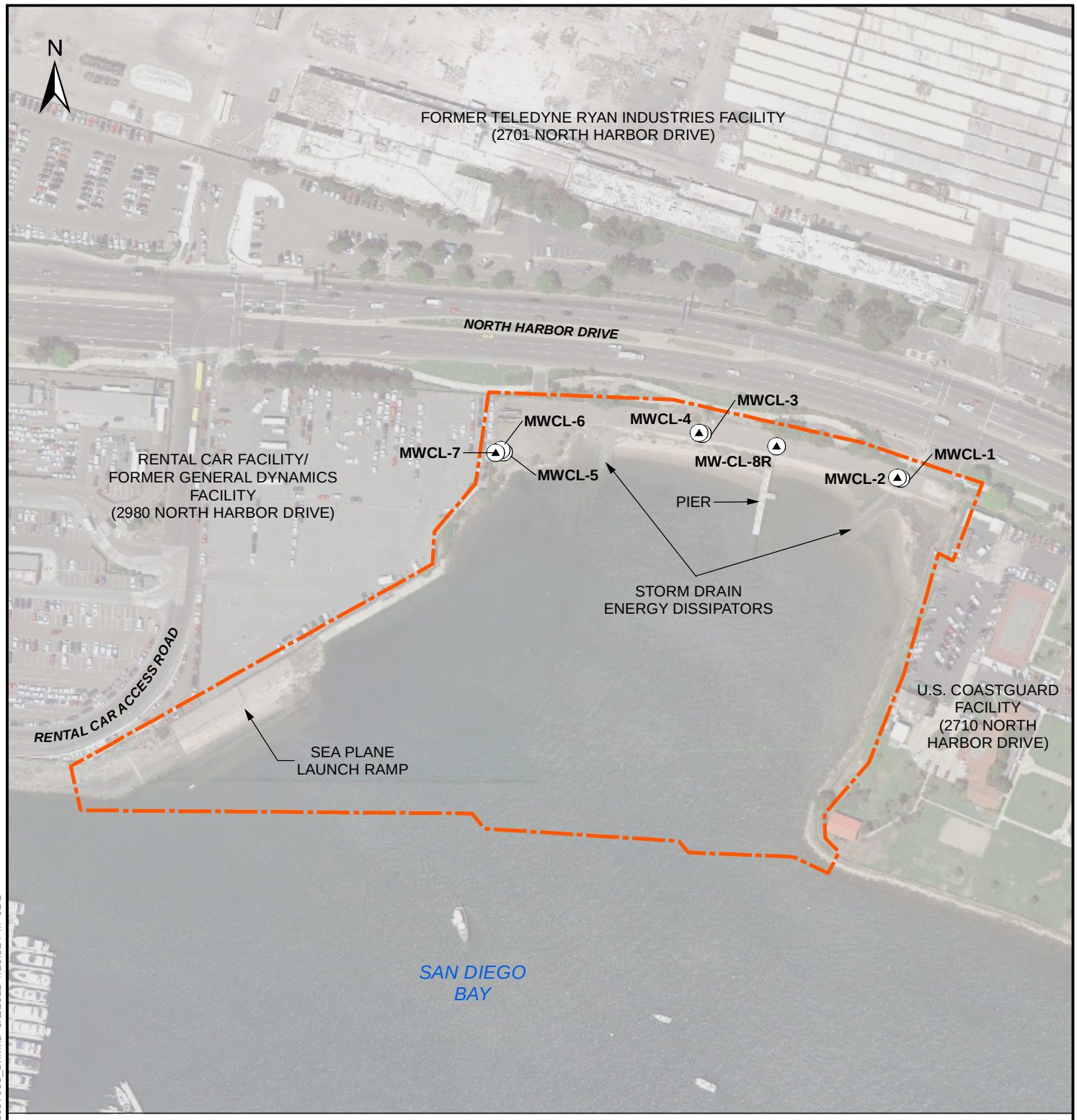

SOURCE: Aerial Imagery - Photo Date: August, 2010; (c) Google Earth, 2011

LEGEND

SITE BOUNDARY

SCALE IN FEET

0 100 200 400

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore	SITE AND VICINITY	FIGURE
PROJECT NO. / DATE	SHIPYARD SEDIMENT ALTERNATIVE CONVAIR LAGOON SAN DIEGO, CALIFORNIA	2
106997003 / 5/11		

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N

LEGEND

- Project Area
- Existing Concrete
- Proposed Fill Pad
- Existing Rip Rap
- Proposed Containment Barrier
- Proposed SWCS (Storm Water Conveyance System)

NORTH HARBOR DRIVE

30-INCH DIAMETER WEST SWCS (ABANDONED) AND DISSIPATOR

ASPHALT PAVED DOCK & POTENTIAL STAGING AREA

ACTIVE 60-INCH DIAMETER SWCS AND DISSIPATOR

CHAIN LINK FENCE

ENTRY EXIT

ACTIVE 54-INCH DIAMETER SWCS

EXISTING CONCRETE SEA WALL

POTENTIAL STAGING AREA = 3.0 AC

EXISTING CONCRETE PIER

30-INCH DIAMETER EAST SWCS (ABANDONED) AND DISSIPATOR

PROPOSED FILL PAD PAD AREA = 10.0 AC

EXISTING SAND CAP

EXISTING CONCRETE SEA PLANE RAMP

EXISTING SUB-SURFACE ROCK BERM

COAST GUARD FACILITY

PROPOSED SWCS OUTFALL EXTENSIONS

TOTAL PROJECT AREA = 15.4 AC

PROPOSED CONTAINMENT BARRIER

PROPOSED ENERGY DISSIPATORS

SAN DIEGO BAY

SCALE IN FEET

0 50 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

SOURCE: FIGURE 5.7-4, CONCEPTUAL DESIGN EXISTING AND PROPOSED FACILITIES, ATKINS, 2011.

106997002_dev_plan_atkins.cdr JDL

Ninyo & Moore	CONCEPTUAL DESIGN EXISITNG AND PROPOSED FACILITIES	FIGURE
PROJECT NO. / DATE	SHIPYARD SEDIMENT ALTERNATIVE CONVAIR LAGOON SAN DIEGO, CALIFORNIA	3
106997003 / 5/11		

APPENDIX A

CEQA INITIAL STUDY CHECKLIST, SECTION IX

CEQA INITIAL STUDY CHECK LIST

IX. HYDROLOGY AND WATER QUALITY - Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?		X		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site?			X	
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of pollutant runoff?			X	
f) Otherwise substantially degrade water quality?		X		
g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?			X	